DESCRIPTION

Novel heteroaromatic amide derivative and medicament containing the same

[Technical Field]

[0001]

The present invention relates to a compound or a pharmaceutical composition useful for treating or preventing a disease associated with a voltage-gated sodium channel Nav1.7 (hereinafter referred to as Nav1.7).

[Background Art]

[0002]

Voltage-gated sodium channels (Nav) are present in excitable cells including neuronal cells in the central and peripheral nervous systems as well as cardiomyocytes. Its role is to control the rising phase of action potential generated by depolarization of cell membrane potential to participate in the generation and propagation of electrical signals. The Nav are essential for maintaining the physiological functions of excitable cells such as those in the neurons and myocardia. Nav abnormalities are associated with diseases such as epilepsy (Non-Patent document 1), arrhythmia (Non-Patent document 2), myotonia (Non-Patent document 3), and chronic pain (Non-Patent document 4).

The Nav are composed of α subunits which form an ion channel pore and β subunits which supplementarily works. There are at least nine α subunits known to date (Nav1.1 to Nav1.9). These subtypes are classified as TTX-sensitive Nav (Nav1.1, Nav1.2, Nav1.3, Nav1.4, Nav1.6, Nav1.7), which are functionally inhibited by the puffer toxin tetrodotoxin (TTX) and TTX-resistant Nav (Nav1.5, Nav1.8, Nav1.9). It is known that Nav1.1, Nav1.2, Nav1.3 are mostly expressed in the central nervous system, Nav1.4 is mostly expressed in skeletal muscles, Nav1.5 is mostly expressed in myocardia, Nav1.6 is mostly expressed in the nervous system, and Nav1.7, Nav1.8 and Nav1.9 are mostly expressed in the peripheral nervous system (Non-Patent document 5).

Nav1.7 is a TTX-sensitive sodium channel distributed in the peripheral nervous system such as autonomic and sensory neurons. Recently, mutations in the gene encoding Nav1.7 (SCN9A) have been shown to change the pain threshold. Namely, it has been reported that a gain of function mutation occurred in SCN9A, based on the analysis of the family history of erythromelalgia with increased flushing at the distal extremities and pain sensation (Non-Patent document 6); and also it has been reported that a loss of function mutation occurred in SCN9A,

based on a pedigree analysis of insensitivity to pain in which only pain sensation had disappeared even though other sensations are normal (Non-Patent document 7).

[0003]

It is also known that inhibition of Nav1.7 achieves analgesic effects on nociceptive pain and neuropathic pain from studies using an anti-Nav1.7 antibody (Non-Patent document 8) and Nav1.7 inhibitory compounds (Non-Patent document 9, Patent document 1, and Patent document 2).

Thus, since Nav1.7 is suggested of its relevance in particular to pain sensation, Nav1.7 inhibitors are considered to be useful as therapeutic or preventive drugs for diseases associated with pain, in particular, nociceptive pain and neuropathic pain.

[0004]

Furthermore, since pruritus sensation is transmitted by peripheral sensory neurons and Nav1.7 is distributed in the peripheral nervous system, Nav1.7 is thought to be involved in acute and chronic pruritus; inhibition of Nav1.7 is considered to exert an anti-pruritic effect against acute or chronic pruritus (Non-Patent document 7).

[0005]

Nav inhibitors are effective in the treatment of various disease states. For example, subtype-non-selective Nav inhibitors include lidocaine, a local anesthetic, mexiletine, an antiarrhythmic drug, and carbamazepine, an antiepileptic drug and so on.

[0006]

Subtype-non-specific Nav inhibitors are known clinically to have an analgesic effect and are used as analgesics. However, these subtype-non-selective Nav inhibitors also exert an inhibitory action on Nav1.5 expressed in the myocardia, and thus have a concern about adversely affecting cardiac function, which function is particularly important in life support. To date, there is no selective Nav1.7 inhibitor to be clinically used.

[0007]

Based on the above, Nav1.7 inhibitors that are selective for Nav1.5 are thought to be very useful as therapeutic or preventive drugs for various painful pathologies with less concern about side effects derived from Nav1.5 inhibition.

[0008]

To date, various heteroaromatic amide derivatives having Nav1.7 inhibitory action have been reported (Patent document 3 to Patent document 10).

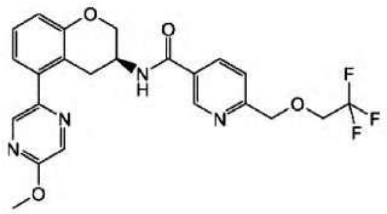
[0009]

In addition, various amide compounds having Nav1.7 inhibitory activity are disclosed in

Patent document 11 to Patent document 15. For example, Patent document 15 describes a compound represented by

[0010]

[Chem 1]



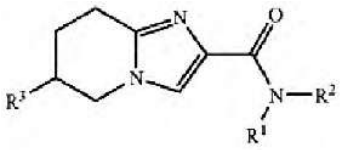
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[0011]

Patent document 16 describes a compound represented by

[0012]

[Chem 2]



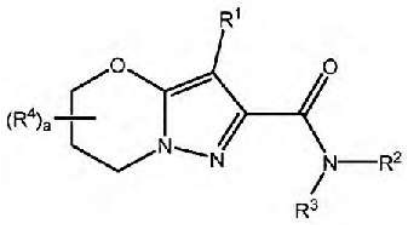
(wherein, each symbol is as defined in Patent document 16), as a compound having affinity to KCNQ2/3 potassium channel and being useful as an analgesic agent.

[0013]

Patent document 17 describes a compound represented by

[0014]

[Chem 3]



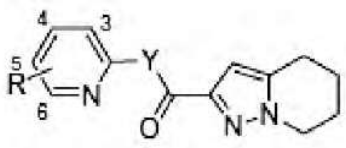
(wherein, each symbol is as defined in Patent document 17), as a compound having PDE4B inhibitory activity and being effective for various disorders including pain.

[0015]

Non-Patent document 10 describes a compound represented by

[0016]

[Chem 4]



(wherein, each symbol is as defined in Non-Patent document 10.), as a negative allosteric modulator of metabotropic glutamate receptor 5 and a compound applicable to chronic pain.

[Prior Art Documents]

[Patent Documents]

[0017]

Patent document 1 : WO2014/151472

Patent document 2 : US20148883840A

Patent document 3 : WO2008/008020

Patent document 4 : WO2009/145720

Patent document 5 : WO2009/145721

Patent document 6 : WO2013/161928

Patent document 7 : JP2014-101287A

Patent document 8 : WO2015/119998

Patent document 9 : WO2016/117647

Patent document 10 : WO2008/130319

Patent document 11 : WO2008/130320

Patent document 12 : WO2008/130321

Patent document 13 : WO2008/130322

Patent document 14 : WO2008/130323

Patent document 15 : WO2012/039657

Patent document 16 : US20090186902A

Patent document 17 : WO2017/145013

[Non-Patent Documents]

[0018]

Non-Patent document 1 : Yogeeswari et al., Curr. Drug Targets 2004, 5 (7), 589-602.

Non-Patent document 2 : Noble D., Proc Natl Acad Sci USA. 2002, 99 (9): 5755-5756.

Non-Patent document 3 : Cannon SC, Kidney Int. 2000, 57 (3), 772-779.

Non-Patent document 4 : Wood, JN et al., J. Neurobiol. 2004, 61 (1), 55-71.

Non-Patent document 5 : Catterall, WA et al., Pharmacol Rev. 2005, 57: 397-409.

Non-Patent document 6 : Waxman, SG Neurology. 2007, 7, 69 (6), 505-507.

Non-Patent document 7 : Cox et al., Nature 2006, 444, 894-898.

Non-Patent document 8 : Lee JH et al., Cell 2014, 157, 1393-1404.

Non-Patent document 9 : Erin McGowan BS et al., Anesth Analg 2009, 109, 951-958.

Non-Patent document 10 : G. Duvey et al., Bioorg. Med. Chem. Lett. 2013, 23 (16), 4523.

[Diclosure of the Invention]

[Problems to be Solved by the Invention]

[0019]

An object of the present invention is to provide novel compounds having Nav1.7 inhibitory action and pharmaceutical compositions containing the same.

[Means to Solve the Problem]

[0020]

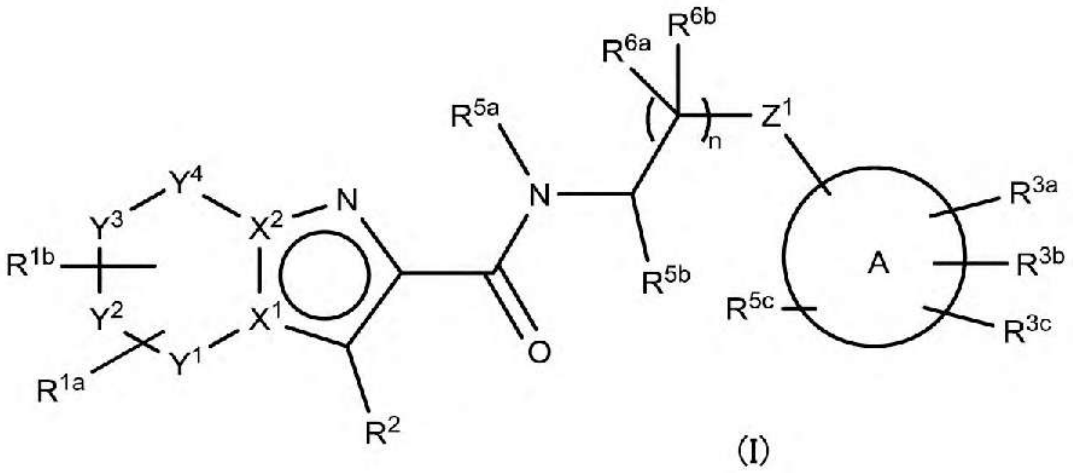
The present inventors have conducted intensive research to solve the aforementioned problems, found out that the following novel heteroaromatic amide derivative represented by the general formula (I) has Nav1.7 inhibitory action selective over Nav1.5, and completed the present invention.

[0021]

(0) The present invention relates to a heteroaromatic amide derivative represented by the general formula (I) or pharmaceutically acceptable salt thereof:

[0022]

[Chem 5]



(I)

[wherein,

X^1-X^2 is N-C or C-N,

Y^1, Y^2, Y^3 and Y^4 are, independently each other, a single bond, -CH_2-, -CH_2CH_2-, -$CR^{4a}R^{4b}$-, -$CR^{4a}H$-, -$CR^{4b}H$-, -$CH_2CR^{4a}R^{4b}$-, -$CH_2CR^{4a}H$-, -NR^{4c}-, -NH-, -S-, -SO_2-, or -O-,

Z^1 is a single bond, -$CR^{7a}R^{7b}$-, -O-, -S-, -NH-, -NR^{7a}-, -$NR^{7a}CH_2$-, -CH_2NR^{7a}-, -CO-, or

$-SO_2-$,

ring A is a 3- to 7-membered monocyclic aromatic ring, or a 8- to 12-membered bicyclic aromatic ring,

R^{1a} and R^{1b} are, independently each other, a hydrogen atom, a halogen atom, a hydroxyl group, a cyano group, a C_1-C_4 alkyl group, a C_1-C_4 haloalkyl group, a C_1-C_4 alkoxy group, a C_1-C_4 haloalkoxy group, a C_3-C_7 cycloalkyl group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group, or a C_1-C_4 haloalkoxy-C_1-C_4 alkyl group,

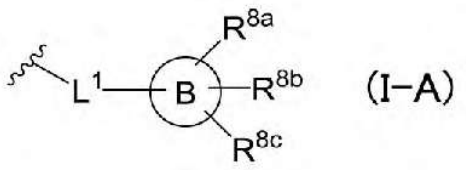
R^2 is a hydrogen atom, a halogen atom, a hydroxyl group, a cyano group, an optionally substituted C_1-C_6 alkyl group, an optionally substituted C_1-C_6 haloalkyl group, an optionally substituted C_2-C_6 alkenyl group, an optionally substituted C_2-C_6 alkynyl group, or an optionally substituted saturated, partially saturated or unsaturated 3- to 7-membered monocyclic ring,

R^{3a}, R^{3b} and R^{3c} are, independently each other, a hydrogen atom, a halogen atom, a cyano group, a cyanomethyl group, a formyl group, a nitro group, a carboxamide group, a hydroxyl group, an optionally substituted C_1-C_6 alkyl group, an optionally substituted C_1-C_6 haloalkyl group, an optionally substituted C_1-C_6 alkoxy group, an optionally substituted C_1-C_6 haloalkoxy group, an optionally substituted C_1-C_4 alkoxy-C_1-C_4 alkyl group, an optionally substituted C_1-C_4 haloalkoxy-C_1-C_4 alkyl group, an optionally substituted C_1-C_4 alkoxy-C_1-C_4 haloalkyl group, an optionally substituted C_1-C_4 haloalkoxy-C_1-C_4 haloalkyl group, an optionally substituted C_1-C_6 alkylcarbonyl group, an optionally substituted C_1-C_6 alkoxycarbonyl group, an optionally substituted C_1-C_6 alkylcarbonyloxy group, an optionally substituted C_1-C_6 haloalkylcarbonyl group, an optionally substituted C_1-C_6 haloalkoxycarbonyl group, an optionally substituted C_1-C_6 haloalkylcarbonyloxy group, an optionally substituted C_3-C_7 cycloalkyl group, an optionally substituted heterocycloalkyl group, an optionally substituted C_3-C_7 cycloalkyloxy group, an optionally substituted heterocycloalkyloxy group, an optionally substituted C_2-C_6 alkenyl group, an optionally substituted C_2-C_6 alkenyloxy group, an optionally substituted C_2-C_6 alkenyloxy-C_1-C_4 alkyl group, an optionally substituted C_2-C_6 alkenyloxy-C_1-C_4 haloalkyl group, an optionally substituted C_2-C_6 alkynyl group, an optionally substituted C_2-C_6 alkynyloxy group, an optionally substituted C_2-C_6 alkynyloxy-C_1-C_4 alkyl group, an optionally substituted C_2-C_6 alkynyloxy-C_1-C_4 haloalkyl group, an optionally substituted C_1-C_4 alkoxy-C_1-C_4 alkoxy group, an optionally substituted C_1-C_4 haloalkoxy-C_1-C_4 alkoxy group, an optionally substituted C_2-C_6 alkenyloxy-C_1-C_4 alkoxy group, an optionally substituted C_2-C_6 alkynyloxy-C_1-C_4 alkoxy group, an optionally substituted C_2-C_6 alkenyloxy-C_1-C_4 haloalkoxy group, an optionally substituted C_2-C_6 alkynyloxy-C_1-C_4 haloalkoxy group, an optionally substituted C_1-C_6 alkylthio group, an optionally substituted C_1-C_6 haloalkylthio group, an

optionally substituted C_1-C_4 alkylthio-C_1-C_4 alkyl group, an optionally substituted C_1-C_4 haloalkylthio-C_1-C_4 alkyl group, an optionally substituted C_1-C_4 alkylthio-C_1-C_4 haloalkyl group, an optionally substituted C_1-C_4 haloalkylthio-C_1-C_4 haloalkyl group, an optionally substituted C_1-C_6 alkylsulfonyl group, $-(CH_2)_pNR^{a1}R^{a2}$ (R^{a1} and R^{a2} are, independently each other, a hydrogen atom, a C_1-C_4 alkyl group, or a C_1-C_4 haloalkyl group, and p is 0, 1, or 2.), or a group represented by the general formula (I-A)

[0023]

[Chem 6]



(I-A)

{wherein,

ring B is a saturated, partially saturated or unsaturated 3- to 7-membered monocyclic ring,

L^1 is a single bond, $-CR^{a3}R^{a4}-$, -O-, $-NR^{a1}-$, $-CR^{a3}R^{a4}O-$, $-OCR^{a3}R^{a4}-$, $-CH_2CH_2-$, -CH=CH-, $-C\equiv C-$, or $-CH_2OCH_2-$ (R^{a3} and R^{a4} are, independently each other, a hydrogen atom, a C_1-C_4 alkyl group, or a C_1-C_4 haloalkyl group.),

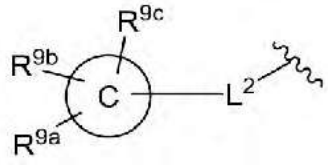
R^{8a}, R^{8b} and R^{8c} are, independently each other, a hydrogen atom, a halogen atom, a cyano group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_3-C_7 cycloalkyl group, a C_3-C_7 cycloalkyloxy group, a heterocycloalkyl group, a heterocycloalkyloxy group, a C_2-C_6 alkenyl group, or a C_2-C_6 alkynyl group.},

R^{4a}, R^{4b} and R^{4c} are, independently each other, a halogen atom, a cyano group, a cyanomethyl group, a formyl group, a nitro group, a carboxamide group, a hydroxyl group, an optionally substituted C_1-C_6 alkyl group, an optionally substituted C_1-C_6 haloalkyl group, an optionally substituted C_1-C_6 alkoxy group, an optionally substituted C_1-C_6 haloalkoxy group, an optionally substituted C_1-C_4 alkoxy-C_1-C_4 alkyl group, an optionally substituted C_1-C_4 haloalkoxy-C_1-C_4 alkyl group, an optionally substituted C_1-C_4 alkoxy-C_1-C_4 haloalkyl group, an optionally substituted C_1-C_4 haloalkoxy-C_1-C_4 haloalkyl group, an optionally substituted C_1-C_6 alkylcarbonyl group, an optionally substituted C_1-C_6 alkoxycarbonyl group, an optionally substituted C_1-C_6 alkylcarbonyloxy group, an optionally substituted C_1-C_6 haloalkylcarbonyl group, an optionally substituted C_1-C_6 haloalkoxycarbonyl group, an optionally substituted C_1-C_6 haloalkylcarbonyloxy group, an optionally substituted C_3-C_7 cycloalkyl group, an optionally substituted heterocycloalkyl group, an optionally substituted C_3-C_7 cycloalkyloxy group, an

optionally substituted heterocycloalkyloxy group, an optionally substituted C_2-C_6 alkenyl group, an optionally substituted C_2-C_6 alkenyloxy group, an optionally substituted C_2-C_6 alkenyloxy-C_1-C_4 alkyl group, an optionally substituted C_2-C_6 alkenyloxy-C_1-C_4 haloalkyl group, an optionally substituted C_2-C_6 alkynyl group, an optionally substituted C_2-C_6 alkynyloxy group, an optionally substituted C_2-C_6 alkynyloxy-C_1-C_4 alkyl group, an optionally substituted C_2-C_6 alkynyloxy-C_1-C_4 haloalkyl group, an optionally substituted C_1-C_4 alkoxy-C_1-C_4 alkoxy group, an optionally substituted C_1-C_4 haloalkoxy-C_1-C_4 alkoxy group, an optionally substituted C_2-C_6 alkenyloxy-C_1-C_4 alkoxy group, an optionally substituted C_2-C_6 alkynyloxy-C_1-C_4 alkoxy group, an optionally substituted C_2-C_6 alkenyloxy-C_1-C_4 haloalkoxy group, an optionally substituted C_2-C_6 alkynyloxy-C_1-C_4 haloalkoxy group, an optionally substituted C_1-C_6 alkylthio group, an optionally substituted C_1-C_6 haloalkylthio group, an optionally substituted C_1-C_4 alkylthio-C_1-C_4 alkyl group, an optionally substituted C_1-C_4 haloalkylthio-C_1-C_4 alkyl group, an optionally substituted C_1-C_4 alkylthio-C_1-C_4 haloalkyl group, an optionally substituted C_1-C_4 haloalkylthio-C_1-C_4 haloalkyl group, a pentafluorosulfanyl group, $-(CH_2)_qNR^{b1}R^{b2}$ (R^{b1} and R^{b2} are, independently each other, a hydrogen atom, a C_1-C_4 alkyl group, or a C_1-C_4 haloalkyl group, and q is 0, 1, 2, or 3.), or the general formula (I-B)

[0024]

[Chem 7]



(I-B)

{wherein,

ring C is a saturated, partially saturated or unsaturated 3- to 7-membered monocyclic ring, or a saturated, partially saturated or unsaturated 7- to 12-membered bicyclic ring,

L^2 is a single bond, -CH=CH-, -C≡C-,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}O(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}NR^{c}(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}CO(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}CONR^{c}(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}NR^{c}CO(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}S(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}SO(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}SO_2(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}-$,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}SO_2NR^{c}(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}-$, or

$-(CR^{10a}R^{10b})r_1(CR^{10c}R^{10d})_{r2}NR^{c}SO_2\ (CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}-$

(R^c is a hydrogen atom, a C_1-C_4 alkyl group, or a C_1-C_4 haloalkyl group,

R^{10a}, R^{10b}, R^{10c}, R^{10d}, R^{10e}, R^{10f}, R^{10g}, and R^{10h} are, independently each other, a hydrogen atom, a halogen atom, a C_1-C_4 alkyl group, or a C_3-C_7 cycloalkyl group,

R^{10a} and R^{10b} optionally form, together with the carbon atom bonded thereto, a 3- to 7-membered monocyclic ring,

R^{10c} and R^{10d} optionally form, together with the carbon atom bonded thereto, a 3- to 7-membered monocyclic ring,

R^{10e} and R^{10f} optionally form, together with the carbon atom bonded thereto, a 3- to 7-membered monocyclic ring,

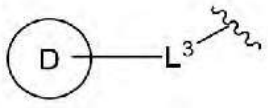
R^{10g} and R^{10h} optionally form, together with the carbon atom bonded thereto, a 3- to 7-membered monocyclic ring,

r1, r2, r3 and r4 are, independently each other, 0, 1, or 2.),

R^{9a}, R^{9b} and R^{9c} are, independently each other, a hydrogen atom, a halogen atom, a hydroxyl group, a cyano group, a formyl group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group, a C_1-C_4 haloalkoxy-C_1-C_4 alkyl group, a C_1-C_4 alkoxy-C_1-C_4 haloalkyl group, a C_1-C_6 alkylcarbonyl group, a C_1-C_6 alkoxycarbonyl group, a C_1-C_6 haloalkylcarbonyl group, a C_3-C_7 cycloalkyl group, a heterocycloalkyl group, a C_3-C_7 cycloalkyloxy group, a heterocycloalkyloxy group, a C_2-C_6 alkenyl group, $-(CH_2)_sNR^{d1}R^{d2}$ (R^{d1} and R^{d2} are, independently each other, a hydrogen atom, a C_1-C_4 alkyl group, or a C_1-C_4 haloalkyl group, and s is 0, 1, or 2.), or a group represented by the general formula (I-C)

[0025]

[Chem 8]



(I-C)

{wherein,

ring D is a 3- to 7-membered monocyclic ring optionally substituted by a halogen atom, a hydroxyl group, a C_1-C_4 alkyl group, a C_1-C_4 haloalkyl group, a C_1-C_4 alkoxy group, or a C_1-C_4 haloalkoxy group,

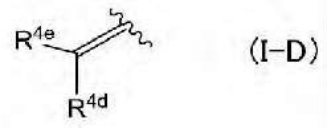
L^3 is a single bond, or an oxygen atom.}, or

R^{4a} and R^{4b} optionally form, together with the carbon atom bonded thereto, a 3- to 7-membered monocyclic ring, or

R^{4a} and R^{4b} together optionally form the general formula (I-D):

[0026]

[Chem 9]



(I-D)

(R^{4d} and R^{4e} are, independently each other, a hydrogen atom, a halogen atom, or a C_1-C_4 alkyl group, or R^{4d} and R^{4e} optionally form, together with the carbon atom bonded thereto, a 3- to 7-membered monocyclic ring.),

R^{5a}, R^{5b}, R^{5c}, R^{6a}, R^{6b} and n fulfill either one of the following constitutions indicated in (i) to (v)

{ (i) R^{5b} and R^{5c} together form a single bond, -CH_2-, -OCH_2-, -CH_2O-, -CH_2S-, -SCH_2-, -CH_2NR^{e1}-, -$NR^{e1}CH_2$-, -CH_2CH_2-, -$CONR^{e1}$-, -$NR^{e1}CO$-, -$CR^{e1}R^{e2}O$-, or -$OCR^{e1}R^{e2}$- (R^{e1} and R^{e2} are a hydrogen atom or a C_1-C_4 alkyl group.), and

R^{5a} is a hydrogen atom, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_3-C_7 cycloalkyl group, a heterocycloalkyl group, a C_3-C_7 cycloalkyl-C_1-C_4 alkyl group, a heterocycloalkyl-C_1-C_4 alkyl group, or an aralkyl group, and

R^{6a} and R^{6b}, independently each other, are a hydrogen atom, a halogen atom, a hydroxyl group, a cyano group, a C_1-C_4 alkyl group, a C_1-C_4 haloalkyl group, a C_1-C_4 alkoxy group, or a C_1-C_4 haloalkoxy group, and

n is 1 or 2.

(ii) R^{5a} and R^{6a} together form -CH_2-, -CH_2CH_2-, -$CH_2CR^{e1}R^{e2}$-, -$CR^{e1}R^{e2}CH_2$-, -$CH_2CH_2CH_2$-, -CH_2CH_2O-, or -$CH_2CH_2CH_2O$- (R^{e1} and R^{e2} are the same as the definition given in the (i).), and

R^{5b} is a hydrogen atom, a C_1-C_4 alkyl group, or a C_1-C_4 haloalkyl group,

R^{5c} and R^{6b} are a hydrogen atom, a halogen atom, a hydroxyl group, a C_1-C_4 alkyl group, a C_1-C_4 haloalkyl group, a C_1-C_4 alkoxy group, a C_1-C_4 haloalkoxy group or,

alternatively, R^{5c} and R^{6b} together form -$(CH_2)_t$-, -O $(CH_2)_t$-, -$(CH_2)_tO$-, -$(CH_2)_tO(CH_2)_u$-, -$(CH_2)_tNR^{e3}(CH_2)_u$-, -$(CH_2)_tCONR^{e3}(CH_2)_u$-, or -$(CH_2)_tNR^{e3}CO(CH_2)_u$- (t and u are, independently each other, 0, 1, 2, or 3, and R^{e3} is a hydrogen atom or a C_1-C_4 alkyl group.), and

n is 1.

(iii) R^{5a} is a hydrogen atom, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_3-C_7 cycloalkyl

group, a heterocycloalkyl group, a C_3-C_7 cycloalkyl-C_1-C_4 alkyl group, a heterocycloalkyl-C_1-C_4 alkyl group, or an aralkyl group, and

R^{5b} is a hydrogen atom or a C_1-C_4 alkyl group,

R^{5c} is a hydrogen atom, a C_1-C_4 alkyl group, or a halogen atom,

R^{6a} and R^{6b} are, independently each other, a hydrogen atom, a halogen atom, a C_1-C_6 alkyl group, a C_3-C_7 cycloalkyl group, or a C_1-C_6 haloalkyl group or,

alternatively, R^{6a} and R^{6b} optionally form, together with the carbon atom bonded thereto, a 3- to 7-membered monocyclic ring, and

n is 1 or 2.

(iv) R^{5a} and R^{5b} together form $-CH_2CH_2-$, $-CH_2CH_2CH_2-$, or $-CH_2CH_2CH_2CH_2-$, and

R^{5c}, R^{6a} and R^{6b}, independently each other, are a hydrogen atom or a halogen atom, and

n is 1 or 2.

(v) R^{6a} and R^{5c} together form $-OCH_2-$, $-CH_2O-$, $-CH_2S-$, $-SCH_2-$, $-CH_2NH-$, $-NHCH_2-$, or $-CH_2CH_2-$, and

R^{5a} and R^{5b} are a hydrogen atom, and

R^{6b} is a hydrogen atom or a halogen atom, and

n is 1.}, and

R^{7a} and R^{7b} are, independently each other, a hydrogen atom, a halogen atom, or a C_1-C_4 alkyl group.].

[0027]

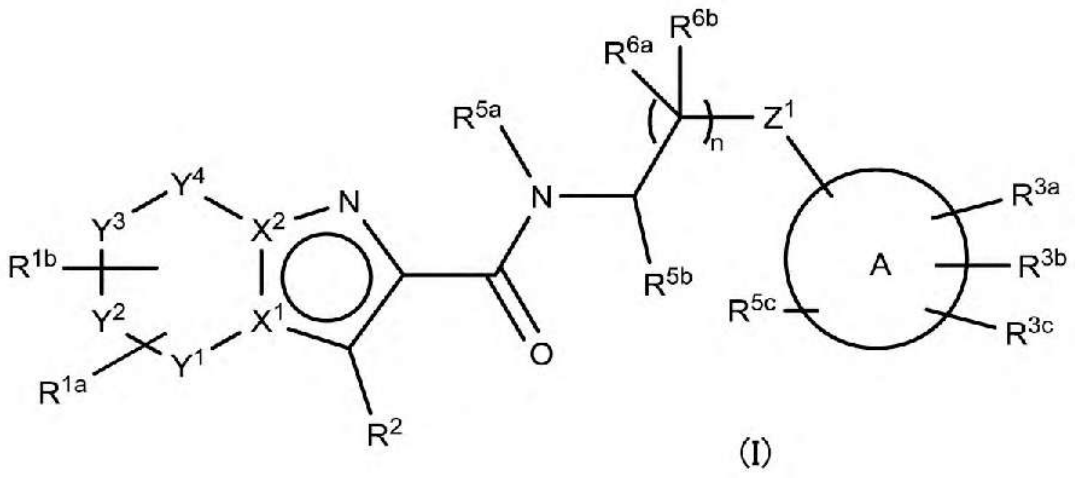
Namely, the present invention includes the following inventions.

[0028]

(1) A pharmaceutical composition comprising a heteroaromatic amide derivative represented by the general formula (I) or salt thereof:

[0029]

[Chem 10]



(I)

[wherein,

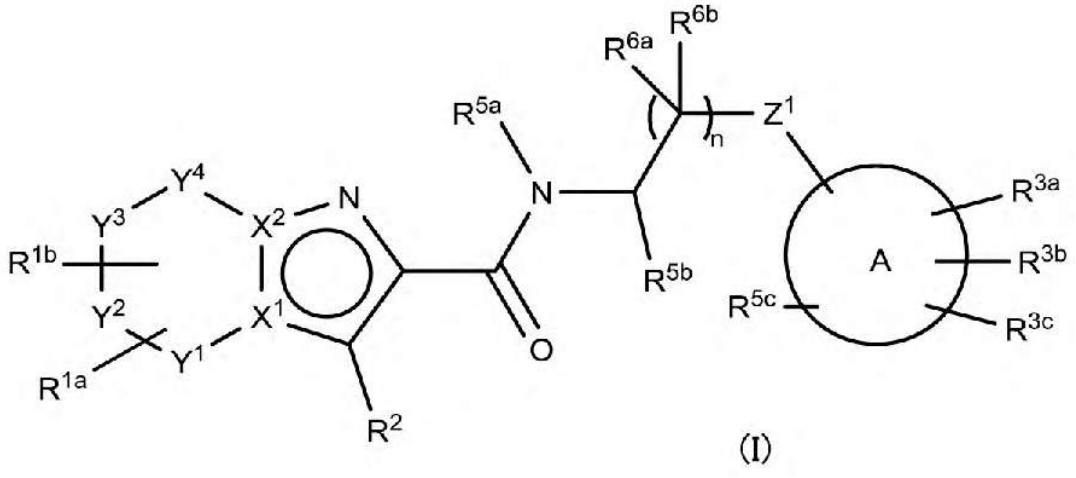
X^1-X^2, Y^1, Y^2, Y^3, Y^4, Z^1, ring A, R^{1a}, R^{1b}, R^2, R^{3a}, R^{3b}, R^{3c}, R^{5a}, R^{5b}, R^{5c}, R^{6a}, R^{6b}, n have the same definition as given in the (0) (with a proviso that ring C is not a phenyl ring when X^1-X^2 is N-C, Y^1, Y^2, Y^3 and Y^4 together form $-CH_2CR^{4a}HCH_2CH_2-$, R^2 is a hydrogen atom, R^{4a} is a group represented by the general formula (I-B), and L^2 is a single bond. Alternatively, when ring C is a phenyl ring, X^1-X^2 is C-N.)].

[0030]

(4) A heteroaromatic amide derivative or salt thereof represented by the general formula (I):

[0031]

[Chem 11]



(I)

[wherein,

X^1-X^2, Y^1, Y^2, Y^3, Y^4, Z^1, ring A, R^{1a}, R^{1b}, R^2, R^{3a}, R^{3b}, R^{3c} have the same definition as given in the (0) (with a proviso that at least one of Y^1, Y^2, Y^3, or Y^4 is $-CR^{4a}R^{4b}-$, $-CR^{4a}H-$, $-CH_2CR^{4a}R^{4b}-$, $-CH_2CR^{4a}H-$, or $-NR^{4c}-$ (R^{4a}, R^{4b} and R^{4c} have the same definition as given in the

(0) when R^2 is a hydrogen atom.).), and

R^{5a}, R^{5b}, R^{5c}, R^{6a}, R^{6b} and n fulfill either one of the above constitutions (i) and (ii) (with a proviso that Y^1, Y^2, Y^3 and Y^4 do not together form $-CH_2NR^{4a}HCH_2CH_2-$ when R^{5a}, R^{5b}, R^{5c}, R^{6a}, R^{6b} and n fulfill the constitution (ii).).].

[0032]

(5) The heteroaromatic amide derivative or salt thereof described in the (4) (with a proviso that ring C is not a phenyl ring when X^1-X^2 is N-C, Y^1, Y^2, Y^3 and Y^4 together form $-CH_2CR^{4a}HCH_2CH_2-$, R^2 is a hydrogen atom, R^{4a} is a group represented by the general formula (I-B), and L^2 is a single bond. Alternatively, when ring C is a phenyl ring, X^1-X^2 is C-N.), wherein in the general formula (I) ,

Y^1, Y^2, Y^3 and Y^4 together form

$-OCR^{4a}HCH_2CH_2-$, $-OCR^{4a}R^{4b}CH_2CH_2-$, $-OCH_2CH_2-$, $-OCR^{4a}HCH_2-$, $-OCR^{4a}R^{4b}CH_2-$,

$-OCH_2CH_2CH_2CH_2-$, $-OCR^{4a}HCH_2CH_2CH_2-$, $-OCR^{4a}R^{4b}CH_2CH_2CH_2-$,

$-OCH_2CR^{4a}HCH_2CH_2-$, $-OCH_2CR^{4a}R^{4b}CH_2CH_2-$,

$-CH_2OCH_2CH_2-$, $-CH_2OCH_2CH_2CH_2-$, $-CH_2CH_2OCH_2-$, $-CH_2CR^{4a}HOCH_2-$

$-CH_2CH_2CH_2CH_2-$, $-CH_2CR^{4a}HCH_2CH_2-$, $-CH_2CR^{4a}R^{4b}CH_2CH_2-$,

$-CH_2CH_2CR^{4a}HCH_2-$, $-CH_2CH_2CR^{4a}R^{4b}CH_2-$,

$-CH_2SCH_2CH_2-$, $-CH_2SO_2CH_2CH_2-$,

$-NHCH_2CH_2CH_2-$, $-NR^{4c}CH_2CH_2CH_2-$, $-NR^{4c}CR^{4a}HCH_2CH_2-$,

$-NHCR^{4a}HCH_2CH_2-$,

$-CH_2NR^{4c}CH_2CH_2-$, $-CH_2NR^{4c}CR^{4a}HCH_2-$, $-CH_2NHCR^{4a}HCH_2-$,

$-CH_2CH_2NR^{4c}CH_2-$, $-CH_2CR^{4a}HNR^{4c}CH_2-$, or $-CH_2CR^{4a}HNHCH_2-$ (R^{4a}, R^{4b} and R^{4c} have the same definition as given in the (0).), and

R^2 is a hydrogen atom, a halogen atom, a hydroxyl group, a cyano group, or an optionally substituted saturated, partially saturated or unsaturated 3- to 7-membered monocyclic ring (with a proviso that R^2 is a hydrogen atom when X^1-X^2 is C-N and Y^1, Y^2, Y^3 and Y^4 together form $-OCR^{4a}HCH_2CH_2-$, $-OCR^{4a}R^{4b}CH_2CH_2-$.).

[0033]

(6) The heteroaromatic amide derivative or salt thereof described in the (4) or (5), wherein in the general formula (I),

X^1-X^2 is C-N, and

Y^1, Y^2, Y^3 and Y^4 together form

$-OCR^{4a}HCH_2CH_2-$, $-OCR^{4a}R^{4b}CH_2CH_2-$, $-OCH_2CH_2-$,

$-OCR^{4a}HCH_2-$, $-OCR^{4a}R^{4b}CH_2-$,

-$OCH_2CH_2CH_2CH_2$-, -$OCR^{4a}HCH_2CH_2CH_2$-, -$OCH_2CR^{4a}HCH_2CH_2$-,
-$CH_2OCH_2CH_2$-, -$CH_2OCH_2CH_2CH_2$-,
-$CH_2CR^{4a}HCH_2CH_2$-, -$CH_2CR^{4a}R^{4b}CH_2CH_2$-, -$CH_2CH_2CR^{4a}HCH_2$-,
-$NHCH_2CH_2CH_2$-, -$NR^{4c}CR^{4a}HCH_2CH_2$-, -$NHCR^{4a}HCH_2CH_2$-, or -$CH_2NR^{4c}CH_2CH_2$- (R^{4a}, R^{4b} and R^{4c} have the same definition as given in the (0).),

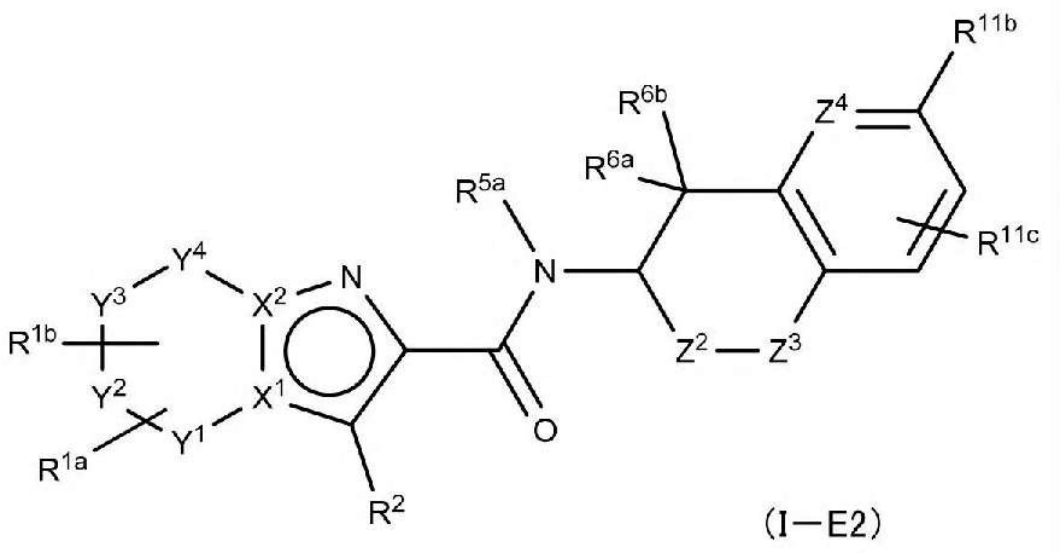
R^{5a}, R^{5b}, R^{5c}, R^{6a}, R^{6b} and n fulfill the constitution (i) in the (0).

[0034]

(7) A heteroaromatic amide derivative or salt thereof represented by the general formula (I-E2):

[0035]

[Chem 12]



[wherein,

X^1, X^2, Y^1, Y^2, Y^3, Y^4, R^{1a}, R^{1b}, R^2 have the same definition as given in the (0),

Z^2-Z^3 is -CH_2-, -OCH_2-, -CH_2O-, -SCH_2-, -CH_2S-, -CH_2NR^{f1}-, -$NR^{f1}CH_2$-, -CH_2CH_2-, -$CONR^{f1}$-, -$NR^{f1}CO$-, -$OCR^{f1}R^{f2}$-, or -$CR^{f1}R^{f2}O$- (R^{f1} and R^{f2} are a hydrogen atom, a C_1-C_4 alkyl group, or a C_1-C_4 haloalkyl group.),

R^{5a} is a hydrogen atom, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_3-C_7 cycloalkyl group, a heterocycloalkyl group, a C_3-C_7 cycloalkyl-C_1-C_4 alkyl group, a heterocycloalkyl-C_1-C_4 alkyl group, or an aralkyl group,

R^{6a} and R^{6b} are, independently each other, a hydrogen atom, a halogen atom, a hydroxyl group, a cyano group, a C_1-C_4 alkyl group, a C_1-C_4 haloalkyl group, a C_1-C_4 alkoxy group, or a C_1-C_4 haloalkoxy group,

Z^4 is C-R^{11a} or a nitrogen atom,

R^{11a} is a hydrogen atom, a halogen atom, a cyano group, a cyanomethyl group, a formyl group, a nitro group, a carboxamide group, a hydroxyl group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group, a C_1-C_4 haloalkoxy-C_1-C_4 alkyl group, a C_3-C_7 cycloalkyl group, a C_2-C_6 alkenyl group, a C_2-C_6 alkenyloxy group, a C_2-C_6 alkynyl group, or a C_2-C_6 alkynyloxy group,

R^{11b} has the same definition as given to R^{3b} in the (0), and

R^{11c} has the same definition as given to R^{3c} in the (0)

(with a proviso that at least one of Y^1, Y^2, Y^3, or Y^4 is -$CR^{4a}R^{4b}$-, -CR^{4a}H-, -$CH_2CR^{4a}R^{4b}$-, -CH_2CR^{4a}H-, or -NR^{4c}- (R^{4a}, R^{4b} and R^{4c} have the same definition as given in the (0).) when R^2 is a hydrogen atom.).].

[0036]

(8) The heteroaromatic amide derivative or salt thereof described in the (7) (with a proviso that R^2 is a hydrogen atom when X^1-X^2 is C-N and Y^1, Y^2, Y^3 and Y^4 together form -$OCR^{4a}HCH_2CH_2$- or -$OCR^{4a}R^{4b}CH_2CH_2$-.),

wherein in the general formula (I-E2),

X^1-X^2 is C-N, and

Y^1, Y^2, Y^3 and Y^4 together form

-$OCR^{4a}HCH_2CH_2$-, -$OCR^{4a}R^{4b}CH_2CH_2$-, -OCH_2CH_2-,

-$OCR^{4a}HCH_2$-, -$OCR^{4a}R^{4b}CH_2$-,

-$OCH_2CH_2CH_2CH_2$-, -$OCR^{4a}HCH_2CH_2CH_2$-, -$OCH_2CR^{4a}HCH_2CH_2$-,

-$CH_2OCH_2CH_2$-, -$CH_2OCH_2CH_2CH_2$-,

-$CH_2CR^{4a}HCH_2CH_2$-, -$CH_2CR^{4a}R^{4b}CH_2CH_2$-, -$CH_2CH_2CR^{4a}HCH_2$-,

-$NHCH_2CH_2CH_2$-, -$NR^{4c}CR^{4a}HCH_2CH_2$-, -$NHCR^{4a}HCH_2CH_2$-, or -$CH_2NR^{4c}CH_2CH_2$-

(R^{4a}, R^{4b} and R^{4c} have the same definition as given in the (0).).

[0037]

(9) The heteroaromatic amide derivative or salt thereof described in the (7) or (8), wherein in the general formula (I-E2),

Z^2-Z^3 is -CH_2O-,

R^{6a} and R^{6b}, independently each other, are a hydrogen atom, a fluorine atom, a hydroxyl group, or a methoxy group,

R^{11a} and R^{11c} are each a hydrogen atom.

[0038]

(10) The heteroaromatic amide derivative or salt thereof described in any one of the (7)

to (9), wherein in the general formula (I-E2),

X^1-X^2 is C-N,

Y^1, Y^2, Y^3 and Y^4 together form

-$OCR^{4a}HCH_2CH_2$-, -$OCR^{4a}HCH_2$-,

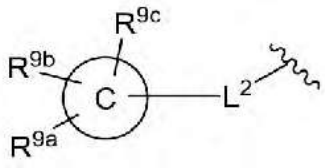
-$OCR^{4a}HCH_2CH_2CH_2$-, -$CH_2CR^{4a}HCH_2CH_2$-,

-$NR^{4c}CR^{4a}HCH_2CH_2$-, -$NHCR^{4a}HCH_2CH_2$-, or -$CH_2NR^{4c}CH_2CH_2$-, and

R^{4a} is a halogen atom, a hydroxyl group, a cyano group, a C_1-C_6 alkyl group, a C_1-C_6 alkyl group optionally substituted by a hydroxyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 haloalkyl group optionally substituted by a hydroxyl group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group optionally substituted by a C_1-C_4 haloalkoxy group, a C_1-C_4 haloalkoxy-C_1-C_4 alkyl group, a C_1-C_4 alkoxy-C_1-C_4 haloalkyl group, a C_1-C_4 haloalkoxy-C_1-C_4 haloalkyl group, a C_1-C_6 alkylcarbonyl group, a C_1-C_6 alkoxycarbonyl group, a C_1-C_6 haloalkylcarbonyl group, a C_3-C_7 cycloalkyl group, a C_3-C_7 cycloalkyl group optionally substituted by a halogen atom or a C_1-C_4 haloalkyl group, a heterocycloalkyl group, a C_2-C_6 alkenyl group, a C_2-C_6 alkenyloxy group, a C_2-C_6 alkenyloxy-C_1-C_4 alkyl group, a C_2-C_6 alkenyloxy-C_1-C_4 alkyl group optionally substituted by a halogen atom, a C_2-C_6 alkynyl group, a C_2-C_6 alkynyl group optionally substituted by a halogen atom or a methoxy group, a C_2-C_6 alkynyloxy-C_1-C_4 alkyl group, a C_1-C_4 haloalkoxy-C_1-C_4 alkoxy group, a C_1-C_6 alkylthio group, a C_1-C_6 haloalkylthio group, a C_1-C_4 alkylthio-C_1-C_4 alkyl group, a C_1-C_4 haloalkylthio-C_1-C_4 alkyl group, -$(CH_2)_qNR^{b1}R^{b2}$ (q, R^{b1} and R^{b2} have the same definition as given in the (0).), or the general formula (I-B)

[0039]

[Chem 13]



(I-B)

{wherein,

ring C is a C_3-C_7 cycloalkyl, an azetidinyl, a pyrrolidinyl, a piperidyl, a piperazinyl, a morpholino, a phenyl, a pyrrolyl, a furyl, a thienyl, an imidazolyl, a pyrazolyl, an oxazolyl, a thiazolyl, a triazolyl, a pyridyl, a pyrazinyl, a pyridazinyl, or a pyrimidinyl,

L^2 is a single bond, -CH=CH-, -C≡C-,

-$(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-,

-$(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}O(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}NR^{c}(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}-$,
$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}CO(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}-$,
$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}S(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}-$, or
$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}SO(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}-$ (R^{10a}, R^{10b}, R^{10c}, R^{10d}, R^{10e}, R^{10f}, R^{10g}, R^{10h}, r1, r2, r3, r4 and R^{c} have the same definition as given in the (0).), and

R^{9a}, R^{9b} and R^{9c} are, independently each other, a hydrogen atom, a halogen atom, a hydroxyl group, a cyano group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_1-C_6 alkoxycarbonyl group, a heterocycloalkyloxy group, or $-(CH_2)_sNR^{d1}R^{d2}$ (s, R^{d1} and R^{d2} have the same definition as given in the (0).).}.

[0040]

(11) The heteroaromatic amide derivative or salt thereof described in the (7) (with a proviso that ring C is not a phenyl ring when Y^1, Y^2, Y^3 and Y^4 together form $-CH_2CR^{4a}HCH_2CH_2-$, R^2 is a hydrogen atom, R^{4a} is a group represented by the general formula (I-B), and L^2 is a single bond. Alternatively, when ring C is a phenyl ring, X^1-X^2 is C-N.), wherein in the general formula (I-E2),

X^1-X^2 is N-C, and

Y^1, Y^2, Y^3 and Y^4 together form
$-CH_2CR^{4a}HOCH_2-$, $-CH_2CR^{4a}HCH_2CH_2-$, $-CH_2CR^{4a}R^{4b}CH_2CH_2-$,
$-CH_2CH_2NR^{4c}CH_2-$, $-CH_2CR^{4a}HNR^{4c}CH_2-$, or $-CH_2CR^{4a}HNHCH_2-$ (R^{4a}, R^{4b} and R^{4c} have the same definition as given in the (0).).

[0041]

(12) The heteroaromatic amide derivative or salt thereof described in the (7) or (11), wherein in the general formula (I-E2),

Z^2-Z^3 is $-CH_2O-$, and

R^{6a}, R^{6b} and R^{11c} are each a hydrogen atom, and R^{11a} is a hydrogen atom or a halogen atom.

[0042]

(13) The heteroaromatic amide derivative or salt thereof described in any one of the (7), (11) or (12), wherein in the general formula (I-E2),

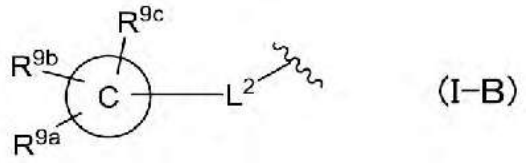
X^1-X^2 is N-C,

Y^1, Y^2, Y^3 and Y^4 together form
$-CH_2CR^{4a}HOCH_2-$, $-CH_2CR^{4a}HCH_2CH_2-$, $-CH_2CH_2NR^{4c}CH_2-$,
$-CH_2CR^{4a}HNR^{4c}CH_2-$, or $-CH_2CR^{4a}HNHCH_2-$, and

R^{4a} and R^{4c}, independently each other, are a halogen atom, a hydroxyl group, a cyano group, a C_1-C_6 alkyl group, a C_1-C_6 alkyl group optionally substituted by a hydroxyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 haloalkyl group optionally substituted by a hydroxyl group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group optionally substituted by a C_1-C_4 haloalkoxy group, a C_1-C_4 haloalkoxy-C_1-C_4 alkyl group, a C_1-C_4 alkoxy-C_1-C_4 haloalkyl group, a C_1-C_4 haloalkoxy-C_1-C_4 haloalkyl group, a C_1-C_6 alkylcarbonyl group, a C_1-C_6 alkoxycarbonyl group, a C_1-C_6 haloalkylcarbonyl group, a C_3-C_7 cycloalkyl group, a C_3-C_7 cycloalkyl group optionally substituted by a halogen atom or a C_1-C_4 haloalkyl group, a heterocycloalkyl group, a C_2-C_6 alkenyl group, a C_2-C_6 alkenyloxy group, a C_2-C_6 alkenyloxy-C_1-C_4 alkyl group, a C_2-C_6 alkenyloxy-C_1-C_4 alkyl group optionally substituted by a halogen atom, a C_2-C_6 alkynyl group, a C_2-C_6 alkynyl group optionally substituted by a halogen atom or a methoxy group, a C_2-C_6 alkynyloxy-C_1-C_4 alkyl group, a C_1-C_4 haloalkoxy-C_1-C_4 alkoxy group, a C_1-C_6 alkylthio group, a C_1-C_6 haloalkylthio group, a C_1-C_4 alkylthio-C_1-C_4 alkyl group, a C_1-C_4 haloalkylthio-C_1-C_4 alkyl group, $-(CH_2)_qNR^{b1}R^{b2}$ (q, R^{b1} and R^{b2} have the same definition as given in the (0).), or the general formula (I-B)

[0043]

[Chem 14]



(I-B)

{wherein,

ring C is a C_3-C_7 cycloalkyl, an azetidinyl, a pyrrolidinyl, a piperidyl, a piperazinyl, a morpholino, a phenyl, a pyrrolyl, a furyl, a thienyl, an imidazolyl, a pyrazolyl, an oxazolyl, a thiazolyl, a triazolyl, a pyridyl, a pyrazinyl, a pyridazinyl, or a pyrimidinyl,

L^2 is a single bond, -CH=CH-, -C≡C-,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}O(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}NR^{c}(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}CO(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}S(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-, or

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}SO(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$- ($R^{10a}$, R^{10b}, R^{10c}, R^{10d}, R^{10e}, R^{10f}, R^{10g}, R^{10h}, r1, r2, r3, r4 and R^{c} have the same definition as given in the (0).),

R^{9a}, R^{9b} and R^{9c} are, independently each other, a hydrogen atom, a halogen atom, a

hydroxyl group, a cyano group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_1-C_6 alkoxycarbonyl group, a heterocycloalkyloxy group, or $-(CH_2)_sNR^{d1}R^{d2}$ (s, R^{d1} and R^{d2} have the same definition as given in the (0).).}.

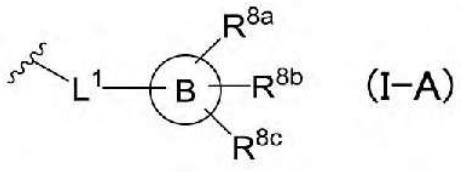
[0044]

(14) The heteroaromatic amide derivative or salt thereof described in any one of the (7) to (13), wherein in the general formula (I-E2),

R^{11b} is a hydrogen atom, a halogen atom, a cyano group, a cyanomethyl group, a formyl group, a nitro group, a carboxamide group, a hydroxyl group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group optionally substituted by a dimethylaminocarbonyl group or a dimethylamino group, a C_1-C_4 haloalkoxy-C_1-C_4 alkyl group, a C_1-C_4 alkoxy-C_1-C_4 haloalkyl group, a C_1-C_4 haloalkoxy-C_1-C_4 haloalkyl group, a C_1-C_6 alkylcarbonyl group, a C_2-C_6 alkenyl group, a C_2-C_6 alkynyl group, a C_2-C_6 alkynyl group optionally substituted by a halogen atom, a C_1-C_6 alkylthio group, a C_1-C_6 haloalkylthio group, $-(CH_2)_pNR^{a1}R^{a2}$ (p, R^{a1} and R^{a2} have the same definition as given in the (0).), or the general formula (I-A)

[0045]

[Chem 15]



(I-A)

{wherein,

ring B is a C_3-C_7 cycloalkyl, an azetidinyl, a pyrrolidinyl, a piperidyl, a piperazinyl, a morpholino, a phenyl, a pyrrolyl, a furyl, a thienyl, an imidazolyl, a pyrazolyl, a oxazolyl, an isoxazolyl, a thiazolyl, a isothiazolyl, a triazolyl, a tetrazolyl, a pyridyl, a pyrazinyl, a pyridazinyl, or a pyrimidinyl,

L^1 is a single bond, $-CH_2-$, $-CH_2O-$, $-OCH_2-$, $-CH_2CH_2-$, or $-CH_2OCH_2-$,

R^{8a}, R^{8b} and R^{8c} are, independently each other, a hydrogen atom, a halogen atom, a cyano group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_3-C_7 cycloalkyl group, a C_3-C_7 cycloalkyloxy group, a heterocycloalkyl group, a heterocycloalkyloxy group, a C_2-C_6 alkenyl group, or a C_2-C_6 alkynyl group.}.

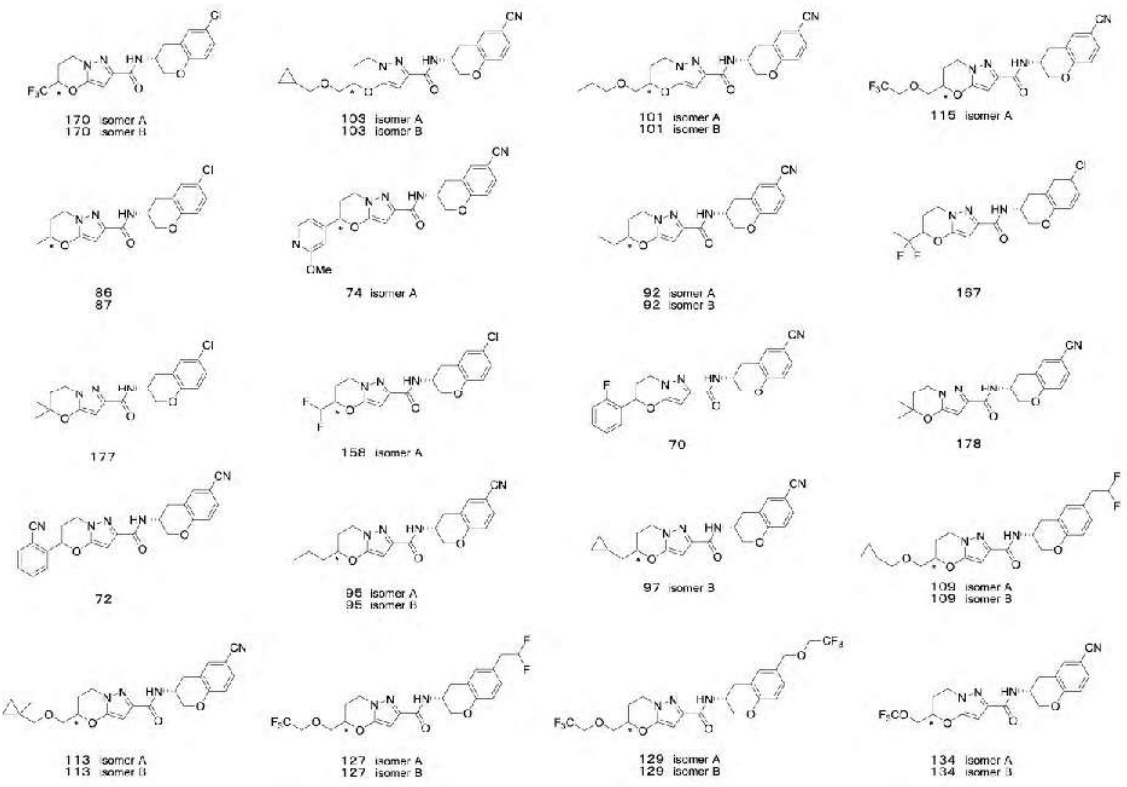
[0046]

(15) The heteroaromatic amide derivative or salt thereof described in the (7), wherein the compound represented by the general formula (I-E2) (the asterisks (*) shown in the structural

formulae denote that the corresponding asymmetric carbon has a single steric structure. The number indicates the Example number. Regarding the notations of “isomer A”, “isomer B”, “isomer C” and “isomer D”, among the plural compounds indicated by the same Example number, the isomers are specified as “isomer A”, “isomer B”, “isomer C” and “isomer D” in accordance with the order of collection by high performance liquid chromatography in the Example.) is any one of the following:

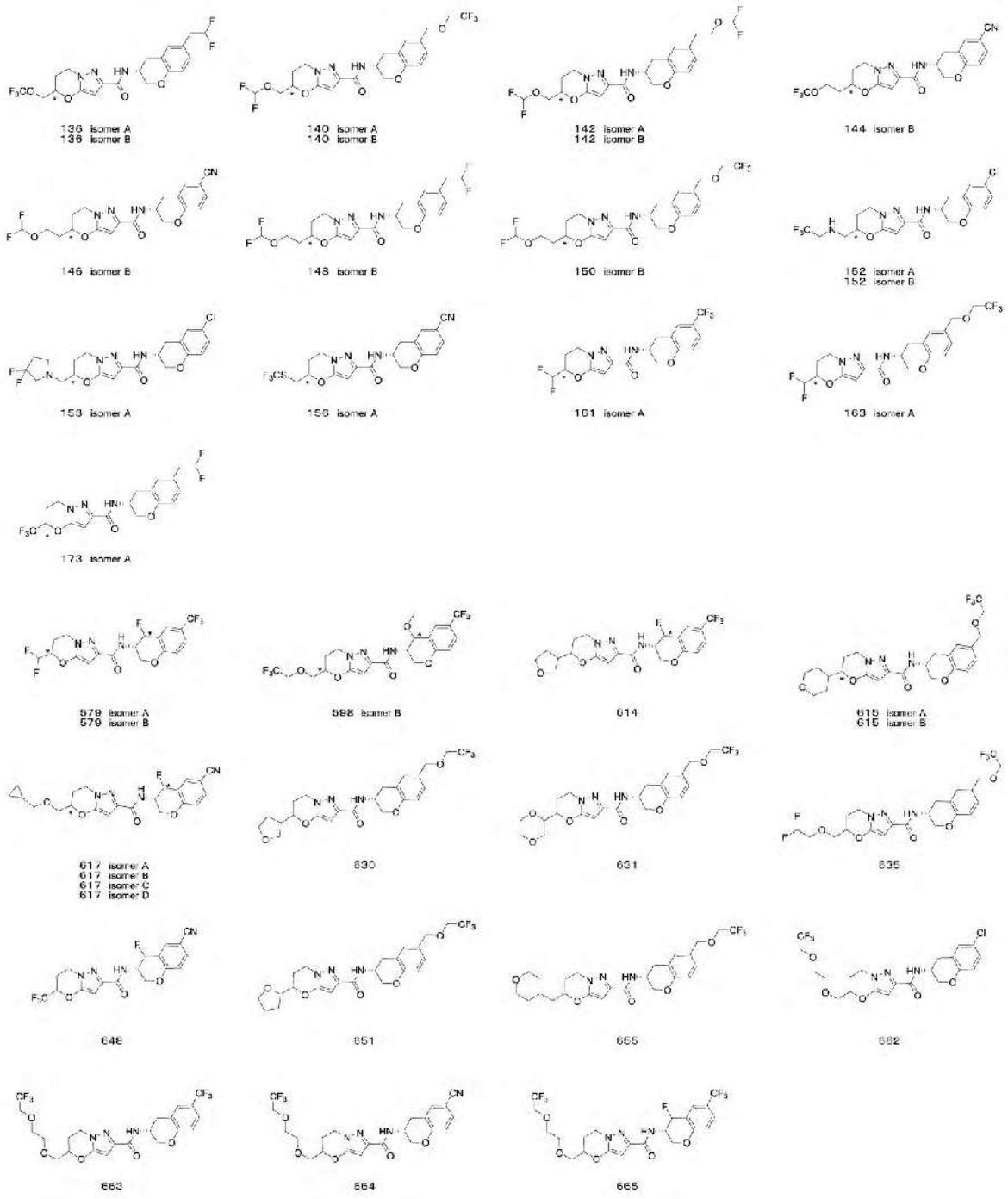
[0047]

[Chem 16]



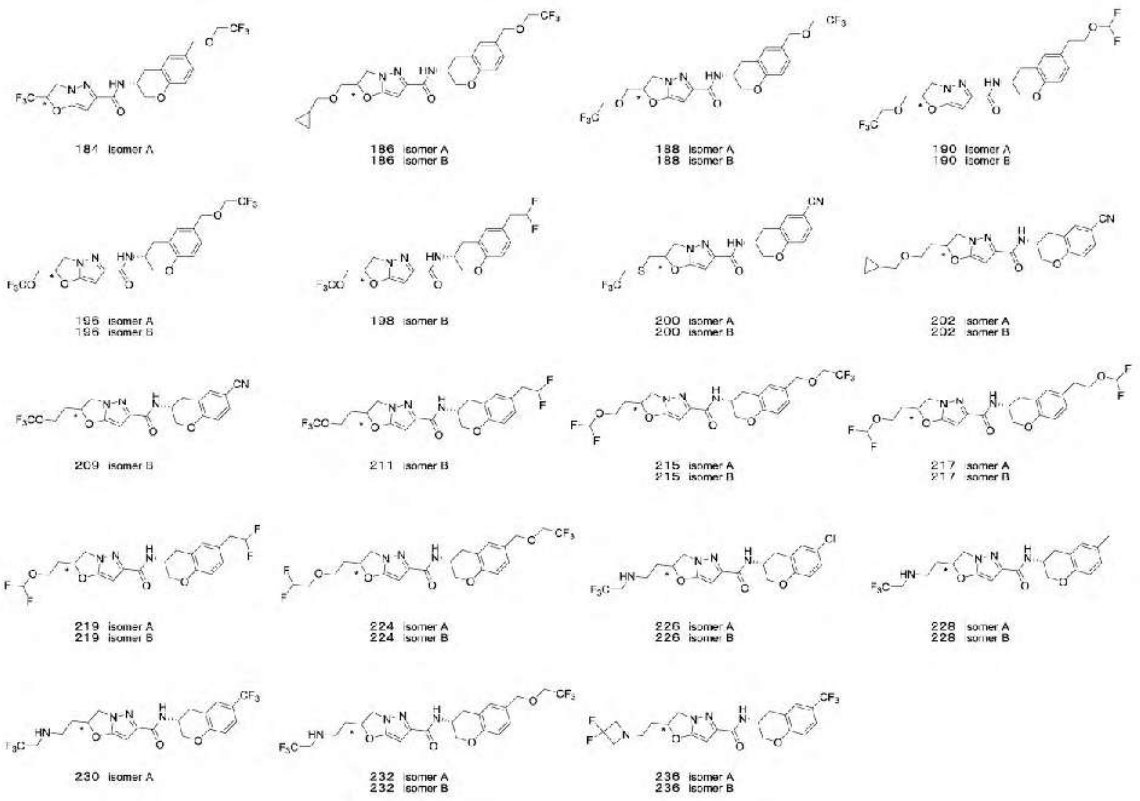
[0048]

[Chem 17]


136 isomer A
136 isomer B
140 isomer A
140 isomer B
142 isomer A
142 isomer B
144 isomer B
146 isomer B
148 isomer B
150 isomer B
152 isomer A
152 isomer B
153 isomer A
155 isomer A
161 isomer A
163 isomer A
173 isomer A
579 isomer A
579 isomer B
598 isomer B
614
615 isomer A
615 isomer B
617 isomer A
617 isomer B
617 isomer C
617 isomer D
630
631
635
648
651
655
662
663
664
665

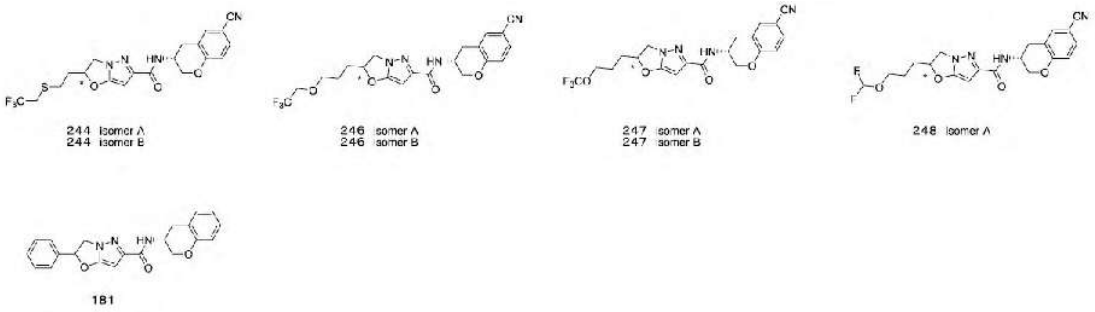
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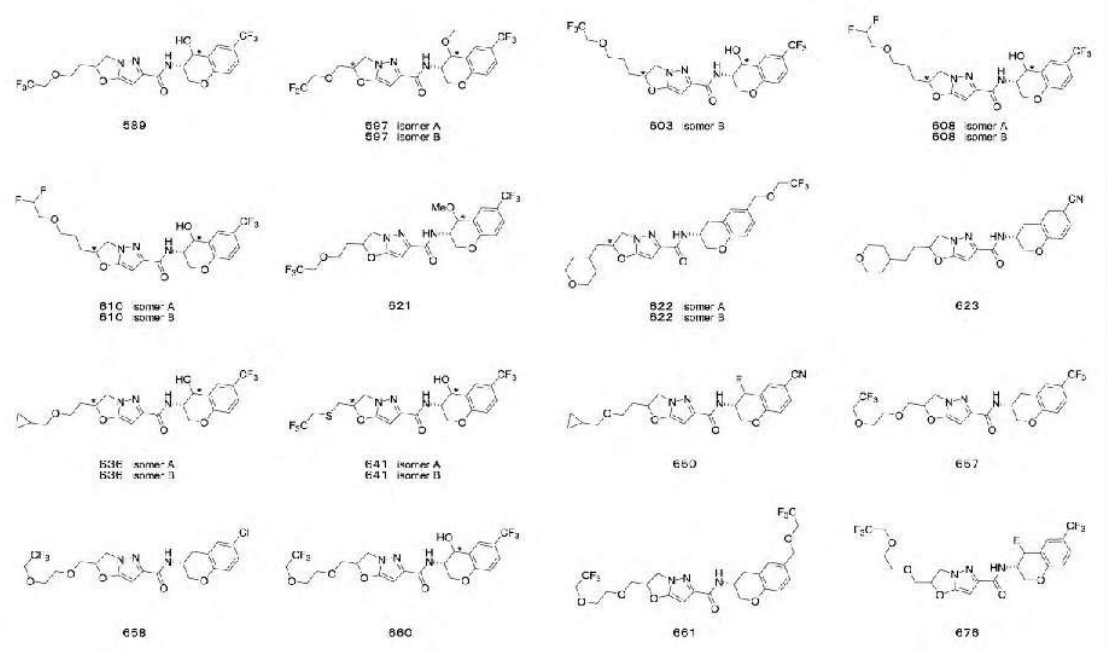
[Chem 18]


184 isomer A
186 isomer A
186 isomer B
188 isomer A
188 isomer B
190 isomer A
190 isomer B
196 isomer A
196 isomer B
198 isomer B
200 isomer A
200 isomer B
202 isomer A
202 isomer B
209 isomer B
211 isomer B
215 isomer A
215 isomer B
217 isomer A
217 isomer B
219 isomer A
219 isomer B
224 isomer A
224 isomer B
226 isomer A
226 isomer B
228 isomer A
228 isomer B
230 isomer A
232 isomer A
232 isomer B
236 isomer A
236 isomer B

[0050]

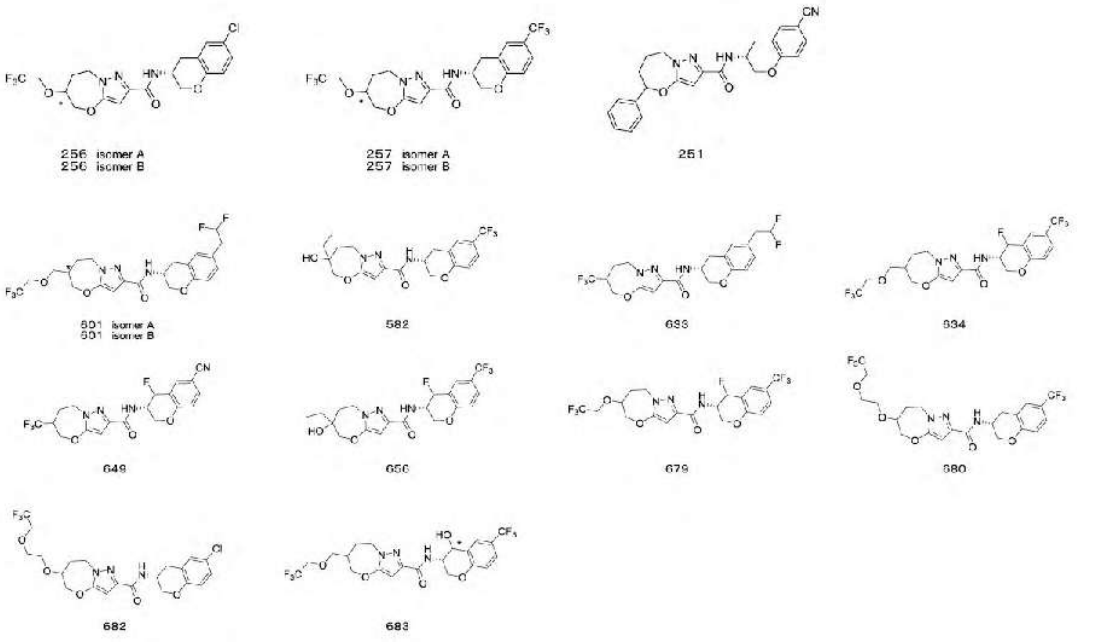
[Chem 19]


244 isomer A
244 isomer B
246 isomer A
246 isomer B
247 isomer A
247 isomer B
248 isomer A
181



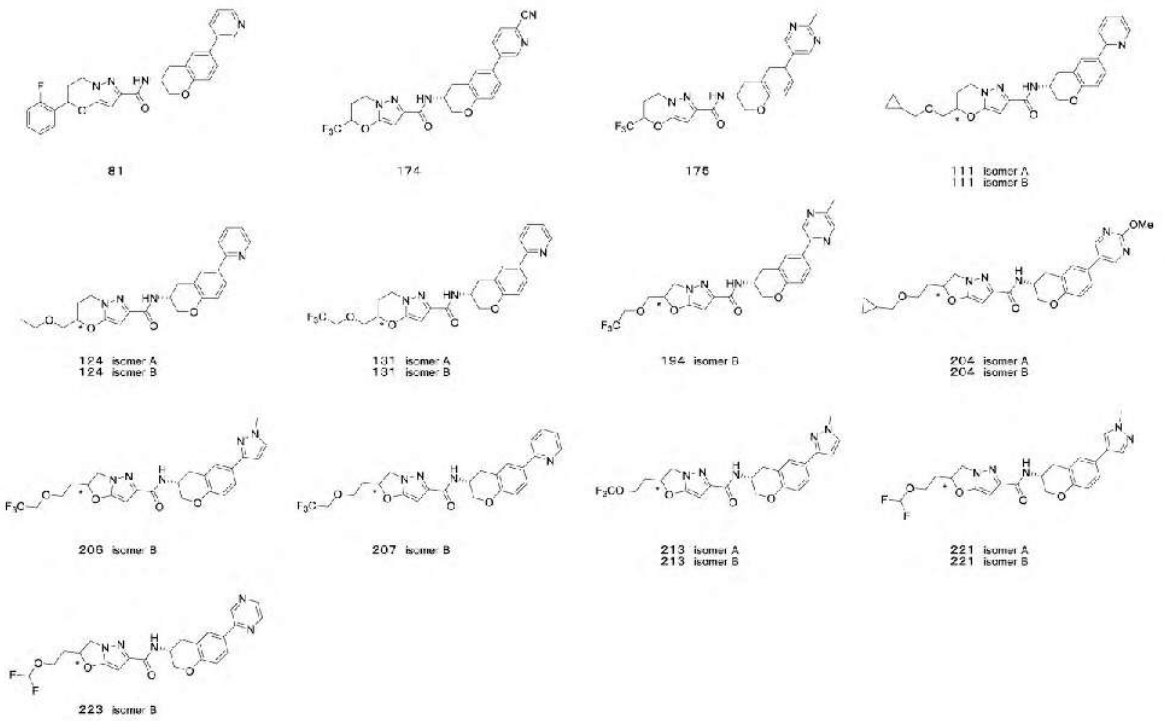
[0051]

[Chem 20]



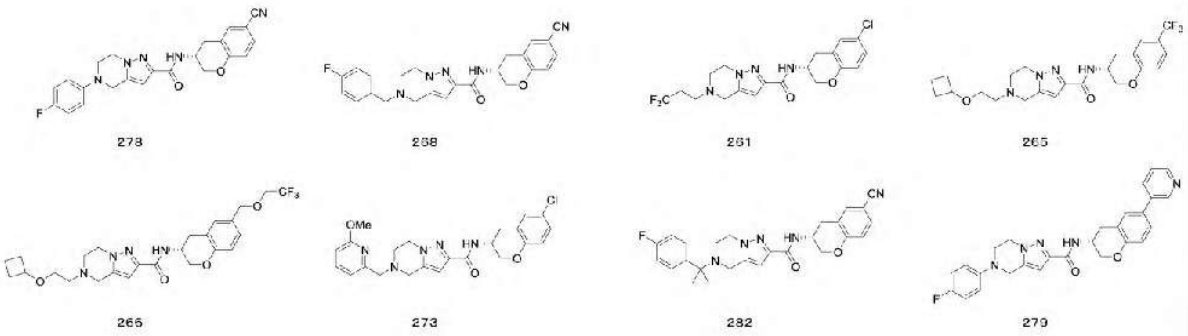
[0052]

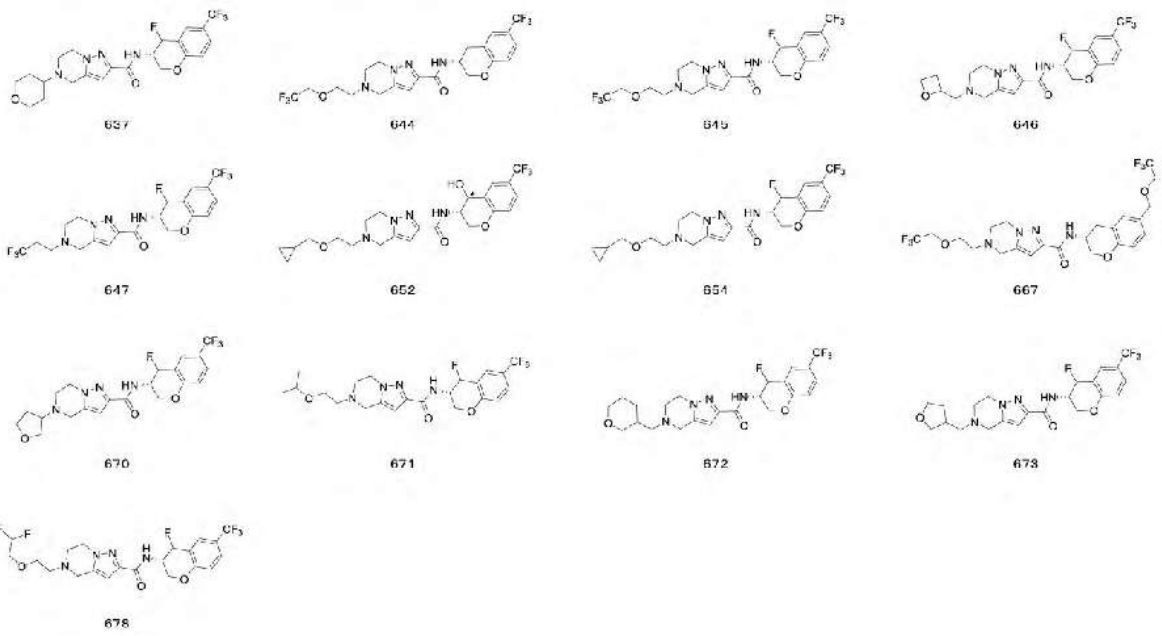
[Chem 21]


81
174
175
111 isomer A
111 isomer B
124 isomer A
124 isomer B
131 isomer A
131 isomer B
194 isomer B
204 isomer A
204 isomer B
206 isomer B
207 isomer B
213 isomer A
213 isomer B
221 isomer A
221 isomer B
223 isomer B

[0053]

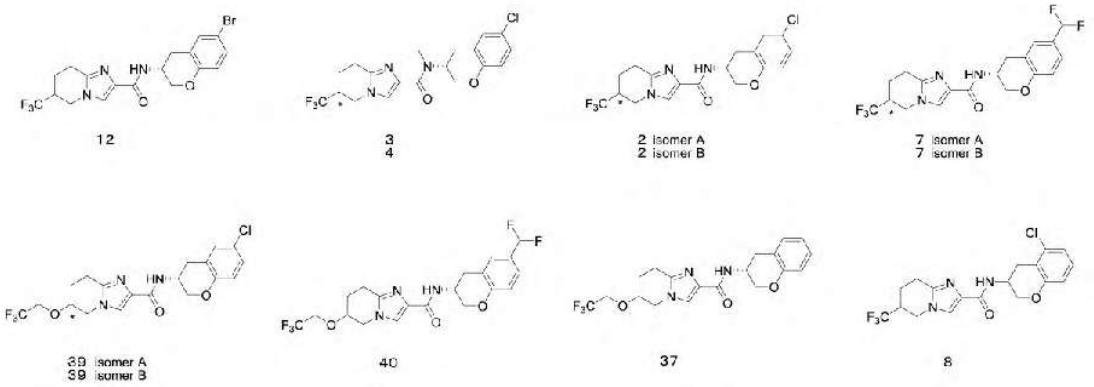
[Chem 22]


278
268
261
265
265
273
282
279



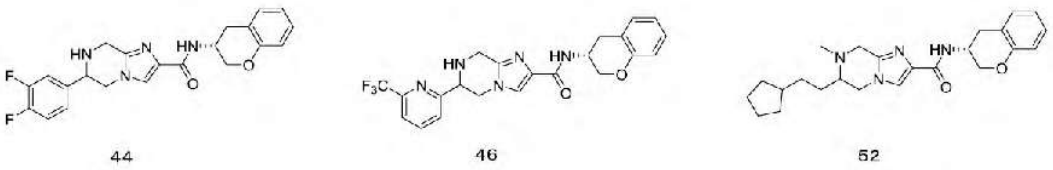
[0054]

[Chem 23]



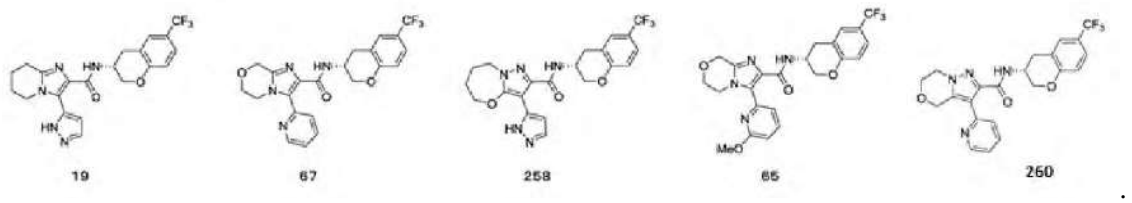
[0055]

[Chem 24]



[0056]

[Chem 25]



[0057]

(16) A pharmaceutical composition containing the heteroaromatic amide derivative or salt thereof described in any one of the (4) to (15).

(17) A pharmaceutical composition for preventing or treating a disorder associated with voltage-gated sodium channel Nav1.7, containing as an active ingredient the heteroaromatic amide derivative represented by the general formula (I) or salt thereof contained in the pharmaceutical composition described in the (1), or the heteroaromatic amide derivative or salt thereof described in any one of the (4) to (15) (hereinafter sometimes referred to as "the heteroaromatic amide derivative or salt thereof described in any one of the (1) to (15)").

[0058]

(18) A preventing or treating agent for a disorder with pain, a disorder with pruritus, or an autonomic nervous system disorder, containing as an active ingredient the heteroaromatic amide derivative or salt thereof described in any one of the (1) to (15).

(19) A preventing or treating agent for a disorder with pain, containing as an active ingredient the heteroaromatic amide derivative or salt thereof described in any one of the (1) to (15).

(20) An analgesic agent containing as an active ingredient the heteroaromatic amide derivative or salt thereof described in any one of the (1) to (15).

(21) A preventing or treating agent for nociceptive pain or neuropathic pain, containing as an active ingredient the heteroaromatic amide derivative or salt thereof described in any one of the (1) to (15).

(22) Use of the heteroaromatic amide derivative or salt thereof described in any one of the (1) to (15) for manufacturing a pharmaceutical composition used for preventing or treating pain.

(23) Use of the heteroaromatic amide derivative or salt thereof described in any one of the (1) to (15) for manufacturing an analgesic agent.

[Effect of the Invention]

[0059]

Since the present inventive heteroaromatic amide derivative or salt thereof has strong Nav1.7 inhibitory activity, it is useful as an active ingredient for a therapeutic and/or preventive

agent for various disorders associated with Nav1.7. For example, it is useful as an analgesic for diseases with various pain.

The present inventive heteroaromatic amide derivative or salt thereof has little concern about side effects derived from Nav1.5, and is useful as an active ingredient for therapeutic and/or preventive agents for a wide range of pathology associated with Nav1.7.

The compounds described in Patent Document 3 to Patent Document 15 are largely different in structure from the present inventive compounds.

In addition, Patent document 16, Patent document 17 and Non-Patent document 10 fail to describe a sodium channel, and let alone neither to describe or suggest the compounds having Nav1.7 inhibitory activity selective over Nav1.5.

[Modes for Carry Out the Invention]

[0060]

The present invention is hereinafter explained in more detail.

First, the substituent which the compound of this invention may have is explained.

[0061]

Specific examples of the "halogen atom" are a fluorine atom, a chlorine atom, a bromine atom and an iodine atom.

The "C_1-C_6 alkyl group" means a straight or branched alkyl group having 1-6 carbon atoms, specific examples including a methyl group, an ethyl group, a n-propyl group, an isopropyl group, a n-butyl group, an isobutyl group, a tert-butyl group, a sec-butyl group, a n-pentyl group, a tert-pentyl group, a 3-methylbutyl group (an isopentyl group), a neopentyl group, a n-hexyl group, a 3,3-dimethylbutyl group and so on.

The "C_1-C_4 alkyl group" means a straight or branched alkyl group having 1-4 carbon atoms, specific examples including a methyl group, an ethyl group, a n-propyl group, a n-butyl group and so on.

The "C_1-C_6 haloalkyl group" means an alkyl group in which the hydrogen atoms on the aforementioned "C_1-C_6 alkyl group" are substituted by one or more of halogen atom, specific examples including a monofluoromethyl group, a difluoromethyl group, a trifluoromethyl group, a 2-fluoroethyl group, a 2,2-difluoroethyl group, a 2,2,2-trifluoroethyl group, a 1-fluoroethyl group, a 1,1-difluoroethyl group, a 3,3,3-trifluoropropyl group, a 3,3-difluoropropyl group, a 2-fluoroisopropyl group, a 2,3,3,3-tetrafluoropropyl group, a 2,2,3,3-tetrafluoropropyl group, a 2,2,3,3,3-pentafluoropropyl group, a 1,1,2,2,3,3,3-heptafluoropropyl group, a 1,1,1,3,3,3-hexafluoroisopropyl group, a 4,4,4-trifluorobutyl group, a 2,2,3,4,4-pentafluorobutyl group, a 2,2,3,4,4,4-hexafluorobutyl group, a 2,2,3,3,4,4,4-heptafluorobutyl group, a 3,3-difluorobutyl

group, a 3,3,3-trifluoro-2-(trifluoromethyl)-propyl group, a 3-fluoro-3-methylbutyl group and so on.

The "C_1-C_4 haloalkyl group" means an alkyl group in which one or more of the hydrogen atoms on the aforementioned "C_1-C_4 alkyl group" are substituted by halogen atoms.

[0062]

The "C_1-C_6 alkoxy group" means an alkoxy group in which the alkyl moiety has the same definition as given for the "C_1-C_6 alkyl group", specific examples including a methoxy group, an ethoxy group, a n-propoxy group, an isopropoxy group, a n-butoxy group, an isobutoxy group, a tert-butoxy group, a ec-butoxy group, a n-pentyloxy group, a tert-amyloxy group, a 3-methylbutoxy group, a neopentyloxy group, a n-hexyloxy group and so on.

The "C_1-C_4 alkoxy group" means an alkoxy group in which the alkyl moiety has the same definition as given for the aforementioned "C_1-C_4 alkyl group".

The "C_1-C_6 haloalkoxy group" means a haloalkoxy group in which the haloalkyl moiety has the same definition as given for the "C_1-C_6 haloalkyl group", specific examples including a trifluoromethoxy group, a difluoromethoxy group, a 2-fluoroethoxy group, a 2,2-difluoroethoxy group, a 2,2,2-trifluoroethoxy group, a 3,3,3-trifluoropropoxy group, a 2,2,3,3-tetrafluoropropoxy group, a 2,2,3,3,3-pentafluoropropoxy group, a 1,1,1,3,3,3-hexafluoroisopropoxy group, a 2,2,3,4,4,4-hexafluorobutoxy group and so on.

The "C_1-C_4 haloalkoxy group" means a haloalkoxy group in which the haloalkyl moiety has the same definition as given for the aforementioned "C_1-C_4 haloalkyl group".

[0063]

The "C_1-C_4 alkoxy-C_1-C_4 alkyl group" is the aforementioned "C_1-C_4 alkyl group" substituted by the aforementioned "C_1-C_4 alkoxy group", and these can bind at any substitutionable position. Specific examples include a methoxymethyl group, an ethoxymethyl group, an isopropoxymethyl group, a n-propoxymethyl group, a tert-butoxymethyl group, an isobutoxymethyl group, a 2-methoxyethyl group, a 2-ethoxyethyl group, a 1-ethoxyethyl group, an isobutoxyethyl group, a tert-butoxyethyl group and so on.

The "C_1-C_4 haloalkoxy-C_1-C_4 alkyl group" is the aforementioned "C_1-C_4 alkyl group" substituted by the aforementioned "C_1-C_4 haloalkoxy group", and these can bind at any substitutionable position. Specific examples include a trifluoromethoxymethyl group, a difluoromethoxymethyl group, a monofluoromethoxymethyl group, a 2,2,2-trifluoroethoxymethyl group, a 2,2-difluoroethoxymethyl group, a 3,3,3-trifluoropropoxymethyl group, a 4,4,4-trifluorobutoxymethyl group, a 1,1,1,3,3,3-pentafluoroisopropoxymethyl group, a 3,3,3-trifluoro-2-(trifluoromethyl)-propoxymethyl group, a 2-(trifluoromethoxy)ethyl group, a 2-

(difluoromethoxy)ethyl group, a 2-(2',2',2'-trifluoroethoxy)ethyl group, 2-(2',2'-difluoroethoxy)ethyl group, a 2-(1',1',1',3',3',3'-pentafluoroisopropoxy)ethyl group, a 3-(trifluoromethoxy)propyl group, a 3-(difluoromethoxy)propyl group, a 3-(2',2',2'-trifluoroethoxy)propyl group, a 3-(2',2'-difluoroethoxy)propyl group, a 3-(1',1',1',3',3',3'-pentafluoroisopropoxy)propyl group and so on.

The "C_1-C_4 alkoxy-C_1-C_4 haloalkyl group" is the aforementioned "C_1-C_4 haloalkyl group" substituted by the aforementioned "C_1-C_4 alkoxy group", and these can bind at any substitutionable position. Specific examples include an ethoxymonofluoromethyl group and so on.

The "C_1-C_4 haloalkoxy-C_1-C_4 haloalkyl group" is the aforementioned "C_1-C_4 haloalkyl group" substituted by the aforementioned "C_1-C_4 haloalkoxy group", and these can bind at any substitutionable position.

[0064]

The "C_1-C_6 alkylcarbonyl group" means an alkylcarbonyl group in which the alkyl moiety is the aforementioned "C_1-C_6 alkyl group", specific examples including a methylcarbonyl group, an ethylcarbonyl group, a n-propylcarbonyl group and so on.

"C_1-C_6 alkoxycarbonyl group" means an alkoxycarbonyl group in which the alkoxy moiety is the aforementioned "C_1-C_6 alkoxy group", specific examples including a methoxycarbonyl group, an ethoxycarbonyl group, a n-propoxycarbonyl group, a tert-butoxycarbonyl and so on.

The "C_1-C_6 alkylcarbonyloxy group" means an alkylcarbonyloxy group in which the alkylcarbonyl moiety is the aforementioned "C_1-C_6 alkylcarbonyl group", specific examples including a methylcarbonyloxy group, an ethylcarbonyloxy group, a n-propylcarbonyloxy group and so on.

The "C_1-C_6 haloalkylcarbonyl group" means a haloalkylcarbonyl group in which the haloalkyl moiety is the aforementioned "C_1-C_6 haloalkyl group", specifically being a trifluoromethylcarbonyl group and so on.

The "C_1-C_6 haloalkoxycarbonyl group" means a haloalkoxycarbonyl group in which the haloalkoxy moiety is the aforementioned "C_1-C_6 haloalkoxy group".

The "C_1-C_6 haloalkylcarbonyloxy group" means a haloalkylcarbonyloxy group in which the halolkylcarbonyl moiety is the aforementioned "C_1-C_6 haloalkylcarbonyl group".

[0065]

The "C_3-C_7 cycloalkyl group" means a monocyclic saturated carbon ring group having 3 to 7 carbon atoms. Specific examples include a cyclopropyl group, a cyclobutyl group, a cyclopentyl group, a cyclohexyl group and so on.

[0066]

The "monocyclic saturated heteroring" means a 3- to 7-membered saturated monocyclic ring comprising at least one of an oxygen atom, a nitrogen atom or a sulfur atom, specific examples including an aziridine, an azetidine, a pyrrolidine, a piperidine, a piperazine, an azepan, an oxetane, a tetrahydrofuran, a tetrahydropyran, a morpholine, a thiomorpholine and so on.

The "heterocycloalkyl group" means a monocyclic saturated heteroring group, in which at least one of the carbon atoms in the "C_3-C_7 cycloalkyl group" is replaced with an oxygen atom, a nitrogen atom or a sulfur atom. Specific examples of the "heterocycloalkyl group" include an azetidinyl group, a pyrrolidinyl group, a piperidyl group, a piperazinyl group, a morpholino group and so on.

[0067]

The "C_3-C_7 cycloalkyloxy group" means a cycloalkyloxy group in which the cycloalkyl moiety is the aforementioned "C_3-C_7 cycloalkyl group".

The "heterocycloalkyloxy group" means a heterocycloalkyloxy group in which the heterocycloalkyl moiety is the aforementioned "heterocycloalkyl group".

[0068]

The "C_2-C_6 alkenyl group" means a straight or branched alkenyl group having 2-6 carbon atoms with one or more double bonds. Positions of the double bonds are not limited. Specific examples include a vinyl group, an allyl group, a 1-propenyl group, a 2-propenyl group, an isopropenyl group, an isobutenyl group, a 3-methyl-3-butenyl group and so on.

The "C_2-C_6 alkenyloxy group" means an alkenyloxy group in which the alkenyl moiety is the aforementioned "C_2-C_6 alkenyl group", specific examples including a vinyloxy group, an allyloxy group, a 1-butenyloxy group, a 2-butenyloxy group, a 3-butenyloxy group and so on.

The "C_2-C_6 alkenyloxy-C_1-C_4 alkyl group" means the aforementioned "C_1-C_4 alkyl group" substituted by the aforementioned "C_2-C_6 alkenyloxy group", and these can bind at any substitutionable position. For example, vinyloxymethyl group, allyloxymethyl group and so on can be recited.

The "C_2-C_6 alkenyloxy-C_1-C_4 haloalkyl group" means the aforementioned "C_1-C_4 haloalkyl group" substituted by the aforementioned "C_2-C_6 alkenyloxy group", and these can bind at any substitutionable position.

[0069]

The "C_2-C_6 alkynyl group" means a straight or branched alkynyl group having 2-6 carbon atoms with one or more triple bonds. Positions of the triple bonds are not limited. Specific examples include an ethynyl group, a 1-propynyl group, a 2-propynyl group, a 3-methyl-1-butynyl group and so on.

The "C_2-C_6 alkynyloxy group" means an alkynyloxy group in which the alkynyl moiety is the aforementioned "C_2-C_6 alkynyl group".

The "C_2-C_6 alkynyloxy-C_1-C_4 alkyl group" means the aforementioned "C_1-C_4 alkyl group" substituted by the aforementioned "C_2-C_6 alkynyloxy group" , and these can bind at any substitutionable position.

The "C_2-C_6 alkynyloxy-C_1-C_4 haloalkyl group" means the aforementioned "C_1-C_4 haloalkyl group" substituted by the aforementioned "C_2-C_6 alkynyloxy group", and these can bind at any substitutionable position.

[0070]

The "C_1-C_4 alkoxy-C_1-C_4 alkoxy group" means the aforementioned "C_1-C_4 alkoxy group" substituted by the aforementioned "C_1-C_4 alkoxy group", and these can bind at any substitutionable position.

The "C_1-C_4 haloalkoxy-C_1-C_4 alkoxy group" means the aforementioned "C_1-C_4 alkoxy group" substituted by the aforementioned "C_1-C_4 haloalkoxy group", and these can bind at any substitutionable position. Specific examples include a 2-(trifluoromethoxy)ethoxy group and so on.

The "C_2-C_6 alkenyloxy-C_1-C_4 alkoxy group" means the aforementioned "C_1-C_4 alkoxy group" substituted by the aforementioned "C_2-C_6 alkenyloxy group", and these can bind at any substitutionable position.

The "C_2-C_6 alkynyloxy-C_1-C_4 alkoxy group" means the aforementioned "C_1-C_4 alkoxy group" substituted by the aforementioned "C_2-C_6 alkynyloxy group", and these can bind at any substitutionable position. For example, an allyloxymethoxy group and so on can be recited.

The "C_2-C_6 alkenyloxy-C_1-C_4 haloalkoxy group" means the aforementioned "C_1-C_4 haloalkoxy group" substituted by the aforementioned "C_2-C_6 alkenyloxy group", and these can bind at any substitutionable position.

The "C_2-C_6 alkynyloxy-C_1-C_4 haloalkoxy group" means the aforementioned "C_1-C_4 haloalkoxy group" substituted by the aforementioned "C_2-C_6 alkynyloxy group", and these can bind at any substitutionable position.

[0071]

The "C_1-C_6 alkylthio group" means an alkylthio group in which the alkyl moiety has the same definition as given for the aforementioned "C_1-C_6 alkyl group", specific examples including a methylthio group, an ethylthio group, a n-propylthio group, an isopropylthio group, a n-butylthio group and so on.

The "C_1-C_4 alkylthio group" means an alkylthio group in which the alkyl moiety has the same definition as given for the aforementioned "C_1-C_4 alkyl group".

The "C_1-C_6 haloalkylthio group" means an alkylthio group in which one or more of the hydrogen atoms in the aforementioned "C_1-C_6 alkylthio group" are substituted by halogen atoms, specific examples including a trifluoromethylthio group, a 2,2,2-trifluoroethylthio group and so on.

The "C_1-C_4 haloalkylthio group" means an alkylthio group in which one or more of the hydrogen atoms in the aforementioned "C_1-C_4 alkylthio group" are substituted by halogen atoms.

The "C_1-C_4 alkylthio-C_1-C_4 alkyl group" means the aforementioned "C_1-C_4 alkyl group" substituted by the aforementioned "C_1-C_4 alkylthio group", and these can bind at any substitutionable position.

The "C_1-C_4 haloalkylthio-C_1-C_4 alkyl group" means the aforementioned "C_1-C_4 alkyl group" substituted by the aforementioned "C_1-C_4 haloalkylthio group", and these can bind at any substitutionable position. Specific examples include a trifluoromethylthiomethyl group, a ((2',2',2'-trifluoroethyl)thio)methyl group, a 2-((trifluoromethyl)thio)ethyl group, a 2-((2',2',2'-trifluoroethyl)thio)ethyl group and so on.

The "C_1-C_4 alkylthio-C_1-C_4 haloalkyl group" means the aforementioned "C_1-C_4 haloalkyl group" substituted by the aforementioned "C_1-C_4 alkylthio group", and these can bind at any substitutionable position.

The "C_1-C_4 haloalkylthio-C_1-C_4 haloalkyl group" means the aforementioned "C_1-C_4 haloalkyl group" substituted by the aforementioned "C_1-C_4 haloalkylthio group", and these can bind at any substitutionable position.

The "C_1-C_6 alkylsulfonyl group" means the aforementioned "C_1-C_6 alkyl group" is substituted by a sulfonyl group, and these can bind at any substitutionable position.

[0072]

The "C_3-C_7 cycloalkyl-C_1-C_4 alkyl group" means the aforementioned "C_1-C_4 alkyl group" substituted by the aforementioned "C_3-C_7 cycloalkyl group", and these can bind at any substitutionable position. Specific examples include a cyclopropylmethyl group and so on.

The "heterocycloalkyl-C_1-C_4 alkyl group" means the aforementioned "C_1-C_4 alkyl group" substituted by the aforementioned "heterocycloalkyl group", and these can bind at any

substitutionable position. Specific examples include an oxetanylmethyl group, a pyrrolidinylmethyl group, a morpholinomethyl group and so on.

The "aralkyl group" means the aforementioned "C_1-C_6 alkyl group" substituted by a phenyl group, a 5-membered heteroaryl group, or a 6-membered heteroaryl group. These can bind at any substitutionable position. Specific examples include a benzyl group, a fenetyl group and so on.

[0073]

The "5-membered heteroaryl" means a 5-membered monocyclic aromatic heteroring comprising one or more (for example, one to four) hetero atoms selected from a nitrogen atom, a sulfur atom and an oxygen atom in addition to carbon atoms. Specific examples include a pyrrol, a furan, a thiophen, an imidazole, a pyrazole, an oxazole, an isoxazole, a thiazole, an isothiazole, a thiadiazole, an oxadiazole, a triazole, a tetrazole and so on.

The "5-membered heteroaryl group" means a group of the aforementioned "5-membered heteroaryl", specific examples including a pyrrolyl group (for example, a 2-pyrrolyl group), a furyl group (for example, a 3-furyl group), a thienyl group (for example, a 2-thienyl group), an imidazolyl group (for example, a 4-imidazolyl group), a pyrazolyl group (for a example, 3-pyrazolyl group) and so on.

The "6-membered heteroaryl" means a 6-membered monocyclic aromatic heteroring comprising one or more (for example, one to three) nitrogen atoms in addition to carbon atoms. Specific examples include a pyridine, a pyridazine, a pyrimidine, a pyrazine, a triazine and so on.

The "6-membered heteroaryl group" means a group of the "6-membered heteroaryl", specific examples including a pyridyl group (for example, a 2-pyridyl group, a 3-pyridyl group, a 4-pyridyl group), a pyridazinyl group (for example, a 3-pyridazinyl group), a pyrimidinyl group (for example, a 5-pyrimidinyl group), a pyrazinyl group (for example, a 2-pyrazinyl group) and so on.

[0074]

In the present specification, the "monocyclic ring" includes all of a monocyclic saturated carbocyclic ring, a monocyclic partially saturated carbocyclic ring, a monocyclic unsaturated carbocyclic ring, a monocyclic saturated heterocyclic ring, a monocyclic partially saturated heterocycles, a monocyclic unsaturated heterocyclic ring, and a monocyclic aromatic ring unless otherwise described.

In the present specification, the "bicyclic ring" includes all of a bicyclic saturated carbocyclic ring, a bicyclic partially saturated carbocyclic ring, a bicyclic unsaturated carbocyclic ring, a bicyclic saturated heterocyclic ring, a bicyclic partially saturated heterocyclic

ring, a bicyclic unsaturated heterocycles, and a bicyclic aromatic ring unless otherwise described.

[0075]

The meaning of substituents with the term “optionally substituted” in the present specification is then explained. Meanwhile, the term “substituted” means that one or more hydrogen atoms at any position are substituted by an atom or a functional group other than a hydrogen atom unless otherwise specified.

[0076]

In R^2 of the general formula (I) or the general formula (I-E2), the substituent of the “optionally substituted C_1-C_6 alkyl group”, “optionally substituted C_1-C_6 haloalkyl group”, “optionally substituted C_2-C_6 alkenyl group”, “optionally substituted C_2-C_6 alkynyl group”, or “optionally substituted saturated, partially saturated or unsaturated 3- to 7-membered monocyclic ring” denotes one selected from the group consisting of a halogen atom, a cyano group, a carboxyl group, a carboxamide group, a hydroxy group, a C_1-C_4 alkyl group, a C_1-C_4 haloalkyl group, a C_1-C_4 alkoxy group, a C_1-C_4 haloalkoxy group, a C_3-C_7 cycloalkyl group, a heterocycloalkyl group, a C_3-C_7 cycloalkyloxy group, a heterocycloalkyloxy group, a C_1-C_4 alkylthio group, a C_1-C_4 haloalkylthio group and $-NR^{d1}R^{d2}$ (R^{d1} and R^{d2} are, independently each other, a hydrogen atom, a C_1-C_4 alkyl group, or a C_1-C_4 haloalkyl group.). These can substitute at all the substitutable positions by one or more.

[0077]

In R^{3a}, R^{3b}, R^{3c}, R^{11b} and R^{11c} of the general formula (I) or the general formula (I-E2), the substituent of the “optionally substituted C_1-C_6 alkyl group”, “optionally substituted C_1-C_6 haloalkyl group”, “optionally substituted C_1-C_6 alkoxy group”, “optionally substituted C_1-C_6 haloalkoxy group”, “optionally substituted C_1-C_4 alkoxy-C_1-C_4 alkyl group”, “optionally substituted C_1-C_4 haloalkoxy-C_1-C_4 alkyl group”, “optionally substituted C_1-C_4 alkoxy-C_1-C_4 haloalkyl group”, “optionally substituted C_1-C_4 haloalkoxy-C_1-C_4 haloalkyl group”, “optionally substituted C_1-C_6 alkylcarbonyl group”, “optionally substituted C_1-C_6 alkoxycarbonyl group”, “optionally substituted C_1-C_6 alkylcarbonyloxy group”, “optionally substituted C_1-C_6 haloalkylcarbonyl group”, “optionally substituted C_1-C_6 haloalkoxycarbonyl group”, “optionally substituted C_1-C_6 haloalkylcarbonyloxy group”, “optionally substituted C_3-C_7 cycloalkyl group”, “optionally substituted heterocycloalkyl group”, “optionally substituted C_3-C_7 cycloalkyloxy group”, “optionally substituted heterocycloalkyloxy group”, “optionally substituted C_2-C_6 alkenyl group”, “optionally substituted C_2-C_6 alkenyloxy group”, “optionally substituted C_2-C_6 alkenyloxy-C_1-C_4 alkyl group”, “optionally substituted C_2-C_6 alkenyloxy-C_1-C_4 haloalkyl group”, “optionally substituted C_2-C_6 alkynyl group”, “optionally substituted C_2-C_6 alkynyloxy

group", "optionally substituted C_2-C_6 alkynyloxy-C_1-C_4 alkyl group", "optionally substituted C_2-C_6 alkynyloxy-C_1-C_4 haloalkyl group", "optionally substituted C_1-C_4 alkoxy-C_1-C_4 alkoxy group", "optionally substituted C_1-C_4 haloalkoxy-C_1-C_4 alkoxy group", "optionally substituted C_2-C_6 alkenyloxy-C_1-C_4 alkoxy group", "optionally substituted C_2-C_6 alkynyloxy-C_1-C_4 alkoxy group", "optionally substituted C_2-C_6 alkenyloxy-C_1-C_4 haloalkoxy group", "optionally substituted C_2-C_6 alkynyloxy-C_1-C_4 haloalkoxy group", "optionally substituted C_1-C_6 alkylthio group", "optionally substituted C_1-C_6 haloalkylthio group", "optionally substituted C_1-C_4 alkylthio-C_1-C_4 alkyl group", "optionally substituted C_1-C_4 haloalkylthio-C_1-C_4 alkyl group", "optionally substituted C_1-C_4 alkylthio-C_1-C_4 haloalkyl group", "optionally substituted C_1-C_4 haloalkylthio-C_1-C_4 haloalkyl group", "optionally substituted C_1-C_6 alkylsulfonyl group" denotes one selected from the group consisting of a halogen atom, a cyano group, a carboxyl group, a carboxamide group, a hydroxy group, a C_1-C_4 alkyl group, a C_1-C_4 haloalkyl group, a C_1-C_4 alkoxy group, a C_1-C_4 haloalkoxy group, a C_3-C_7 cycloalkyl group, a heterocycloalkyl group, a C_3-C_7 cycloalkyloxy group, a heterocycloalkyloxy group, a C_1-C_4 alkylthio group, a C_1-C_4 haloalkylthio group, a methylamino group, a dimethylamino group, an ethylamino group, a diethylamino group, an ethylmethylamino group, a (2,2,2-trifluoroethyl)amino group, a methyl (2,2,2-trifluoroethyl)amino group, an ethyl (2,2,2-trifluoroethyl)amino group, a bis(2,2,2-trifluoroethyl)amino group, a methylaminocarbonyl group, a dimethylaminocarbonyl group, an ethylaminocarbonyl group, a diethylaminocarbonyl group and an ethylmethylaminocarbonyl group. These can substitute at all the substitutable positions by one or more.

[0078]

In R^{4a}, R^{4b} or R^{4c} of the general formula (I) or the general formula (I-E2), the substituent of the "optionally substituted C_1-C_6 alkyl group", "optionally substituted C_1-C_6 haloalkyl group", "optionally substituted C_1-C_6 alkoxy group", "optionally substituted C_1-C_6 haloalkoxy group", "optionally substituted C_1-C_4 alkoxy-C_1-C_4 alkyl group", "optionally substituted C_1-C_4 haloalkoxy-C_1-C_4 alkyl group", "optionally substituted C_1-C_4 alkoxy-C_1-C_4 haloalkyl group", "optionally substituted C_1-C_4 haloalkoxy-C_1-C_4 haloalkyl group", "optionally substituted C_1-C_6 alkylcarbonyl group", "optionally substituted C_1-C_6 alkoxycarbonyl group", "optionally substituted C_1-C_6 alkylcarbonyloxy group", "optionally substituted C_1-C_6 alkoxycarbonyloxy group", "optionally substituted C_1-C_6 haloalkylcarbonyl group", "optionally substituted C_1-C_6 haloalkoxycarbonyl group", "optionally substituted C_1-C_6 haloalkylcarbonyloxy group", "optionally substituted C_3-C_7 cycloalkyl group", "optionally substituted heterocycloalkyl group", "optionally substituted C_3-C_7 cycloalkyloxy group", "optionally substituted heterocycloalkyloxy group", "optionally substituted C_2-C_6 alkenyl group", "optionally substituted C_2-C_6 alkenyloxy

group", "optionally substituted C_2-C_6 alkenyloxy-C_1-C_4 alkyl group", "optionally substituted C_2-C_6 alkenyloxy-C_1-C_4 haloalkyl group", "optionally substituted C_2-C_6 alkynyl group", "optionally substituted C_2-C_6 alkynyloxy group", "optionally substituted C_2-C_6 alkynyloxy-C_1-C_4 alkyl group", "optionally substituted C_2-C_6 alkynyloxy-C_1-C_4 haloalkyl group", "optionally substituted C_1-C_4 alkoxy-C_1-C_4 alkoxy group", "optionally substituted C_1-C_4 haloalkoxy-C_1-C_4 alkoxy group", "optionally substituted C_2-C_6 alkenyloxy-C_1-C_4 alkoxy group", "optionally substituted C_2-C_6 alkynyloxy-C_1-C_4 alkoxy group", "optionally substituted C_2-C_6 alkenyloxy-C_1-C_4 haloalkoxy group", "optionally substituted C_2-C_6 alkynyloxy-C_1-C_4 haloalkoxy group", "optionally substituted C_1-C_6 alkylthio group", "optionally substituted C_1-C_6 haloalkylthio group", "optionally substituted C_1-C_4 alkylthio-C_1-C_4 alkyl group", "optionally substituted C_1-C_4 haloalkylthio-C_1-C_4 alkyl group", "optionally substituted C_1-C_4 alkylthio-C_1-C_4 haloalkyl group", "optionally substituted C_1-C_4 haloalkylthio-C_1-C_4 haloalkyl group" denotes one selected from the group consisting of a halogen atom, a cyano group, a carboxyl group, carboxamide group, a hydroxy group, a C_1-C_4 alkyl group, a C_1-C_4 haloalkyl group, a C_1-C_4 alkoxy group, a C_1-C_4 haloalkoxy group, a C_3-C_7 cycloalkyl group, a heterocycloalkyl group, a C_3-C_7 cycloalkyloxy group, a heterocycloalkyloxy group, a C_1-C_4 alkylthio group and a C_1-C_4 haloalkylthio group. These can substitute at all the substitutable positions by one or more.

[0079]

As regards the present inventive heteroaromatic amide derivative or salt thereof of the general formula (I) or the general formula (I-E2), preferable atoms, substituent groups, and rings are then hereinbelow explained. The present inventive compound having at least one of preferable atoms, substituents, or rings is preferable; the present inventive compound having plural preferable atoms, substituents, or rings is more preferable.

[0080]

Preferable Y^1, Y^2, Y^3 and Y^4 together form

$-OCH_2CH_2CH_2-$, $-OCR^{4a}HCH_2CH_2-$, $-OCR^{4a}R^{4b}CH_2CH_2-$

$-OCH_2CH_2-$, $-OCR^{4a}HCH_2-$, $-OCR^{4a}R^{4b}CH_2-$,

$-OCH_2CH_2CH_2CH_2-$, $-OCR^{4a}HCH_2CH_2CH_2-$, $-OCR^{4a}R^{4b}CH_2CH_2CH_2-$,

$-OCH_2CR^{4a}HCH_2CH_2-$, $-OCH_2CR^{4a}R^{4b}CH_2CH_2-$,

$-CH_2OCH_2CH_2-$, $-CH_2OCH_2CH_2CH_2-$, $-CH_2CH_2OCH_2-$, $-CH_2CR^{4a}HOCH_2-$

$-CH_2CH_2CH_2CH_2-$, $-CH_2CR^{4a}HCH_2CH_2-$, $-CH_2CR^{4a}R^{4b}CH_2CH_2-$,

$-CH_2CH_2CR^{4a}HCH_2-$, $-CH_2CH_2CR^{4a}R^{4b}CH_2-$,

$-CH_2SCH_2CH_2-$, $-CH_2SO_2CH_2CH_2-$,

$-NHCH_2CH_2CH_2-$, $-NR^{4c}CH_2CH_2CH_2-$, $-NR^{4c}CR^{4a}HCH_2CH_2-$,

-$NHCR^{4a}HCH_2CH_2$-,

-$CH_2NR^{4c}CH_2CH_2$-, -$CH_2NR^{4c}CR^{4a}HCH_2$-, -$CH_2NHCR^{4a}HCH_2$-,

-$CH_2CH_2NR^{4c}CH_2$-, -$CH_2CR^{4a}HNR^{4c}CH_2$-, or -$CH_2CR^{4a}HNHCH_2$-;

more preferable Y^1, Y^2, Y^3 and Y^4 together form

-$OCR^{4a}HCH_2CH_2$-, -$OCR^{4a}R^{4b}CH_2CH_2$-

-OCH_2CH_2-, -$OCR^{4a}HCH_2$-, -$OCR^{4a}R^{4b}CH_2$-,

-$OCH_2CH_2CH_2CH_2$-, -$OCR^{4a}HCH_2CH_2CH_2$-, -$OCR^{4a}R^{4b}CH_2CH_2CH_2$-,

-$OCH_2CR^{4a}HCH_2CH_2$-, -$OCH_2CR^{4a}R^{4b}CH_2CH_2$-,

-$CH_2OCH_2CH_2$-, -$CH_2OCH_2CH_2CH_2$-, -$CH_2CH_2OCH_2$-, -$CH_2CR^{4a}HOCH_2$-

-$CH_2CH_2CH_2CH_2$-, -$CH_2CR^{4a}HCH_2CH_2$-, -$CH_2CR^{4a}R^{4b}CH_2CH_2$-,

-$CH_2CH_2CR^{4a}HCH_2$-, -$CH_2CH_2CR^{4a}R^{4b}CH_2$-,

-$CH_2SCH_2CH_2$-, -$CH_2SO_2CH_2CH_2$-,

-$NHCH_2CH_2CH_2$-, -$NR^{4c}CH_2CH_2CH_2$-, -$NR^{4c}CR^{4a}HCH_2CH_2$-,

-$NHCR^{4a}HCH_2CH_2$-,

-$CH_2NR^{4c}CH_2CH_2$-, -$CH_2NR^{4c}CR^{4a}HCH_2$-, -$CH_2NHCR^{4a}HCH_2$-,

-$CH_2CH_2NR^{4c}CH_2$-, -$CH_2CR^{4a}HNR^{4c}CH_2$-, or -$CH_2CR^{4a}HNHCH_2$-.

Meanwhile, for example, "Y^1, Y^2, Y^3 and Y^4 together form -$OCR^{4a}HCH_2CH_2$-" means that Y^1 is -O-, Y^2 is -$CR^{4a}H$-, Y^3 is -CH_2-, and Y^4 is -CH_2-.

[0081]

When X^1-X^2 is C-N, (namely, in the case where X^1 is a carbon atom, and X^2 is a nitrogen atom.), preferable Y^1, Y^2, Y^3 and Y^4 together form

-$OCH_2CH_2CH_2$-, -$OCR^{4a}HCH_2CH_2$-, -$OCR^{4a}R^{4b}CH_2CH_2$-, -OCH_2CH_2-,

-$OCR^{4a}HCH_2$-, -$OCR^{4a}R^{4b}CH_2$-,

-$OCH_2CH_2CH_2CH_2$-, -$OCR^{4a}HCH_2CH_2CH_2$-, -$OCH_2CR^{4a}HCH_2CH_2$-,

-$CH_2OCH_2CH_2$-, -$CH_2OCH_2CH_2CH_2$-,

-$CH_2CR^{4a}HCH_2CH_2$-, -$CH_2CR^{4a}R^{4b}CH_2CH_2$-, -$CH_2CH_2CR^{4a}HCH_2$-,

-$NHCH_2CH_2CH_2$-, -$NR^{4c}CR^{4a}HCH_2CH_2$-, -$NHCR^{4a}HCH_2CH_2$-, or -$CH_2NR^{4c}CH_2CH_2$-.

In this case, more preferable Y^1, Y^2, Y^3 and Y^4 together form

-$OCR^{4a}HCH_2CH_2$-, -$OCR^{4a}R^{4b}CH_2CH_2$-, -OCH_2CH_2-,

-$OCR^{4a}HCH_2$-, -$OCR^{4a}R^{4b}CH_2$-,

-$OCH_2CH_2CH_2CH_2$-, -$OCR^{4a}HCH_2CH_2CH_2$-, -$OCH_2CR^{4a}HCH_2CH_2$-,

-$CH_2OCH_2CH_2$-, -$CH_2OCH_2CH_2CH_2$-,

-$CH_2CR^{4a}HCH_2CH_2$-, -$CH_2CR^{4a}R^{4b}CH_2CH_2$-, -$CH_2CH_2CR^{4a}HCH_2$-,

-$NHCH_2CH_2CH_2$-, -$NR^{4c}CR^{4a}HCH_2CH_2$-, -$NHCR^{4a}HCH_2CH_2$-, or -$CH_2NR^{4c}CH_2CH_2$-.

In this case, further more preferable Y^1, Y^2, Y^3 and Y^4 together form -$OCR^{4a}HCH_2CH_2$-, -$OCR^{4a}R^{4b}CH_2CH_2$-, -OCH_2CH_2-, -$OCR^{4a}HCH_2$-, -$OCR^{4a}R^{4b}CH_2$-, -$OCH_2CH_2CH_2CH_2$-, -$OCR^{4a}HCH_2CH_2CH_2$-, -$OCH_2CR^{4a}HCH_2CH_2$-, -$CH_2CR^{4a}HCH_2CH_2$-, -$NR^{4c}CR^{4a}HCH_2CH_2$-, -$NHCR^{4a}HCH_2CH_2$-, or -$CH_2NR^{4c}CH_2CH_2$-.

In this case, still further more preferable Y^1, Y^2, Y^3 and Y^4 together form -$OCR^{4a}HCH_2CH_2$-, -$OCR^{4a}HCH_2$-, -$OCR^{4a}HCH_2CH_2CH_2$-, -$CH_2CR^{4a}HCH_2CH_2$-, -$NR^{4c}CR^{4a}HCH_2CH_2$-, -$NHCR^{4a}HCH_2CH_2$-, or -$CH_2NR^{4c}CH_2CH_2$-.

In this case, particularly preferable Y^1, Y^2, Y^3 and Y^4 together form -$OCR^{4a}HCH_2CH_2$-.

Additionally, in this case, in another aspect of the present invention, particularly preferable Y^1, Y^2, Y^3 and Y^4 together form -$CH_2NR^{4c}CH_2CH_2$-.

[0082]

When X^1-X^2 is N-C (namely, in the case where X^1 is a nitrogen atom, and X^2 is a carbon atom), preferable Y^1, Y^2, Y^3 and Y^4 together form -$CH_2CH_2OCH_2$-, -$CH_2CR^{4a}HOCH_2$- -$CH_2CH_2CH_2CH_2$-, -$CH_2CR^{4a}HCH_2CH_2$-, -$CH_2CR^{4a}R^{4b}CH_2CH_2$-, -$CH_2CH_2NR^{4c}CH_2$-, -$CH_2CR^{4a}HNR^{4c}CH_2$-, or -$CH_2CR^{4a}HNHCH_2$-.

In this case, more preferable Y^1, Y^2, Y^3 and Y^4 together form -$CH_2CH_2OCH_2$-, -$CH_2CR^{4a}HOCH_2$-, -$CH_2CR^{4a}HCH_2CH_2$-, -$CH_2CH_2NR^{4c}CH_2$-, -$CH_2CR^{4a}HNR^{4c}CH_2$-, or -$CH_2CR^{4a}HNHCH_2$-.

In this case, further more preferable Y^1, Y^2, Y^3 and Y^4 together form -$CH_2CR^{4a}HOCH_2$-, -$CH_2CR^{4a}HCH_2CH_2$-, -$CH_2CH_2NR^{4c}CH_2$-, -$CH_2CR^{4a}HNR^{4c}CH_2$-, or -$CH_2CR^{4a}HNHCH_2$-.

[0083]

Z^1 is preferably a single bond, -$CR^{7a}R^{7b}$-, -O-, or -S-, and more preferably a single bond.

[0084]

Ring A is a 3- to 7-membered monocyclic aromatic ring, or 8- to 12-membered bicyclic aromatic ring.

In one embodiment of the present invention, preferable ring A is a 3- to 7-membered monocyclic aromatic ring; for example, in this case, ring A is a phenyl, a pyrrolyl, a furyl, a thienyl, an imidazolyl, a pyrazolyl, an oxazolyl, a thiazolyl, a triazolyl, a pyridyl, a pyrazinyl, a pyridazinyl, a pyrimidinyl, a tetrazolyl, an isothiazolyl, an oxadiazolyl, an isoxazolyl, or a thiadiazolyl.

In this case, preferably, ring A is a phenyl, a pyrrolyl, a furyl, a thienyl, a imidazolyl, a pyrazolyl, a oxazolyl, a thiazolyl, a triazolyl, a pyridyl, a pyrazinyl, a pyridazinyl, or a pyrimidinyl;

in this case, more preferably, ring A is a phenyl, a pyridyl, a pyrazinyl, a pyridazinyl, or a pyrimidinyl;

in this case, further more preferably, ring A is a phenyl.

[0085]

In one embodiment of the present invention, preferable ring A is a 8- to 12-membered bicyclic aromatic ring;

for example, in this case, ring A is a quinolinyl, an isoquinolylphthaladinyl, a naphthyridinyl, a quinoxalinyl, a quinazolinyl, a cinnolinyl, a benzoimidazolyl, an indolyl, an isoindolyl, a benzooxazolinyl, a benzofuranyl, an isobenzofuranyl, or an indazolyl.

In this case, preferably, ring A is a quinolyl, a benzoimidazolyl, an indolyl, or a benzooxazolinyl,

In this case, more preferably, ring A is an 8-quinolyl, a 1-benzoimidazolyl, a 3-indolyl, or a 2-benzooxazolinyl.

[0086]

R^{1a} and R^{1b} are, independently each other, a hydrogen atom, a halogen atom, a hydroxy group, a cyano group, a C_1-C_4 alkyl group, a C_1-C_4 haloalkyl group, a C_1-C_4 alkoxy group, a C_1-C_4 haloalkoxy group, a C_3-C_7 cycloalkyl group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group, or a C_1-C_4 haloalkoxy-C_1-C_4 alkyl group;

preferably, R^{1a} and R^{1b} are, independently each other, a hydrogen atom, a halogen atom, a C_1-C_4 alkyl group, or a C_1-C_4 haloalkyl group,

more preferably, R^{1a} and R^{1b} are, independently each other, a hydrogen atom or a halogen atom.

[0087]

R^2 is a hydrogen atom, a halogen atom, a hydroxy group, a cyano group, an optionally substituted C_1-C_6 alkyl group, an optionally substituted C_1-C_6 haloalkyl group, an optionally substituted C_2-C_6 alkenyl group, an optionally substituted C_2-C_6 alkynyl group, or an optionally substituted saturated, partially saturated or unsaturated 3- to 7-membered monocyclic ring.

Preferably, R^2 is a hydrogen atom, a halogen atom, a hydroxy group, a cyano group, or an optionally substituted saturated, partially saturated or unsaturated 3- to 7-membered monocyclic ring;

more preferably, R^2 is a hydrogen atom or an optionally substituted saturated, partially saturated or unsaturated 3- to 7-membered monocyclic ring.

[0088]

In one embodiment of the present invention, preferable R^2 is a hydrogen atom, a halogen atom, a hydroxy group, or a cyano group; in this case, more preferably, R^2 is a hydrogen atom.

[0089]

Further, in another aspect of the present invention, when R^2 is an optionally substituted saturated, partially saturated or unsaturated 3- to 7-membered monocyclic ring, R^2 is preferably an optionally substituted 3- to 7-membered monocyclic aromatic ring.

[0090]

Still further, in another aspect of the present invention, when R^2 is an optionally substituted saturated, partially saturated or unsaturated 3- to 7-membered monocyclic ring,

R^2 is preferably a saturated, partially saturated or unsaturated 3- to 7-membered monocyclic ring optionally substituted by a halogen atom, a cyano group, a carboxyl group, carboxamide group, a hydroxy group, a C_1-C_4 alkyl group, a C_1-C_4 haloalkyl group, a C_1-C_4 alkoxy group, a C_1-C_4 haloalkoxy group, a C_3-C_7 cycloalkyl group, a heterocycloalkyl group, a C_3-C_7 cycloalkyloxy group, a heterocycloalkyloxy group, a C_1-C_4 alkylthio group, a C_1-C_4 haloalkylthio group, or $-NR^{d1}R^{d2}$ (R^{d1} and R^{d2} are, independently each other, a hydrogen atom, a C_1-C_4 alkyl group, or a C_1-C_4 haloalkyl group.).

In this case, more preferably, R^2 is an unsaturated 3- to 7-membered monocyclic ring optionally substituted by a halogen atom, a cyano group, a C_1-C_4 alkyl group, a C_1-C_4 haloalkyl group, a C_1-C_4 alkoxy group, a C_1-C_4 haloalkoxy group, or $-NR^{d1}R^{d2}$ (R^{d1} and R^{d2} are, independently each other, a hydrogen atom, a C_1-C_4 alkyl group, or a C_1-C_4 haloalkyl group.).

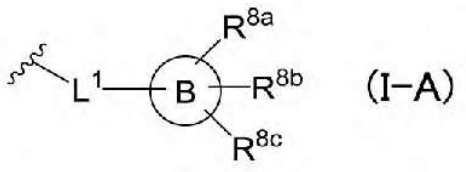
[0091]

R^{3a}, R^{3b} and R^{3c} are, preferably, independently each other, a hydrogen atom, a halogen atom, a cyano group, a cyanomethyl group, a formyl group, a nitro group, a carboxamide group, a hydroxy group, a C_1-C_6 alkyl group, a C_1-C_6 alkyl group substituted by a heterocyclooxy group, a C_1-C_6 alkyl group substituted by a cyano group, a C_1-C_6 alkyl group substituted by a morpholino group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group substituted by a dimethylamino group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group substituted by a dimethylaminocarbonyl group, a C_1-C_4 haloalkoxy-C_1-C_4 alkyl group, a C_1-C_4 alkoxy-C_1-C_4 haloalkyl group, a C_1-C_4 haloalkoxy-C_1-C_4 haloalkyl group, a C_1-C_6 alkylcarbonyl group, a C_1-C_6 alkoxycarbonyl group,

a C_1-C_6 alkylcarbonyloxy group, a C_1-C_6 haloalkylcarbonyl group, a C_1-C_6 haloalkoxycarbonyl group, a C_1-C_6 haloalkylcarbonyloxy group, a C_3-C_7 cycloalkyl group, a heterocycloalkyl group, a C_3-C_7 cycloalkyloxy group, a heterocycloalkyloxy group, a C_2-C_6 alkenyl group, a C_2-C_6 alkenyloxy group, a C_2-C_6 alkenyloxy-C_1-C_4 alkyl group, a C_2-C_6 alkenyloxy-C_1-C_4 haloalkyl group, a C_2-C_6 alkynyl group, a C_2-C_6 alkynyl group optionally substituted by a halogen atom, a C_2-C_6 alkynyloxy group, a C_2-C_6 alkynyloxy-C_1-C_4 alkyl group, a C_2-C_6 alkynyloxy-C_1-C_4 haloalkyl group, a C_1-C_4 alkoxy-C_1-C_4 alkoxy group, a C_1-C_4 haloalkoxy-C_1-C_4 alkoxy group, a C_2-C_6 alkenyloxy-C_1-C_4 alkoxy group, a C_2-C_6 alkynyloxy-C_1-C_4 alkoxy group, a C_2-C_6 alkenyloxy-C_1-C_4 haloalkoxy group, a C_2-C_6 alkynyloxy-C_1-C_4 haloalkoxy group, a C_1-C_6 alkylthio group, a C_1-C_6 haloalkylthio group, a C_1-C_4 alkylthio-C_1-C_4 alkyl group, a C_1-C_4 haloalkylthio-C_1-C_4 alkyl group, a C_1-C_4 alkylthio-C_1-C_4 haloalkyl group, a C_1-C_4 haloalkylthio-C_1-C_4 haloalkyl group, a C_1-C_6 alkylsulfonyl group, $-(CH_2)_pNR^{a1}R^{a2}$ (R^{a1} and R^{a2} are, independently each other, a hydrogen atom, a C_1-C_4 alkyl group, or a C_1-C_4 haloalkyl group, and p is 0, 1, or 2.), or a group represented by the general formula (I-A)

[0092]

[Chem 26]



(I-A)

{wherein,

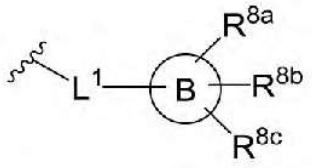
ring B, L^1, R^{8a}, R^{8b}, and R^{8c} have the same definition as the (0).}.

[0093]

R^{3a}, R^{3b} and R^{3c} are, more preferably, independently each other, a hydrogen atom, a halogen atom, a cyano group, a cyanomethyl group, a formyl group, a nitro group, a carboxamide group, a hydroxy group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group optionally substituted by a dimethylaminocarbonyl group or a dimethylamino group, a C_1-C_4 haloalkoxy-C_1-C_4 alkyl group, a C_1-C_4 alkoxy-C_1-C_4 haloalkyl group, a C_1-C_4 haloalkoxy-C_1-C_4 haloalkyl group, a C_1-C_6 alkylcarbonyl group, a C_2-C_6 alkenyl group, a C_2-C_6 alkynyl group, a C_2-C_6 alkynyl group optionally substituted by a halogen atom, a C_1-C_6 alkylthio group, a C_1-C_6 haloalkylthio group, $-(CH_2)_pNR^{a1}R^{a2}$ (p, R^{a1} and R^{a2} have the same definition as given in the (0).), or a group represented by the general formula (I-A)

[0094]

[Chem 27]



(I-A)

{wherein,

ring B is a C_3-C_7 cycloalkyl, an azetidinyl, a pyrrolidinyl, a piperidyl, a piperazinyl, a morpholino, a phenyl, a pyrrolyl, a furyl, a thienyl, an imidazolyl, a pyrazolyl, an oxazolyl, a thiazolyl, a triazolyl, a pyridyl, a pyrazinyl, a pyridazinyl, or a pyrimidinyl,

L^1 is a single bond, $-CH_2-$, $-CH_2O-$, $-OCH_2-$, $-CH_2CH_2-$, or $-CH_2OCH_2-$,

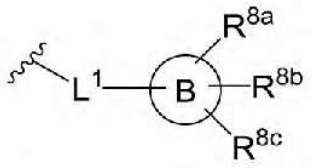
R^{8a}, R^{8b} and R^{8c} are, independently each other, a hydrogen atom, a halogen atom, a cyano group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_3-C_7 cycloalkyl group, a C_3-C_7 cycloalkyloxy group, a heterocycloalkyl group, a heterocycloalkyloxy group, a C_2-C_6 alkenyl group, or a C_2-C_6 alkynyl group.}.

[0095]

More preferably, R^{3a}, R^{3b} and R^{3c} are, independently each other, a hydrogen atom, a halogen atom, a cyano group, a cyanomethyl group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group, a C_1-C_4 haloalkoxy-C_1-C_4 alkyl group, a C_2-C_6 alkenyl group, a C_2-C_6 alkynyl group, $-(CH_2)_pNR^{a1}R^{a2}$ (p is 1, and R^{a1} and R^{a2} are, independently each other, a hydrogen atom, a methyl group, an ethyl group, or a 2,2,2-trifluoroethyl group.), or a group represented by the general formula (I-A)

[0096]

[Chem 28]



(I-A)

{wherein,

ring B is a C_3-C_7 cycloalkyl, a morpholino, a phenyl, a pyrazolyl, a pyridyl, a pyrazinyl, a pyridazinyl, or a pyrimidinyl,

L^1 is a single bond,

R^{8a}, R^{8b} and R^{8c} are, independently each other, a hydrogen atom, a halogen atom, a cyano group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, or a C_1-C_6 haloalkoxy group.}.

[0097]

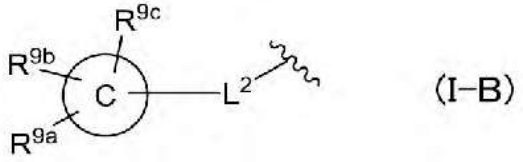
Further more preferably, R^{3a}, R^{3b} and R^{3c} are, independently each other, a hydrogen atom, a halogen atom, a cyano group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, or a C_1-C_6 haloalkoxy group.

[0098]

R^{4a}, R^{4b} and R^{4c} are, preferably, independently each other, a halogen atom, a cyano group, a cyanomethyl group, a formyl group, a nitro group, a carboxamide group, a hydroxy group, a C_1-C_6 alkyl group,a C_1-C_6 alkyl group optionally substituted by a hydroxy group, a C_1-C_6 haloalkyl group, a C_1-C_6 haloalkyl group optionally substituted by a hydroxy group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group optionally substituted by a C_1-C_4 haloalkoxy group, a C_1-C_4 haloalkoxy-C_1-C_4 alkyl group, a C_1-C_4 alkoxy-C_1-C_4 haloalkyl group, a C_1-C_4 haloalkoxy-C_1-C_4 haloalkyl group, a C_1-C_6 alkylcarbonyl group, a C_1-C_6 alkoxycarbonyl group, a C_1-C_6 alkylcarbonyloxy group, a C_1-C_6 haloalkylcarbonyl group, a C_1-C_6 haloalkoxycarbonyl group, a C_1-C_6 haloalkylcarbonyloxy group, a C_3-C_7 cycloalkyl group, a C_3-C_7 cycloalkyl group optionally substituted by a halogen atom, a heterocycloalkyl group, a C_3-C_7 cycloalkyloxy group, a heterocycloalkyloxy group, a C_2-C_6 alkenyl group, a C_2-C_6 alkenyloxy group, a C_2-C_6 alkenyloxy-C_1-C_4 alkyl group, a C_2-C_6 alkenyloxy-C_1-C_4 alkyl group optionally substituted by a halogen atom, a C_2-C_6 alkenyloxy-C_1-C_4 haloalkyl group, a C_2-C_6 alkynyl group, a C_2-C_6 alkynyl group optionally substituted by a halogen atom or a methoxy group, a C_2-C_6 alkynyloxy group, a C_2-C_6 alkynyloxy-C_1-C_4 alkyl group, a C_2-C_6 alkynyloxy-C_1-C_4 haloalkyl group, a C_1-C_4 alkoxy-C_1-C_4 alkoxy group, a C_1-C_4 haloalkoxy-C_1-C_4 alkoxy group, a C_2-C_6 alkenyloxy-C_1-C_4 alkoxy group, a C_2-C_6 alkynyloxy-C_1-C_4 alkoxy group, a C_2-C_6 alkenyloxy-C_1-C_4 haloalkoxy group, a C_2-C_6 alkynyloxy-C_1-C_4 haloalkoxy group, a C_1-C_6 alkylthio group, a C_1-C_6 haloalkylthio group, a C_1-C_4 alkylthio-C_1-C_4 alkyl group, a C_1-C_4 haloalkylthio-C_1-C_4 alkyl group, a C_1-C_4 alkylthio-C_1-C_4 haloalkyl group, a C_1-C_4 haloalkylthio-C_1-C_4 haloalkyl group, a pentafluorosulfanyl group, $-(CH_2)_qNR^{b1}R^{b2}$ (R^{b1} and R^{b2} are, independently each other, a hydrogen atom, a C_1-C_4 alkyl group, or a C_1-C_4 haloalkyl group, and q is, 0, 1, 2, or 3.), or a group represented by the general formula (I-B)

[0099]

[Chem 29]



(I-B)

{wherein,

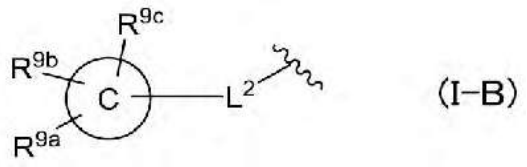
ring C, L^2, R^{9a}, R^{9b}, R^{9c} have the same definition as the (0).}.

[0100]

R^{4a}, R^{4b} and R^{4c} are, more preferably, independently each other, a halogen atom, a hydroxy group, a cyano group, a C_1-C_6 alkyl group, a C_1-C_6 alkyl group optionally substituted by a hydroxy group, C_1-C_6 haloalkyl group, a C_1-C_6 haloalkyl group optionally substituted by a hydroxy group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group optionally substituted by a C_1-C_4 haloalkoxy group, a C_1-C_4 haloalkoxy-C_1-C_4 alkyl group, a C_1-C_4 alkoxy-C_1-C_4 haloalkyl group, a C_1-C_4 haloalkoxy-C_1-C_4 haloalkyl group, a C_1-C_6 alkylcarbonyl group, a C_1-C_6 alkoxycarbonyl group, a C_1-C_6 haloalkylcarbonyl group, a C_3-C_7 cycloalkyl group, a C_3-C_7 cycloalkyl group optionally substituted by a halogen atom or a C_1-C_4 haloalkyl group, a heterocycloalkyl group, a C_2-C_6 alkenyl group, a C_2-C_6 alkenyloxy group, a C_2-C_6 alkenyloxy-C_1-C_4 alkyl group, a C_2-C_6 alkenyloxy-C_1-C_4 alkyl group optionally substituted by a halogen atom, a C_2-C_6 alkynyl group, a C_2-C_6 alkynyl group optionally substituted by a halogen atom or a methoxy group, a C_2-C_6 alkynyloxy-C_1-C_4 alkyl group, a C_1-C_4 haloalkoxy-C_1-C_4 alkoxy group, a C_1-C_6 alkylthio group, a C_1-C_6 haloalkylthio group, a C_1-C_4 alkylthio-C_1-C_4 alkyl group, a C_1-C_4 haloalkylthio-C_1-C_4 alkyl group, $-(CH_2)_qNR^{b1}R^{b2}$ (q, R^{b1} and R^{b2} have the same definition as given in the (0).), or the general formula (I-B)

[0101]

[Chem 30]



(I-B)

{wherein,

ring C is a C_3-C_7 cycloalkyl, an azetidinyl, a pyrrolidinyl, a piperidyl, a piperazinyl, a morpholino, a phenyl, a pyrrolyl, a furyl, a thienyl, an imidazolyl, a pyrazolyl, an oxazolyl, a thiazolyl, a triazolyl, a pyridyl, a pyrazinyl, a pyridazinyl, or a pyrimidinyl,

L^2 is a single bond, -CH=CH-, -C≡C-,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}O(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}NR^{c}(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}CO(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}S(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-, or

-$(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}SO(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$- ($R^{10a}$, R^{10b}, R^{10c}, R^{10d}, R^{10e}, R^{10f}, R^{10g}, R^{10h}, r1, r2, r3, r4 and R^c have the same definition as given in the (0).),

R^{9a}, R^{9b} and R^{9c} are, independently each other, a hydrogen atom, a halogen atom, a hydroxy group, a cyano group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_1-C_6 alkoxycarbonyl group, a heterocycloalkyloxy group, or -$(CH_2)_sNR^{d1}R^{d2}$ (s, R^{d1} and R^{d2} have the same definition as given in the (0).).}.

[0102]

In one embodiment of the present invention, preferable R^{4a}, R^{4b} and R^{4c} are, independently each other, a halogen atom, a hydroxy group, a cyano group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group optionally substituted by a C_1-C_4 haloalkoxy group, a C_1-C_4 haloalkoxy-C_1-C_4 alkyl group, a C_1-C_4 haloalkoxy-C_1-C_4 alkoxy group, a C_1-C_4 alkylthio-C_1-C_4 alkyl group, a C_1-C_4 haloalkylthio-C_1-C_4 alkyl group, or -$(CH_2)_qNR^{b1}R^{b2}$ (q, R^{b1} and R^{b2} have the same definition as given in the (0).),

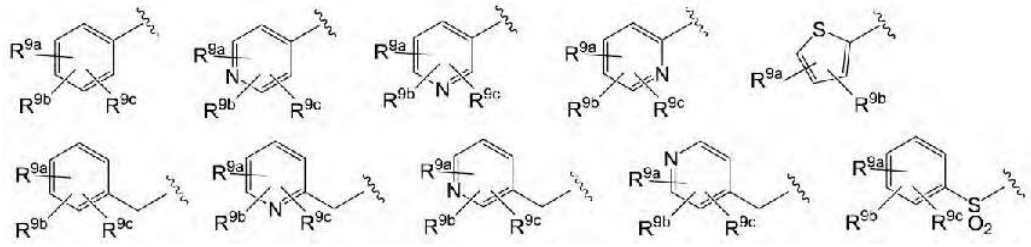
more preferably, a halogen atom, a cyano group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group optionally substituted by a C_1-C_4 haloalkoxy group, or a C_1-C_4 haloalkoxy-C_1-C_4 alkyl group, or a C_1-C_4 haloalkoxy-C_1-C_4 alkoxy group.

[0103]

In addition, in another aspect of the present invention, when R^{4a}, R^{4b} and R^{4c} are groups represented by the general formula (I-B), R^{4a}, R^{4b} and R^{4c} are more preferably a substituent selected from the group consisting of the following formulae:

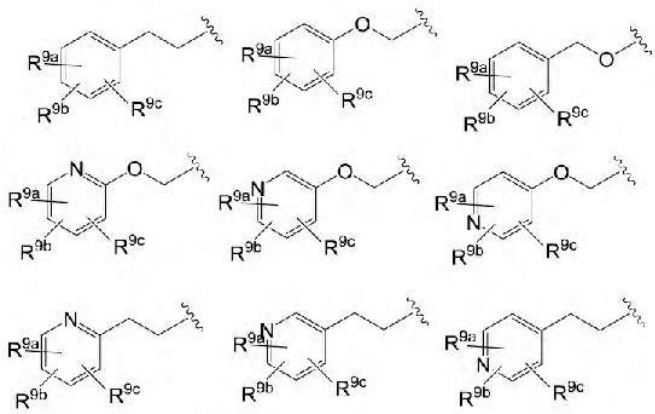
[0104]

[Chem 31]



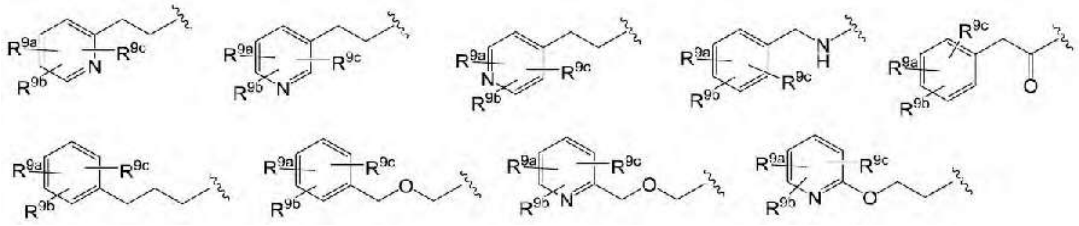
[0105]

[Chem 32]



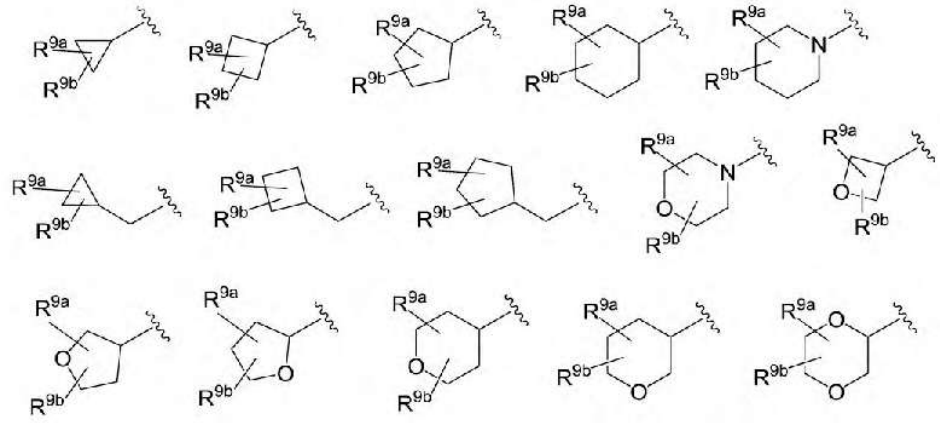
[0106]

[Chem 33]



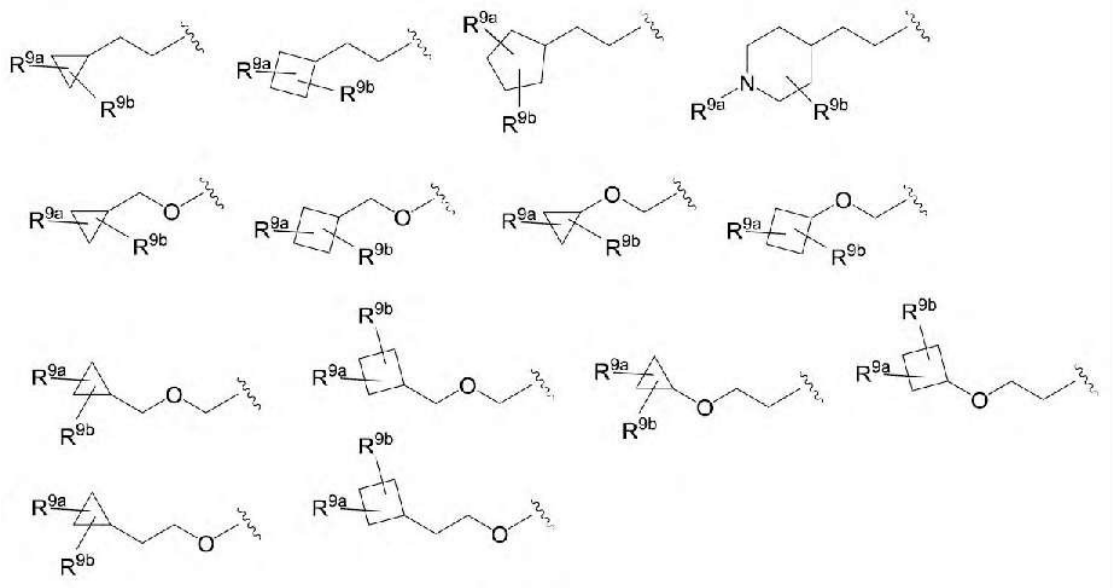
[0107]

[Chem 34]



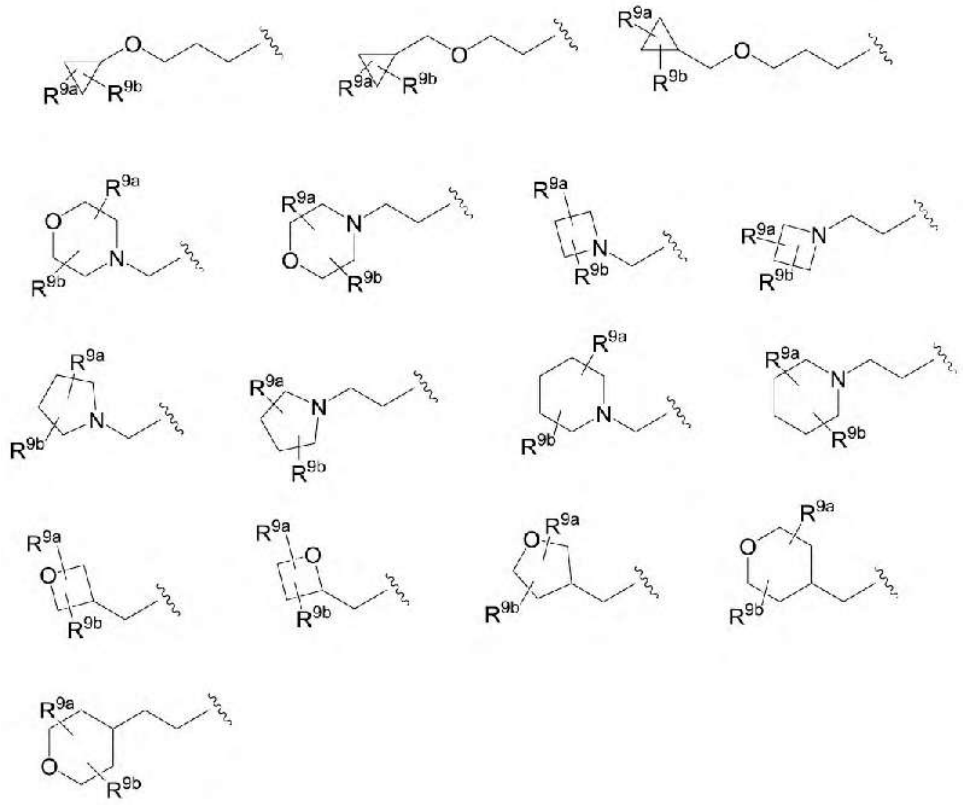
[0108]

[Chem 35]



[0109]

[Chem 36]

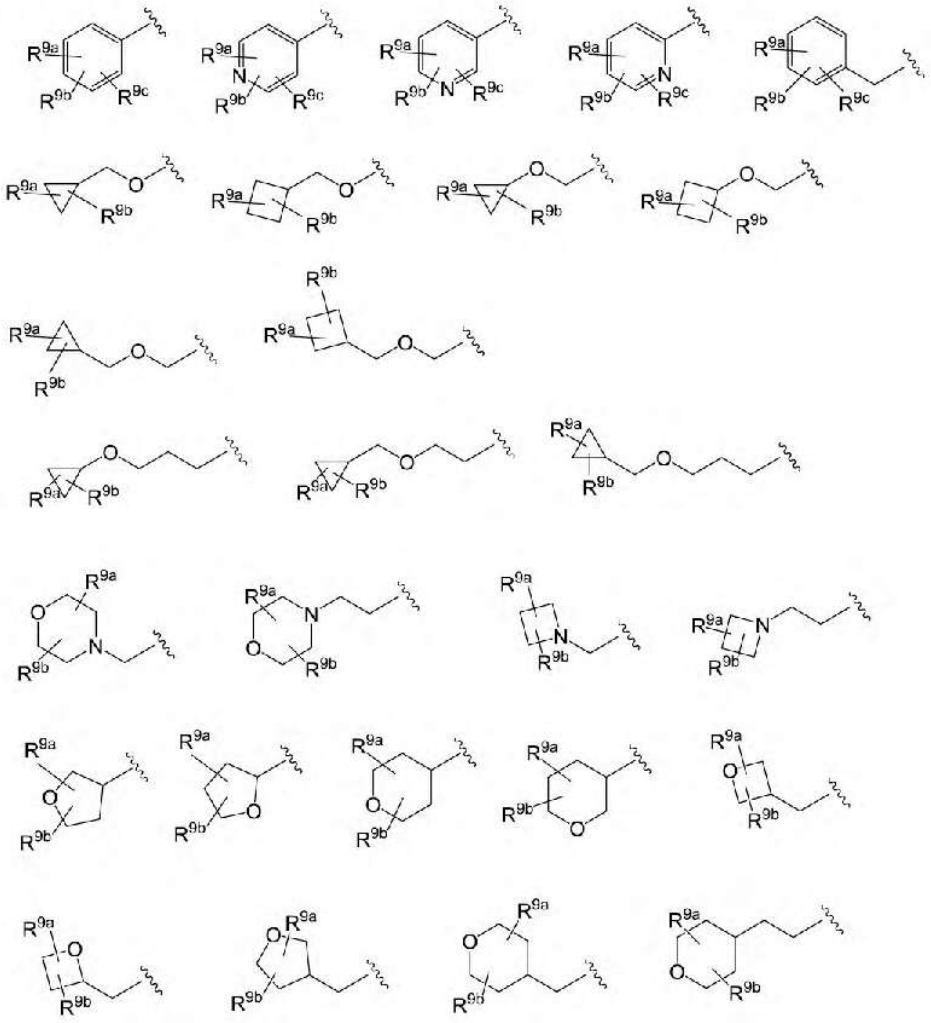


(wherein R^{9a}, R^{9b} and R^{9c} have the same definition as given in the (0).),

in this case, R^{4a}, R^{4b} and R^{4c} are more preferably a substituent selected from the group consisting of the following formulae:

[0110]

[Chem 37]

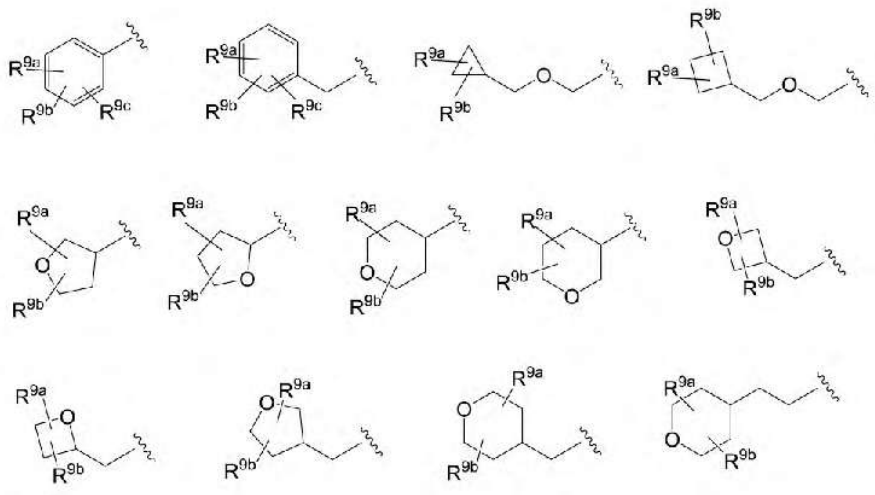


(wherein R^{9a}, R^{9b} and R^{9c} have the same definition as given in the (0).),

in this case, R^{4a}, R^{4b} and R^{4c} are further more preferably a substituent selected from the group consisting of the following:

[0111]

[Chem 38]



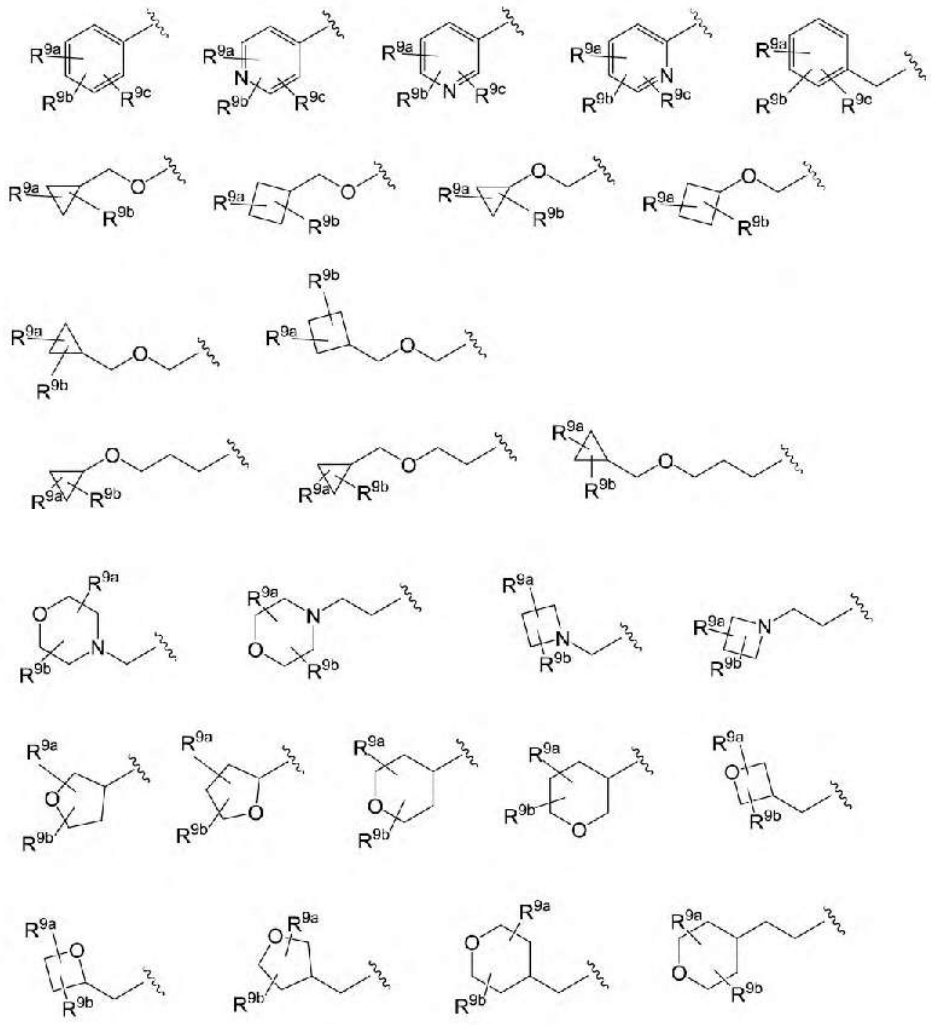
(wherein R^{9a}, R^{9b} and R^{9c} are, independently each other, a hydrogen atom, a halogen atom, a hydroxy group, a cyano group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, or a C_1-C_6 haloalkoxy group.).

[0112]

In addition, in another aspect of the present invention, preferable R^{4a}, R^{4b} and R^{4c} are, independently each other, a halogen atom, a hydroxy group, a cyano group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group optionally substituted by a C_1-C_4 haloalkoxy group, a C_1-C_4 haloalkoxy-C_1-C_4 alkyl group, a C_1-C_4 haloalkoxy-C_1-C_4 alkoxy group, a C_1-C_4 alkylthio-C_1-C_4 alkyl group, a C_1-C_4 haloalkylthio-C_1-C_4 alkyl group, $-(CH_2)_qNR^{b1}R^{b2}$ (q, R^{b1} and R^{b2} have the same definition as given in the (0).), or a substituent selected from the group consisting of the following formulae:

[0113]

[Chem 39]

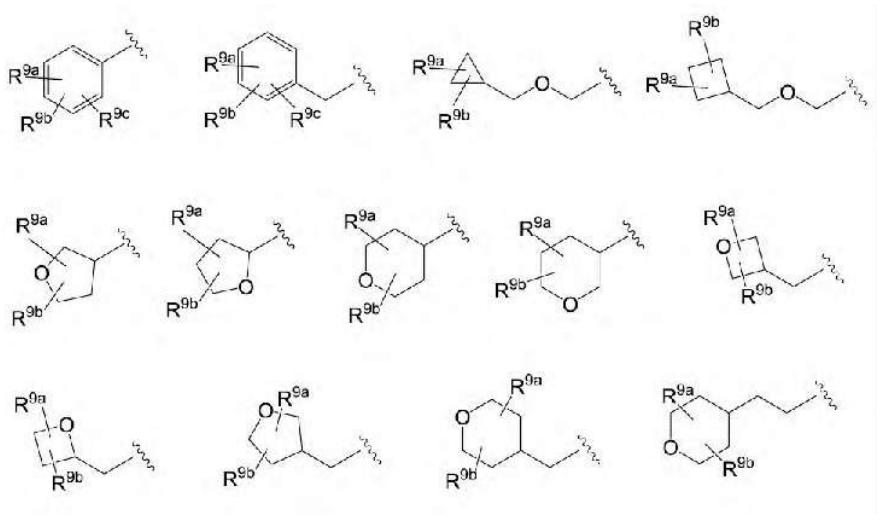


(wherein R^{9a}, R^{9b} and R^{9c} have the same definition as given in the (0).),

more preferable R^{4a}, R^{4b} and R^{4c} are, independently each other, a halogen atom, a cyano group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group optionally substituted by a C_1-C_4 haloalkoxy group, a C_1-C_4 haloalkoxy-C_1-C_4 alkyl group, a C_1-C_4 haloalkoxy-C_1-C_4 alkoxy group, or a substituent selected from the group consisting of the following formulae:

[0114]

[Chem 40]



(wherein R^{9a}, R^{9b} and R^{9c} are, independently each other, a hydrogen atom, a halogen atom, a hydroxy group, a cyano group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, or a C_1-C_6 haloalkoxy group.).

[0115]

When R^{5a}, R^{5b}, R^{5c}, R^{6a}, R^{6b} and n fulfill the constitution (i) in the (0), the present inventive compounds are preferable, wherein

R^{5b} and R^{5c} together form a single bond, $-CH_2O-$, $-CH_2S-$, $-CH_2NR^{e1}-$, $-CH_2CH_2-$, or $-CONR^{e1}-$ (R^{e1} and R^{e2} have the same definition as given in the (0).),

R^{5a} is a hydrogen atom or a C_1-C_6 alkyl group,

R^{6a} and R^{6b} are, independently each other, a hydrogen atom, a fluorine atom, a hydroxy group, or a methoxy group, and

n is 1 or 2.

More preferably, the present inventive compounds are preferable, wherein, among R^{5a}, R^{5b}, R^{5c}, R^{6a} and R^{6b}, R^{5b} and R^{5c} together form $-CH_2O-$, R^{5a}, R^{6a} and R^{6b} are hydrogen atoms, and n is 1.

[0116]

In the general formula (I-E2), Z^2-Z^3 is preferably $-CH_2O-$, $-CH_2S-$, $-CH_2NR^{f1}-$, $-CH_2CH_2-$, or $-CONR^{f1}-$ (R^{f1} and R^{f2} is a hydrogen atom or a C_1-C_4 alkyl group.),

more preferably, Z^2-Z^3 forms $-CH_2O-$.

[0117]

In the general formula (I) or the general formula (I-E2), R^{5a} is more preferably a hydrogen atom, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_3-C_7 cycloalkyl group, or a heterocycloalkyl group,

more preferably, R^{5a} is a hydrogen atom.

[0118]

In the general formula (I-E2), when Z^4 is C-R^{11a}, R^{11a} is preferably a hydrogen atom, a halogen atom, a cyano group, a cyanomethyl group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, or a C_1-C_6 haloalkoxy group,

more preferably, R^{11a} is a hydrogen atom, a halogen atom, a cyano group, a C_1-C_6 alkyl group, or a C_1-C_6 haloalkyl group,

further preferably, R^{11a} is a hydrogen atom.

[0119]

In the general formula (I-E2), R^{11b} is R^{3b} in the (0); preferable substituent thereof is the above mentioned preferable R^{3b}.

In the general formula (I-E2), R^{11c} is R^{3c} in the (0); preferable substituent thereof is the above mentioned preferable R^{3c}.

[0120]

As regards the present inventive heteroaromatic amide derivative or salt thereof of the general formula (I-E2), preferable combinations of atoms, substituent groups, or rings are then hereinbelow explained.

[0121]

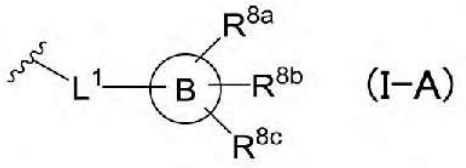
In one embodiment of the present invention, in a compound represented by the general formula (I-E2) having R^{11a}, R^{11b}, R^{11c} and at least one of R^{4a}, R^{4b} and R^{4c}, preferable combinations of these substituents are selected from the group consisting of the following:

R^{11a} is a hydrogen atom, a halogen atom, a cyano group, a cyanomethyl group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, or a C_1-C_6 haloalkoxy group,

R^{11b} and R^{11c} are, independently each other, a hydrogen atom, a halogen atom, a cyano group, a cyanomethyl group, a formyl group, a nitro group, a carboxamide group, a hydroxy group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group optionally substituted by a dimethylaminocarbonyl group or a dimethylamino group, a C_1-C_4 haloalkoxy-C_1-C_4 alkyl group, a C_1-C_4 alkoxy-C_1-C_4 haloalkyl group, a C_1-C_4 haloalkoxy-C_1-C_4 haloalkyl group, a C_1-C_6 alkylcarbonyl group, a C_2-C_6 alkenyl group, a C_2-C_6 alkynyl group, a C_2-C_6 alkynyl group optionally substituted by a halogen atom, a C_1-C_6 alkylthio group, a C_1-C_6 haloalkylthio group, -$(CH_2)_pNR^{a1}R^{a2}$ (p, R^{a1} and R^{a2} have the same definition as given in the (0).), or a group represented by the general formula (I-A)

[0122]

[Chem 41]



(I-A)

{wherein,

ring B is a C_3-C_7 cycloalkyl, an azetidinyl, a pyrrolidinyl, a piperidyl, a piperazinyl, a morpholino, a phenyl, a pyrrolyl, a furyl, a thienyl, an imidazolyl, a pyrazolyl, an oxazolyl, a thiazolyl, a triazolyl, a pyridyl, a pyrazinyl, a pyridazinyl, or a pyrimidinyl,

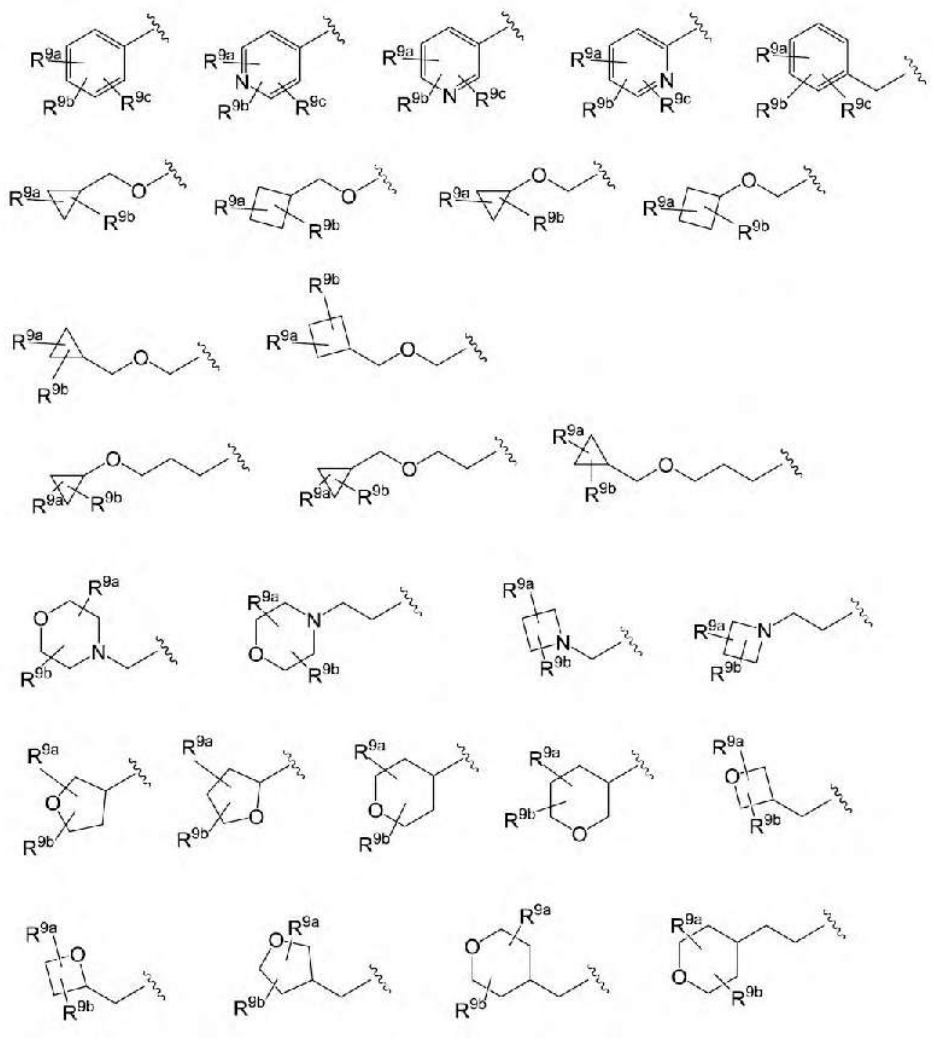
L^1 is a single bond, $-CH_2-$, $-CH_2O-$, $-OCH_2-$, $-CH_2CH_2-$, or $-CH_2OCH_2-$,

R^{8a}, R^{8b} and R^{8c} are, independently each other, a hydrogen atom, a halogen atom, a cyano group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_3-C_7 cycloalkyl group, a C_3-C_7 cycloalkyloxy group, a heterocycloalkyl group, a heterocycloalkyloxy group, a C_2-C_6 alkenyl group, or a C_2-C_6 alkynyl group.},

R^{4a}, R^{4b} and R^{4c} are, independently each other, a halogen atom, a hydroxy group, a cyano group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group optionally substituted by a C_1-C_4 haloalkoxy group, a C_1-C_4 haloalkoxy-C_1-C_4 alkyl group, a C_1-C_4 haloalkoxy-C_1-C_4 alkoxy group, a C_1-C_4 alkylthio-C_1-C_4 alkyl group, a C_1-C_4 haloalkylthio-C_1-C_4 alkyl group, $-(CH_2)_qNR^{b1}R^{b2}$ (q, R^{b1} and R^{b2} have the same definition as given in the (0).), or a substituent selected from the group consisting of the following formulae:

[0123]

[Chem 42]



(wherein R^{9a}, R^{9b} and R^{9c} have the same definition as given in the (0).).

[0124]

In one embodiment of the present invention, in a compound represented by the general formula (I) or the general formula (I-E2) having R^2 and at least one of R^{4a}, R^{4b} and R^{4c}, preferable combinations of these substituents are selected from the group consisting of the following:

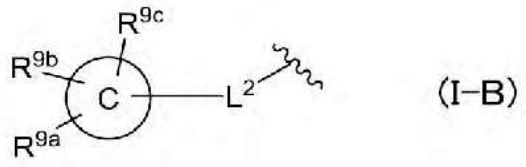
R^2 is a hydrogen atom, a halogen atom, a hydroxy group, or a cyano group,

R^{4a}, R^{4b} and R^{4c} are, independently each other, a halogen atom, a hydroxy group, a cyano group, a C_1-C_6 alkyl group, a C_1-C_6 alkyl group optionally substituted by a hydroxy group, a C_1-C_6 haloalkyl group, a C_1-C_6 haloalkyl group optionally substituted by a hydroxy group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group optionally substituted by a C_1-C_4 haloalkoxy group, a C_1-C_4 haloalkoxy-C_1-C_4 alkyl group, a C_1-C_4 alkoxy-C_1-C_4 haloalkyl group, a C_1-C_4 haloalkoxy-C_1-C_4 haloalkyl group, a C_1-C_6 alkylcarbonyl group, a C_1-C_6 alkoxycarbonyl group, a C_1-C_6 haloalkylcarbonyl group, a C_3-C_7 cycloalkyl group, a C_3-

C_7 cycloalkyl group optionally substituted by a halogen atom or a C_1-C_4 haloalkyl group, a heterocycloalkyl group, a C_2-C_6 alkenyl group, a C_2-C_6 alkenyloxy group, a C_2-C_6 alkenyloxy-C_1-C_4 alkyl group, a C_2-C_6 alkenyloxy-C_1-C_4 alkyl group optionally substituted by a halogen atom, a C_2-C_6 alkynyl group, a C_2-C_6 alkynyl group optionally substituted by a halogen atom or a methoxy group, a C_2-C_6 alkynyloxy-C_1-C_4 alkyl group, a C_1-C_4 haloalkoxy-C_1-C_4 alkoxy group, a C_1-C_6 alkylthio group, a C_1-C_6 haloalkylthio group, a C_1-C_4 alkylthio-C_1-C_4 alkyl group, a C_1-C_4 haloalkylthio-C_1-C_4 alkyl group, $-(CH_2)_qNR^{b1}R^{b2}$ (q, R^{b1} and R^{b2} have the same definition as given in the (0).), or the general formula (I-B)

[0125]

[Chem 43]



(I-B)

{wherein,

ring C is a C_3-C_7 cycloalkyl, an azetidinyl, a pyrrolidinyl, a piperidyl, a piperazinyl, a morpholino, a phenyl, a pyrrolyl, a furyl, a thienyl, an imidazolyl, a pyrazolyl, an oxazolyl, a thiazolyl, a triazolyl, a pyridyl, a pyrazinyl, a pyridazinyl, or a pyrimidinyl,

L^2 is a single bond, -CH=CH-, -C≡C-,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}NR^{c}(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}CO(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}S(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-, or

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}SO(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$- ($R^{10a}$, R^{10b}, R^{10c}, R^{10d}, R^{10e}, R^{10f}, R^{10g}, R^{10h}, r1, r2, r3, r4 and R^c have the same definition as given in the (0).),

R^{9a}, R^{9b} and R^{9c} are, independently each other, a hydrogen atom, a halogen atom, a hydroxy group, a cyano group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_1-C_6 alkoxycarbonyl group, a heterocycloalkyloxy group, or $-(CH_2)_sNR^{d1}R^{d2}$ (s, R^{d1} and R^{d2} have the same definition as given in the (0).).}.

[0126]

In one embodiment of the present invention, in a compound represented by the general formula (I-E2) having Z^2-Z^3, R^{6a} , R^{6b}, R^{11a}, R^{11b} and R^{11c}, preferable combinations of these substituents are selected from the group consisting of the following:

Z^2-Z^3 is -CH_2O-, -CH_2S-, -CH_2NR^{f1}-, -CH_2CH_2-, or -$CONR^{f1}$- (R^{f1} and R^{f2} is a hydrogen atom or a C_1-C_4 alkyl group.),

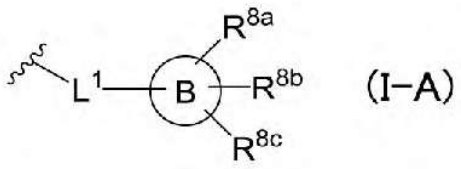
R^{6a} and R^{6b} are, independently each other, a hydrogen atom, a fluorine atom, a hydroxy group, or a methoxy group,

R^{11a} is a hydrogen atom, a halogen atom, a cyano group, a cyanomethyl group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, or a C_1-C_6 haloalkoxy group,

R^{11b} and R^{11c} are, independently each other, a hydrogen atom, a halogen atom, a cyano group, a cyanomethyl group, a formyl group, a nitro group, a carboxamide group, a hydroxy group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group optionally substituted by a dimethylaminocarbonyl group or a dimethylamino group, a C_1-C_4 haloalkoxy-C_1-C_4 alkyl group, a C_1-C_4 alkoxy-C_1-C_4 haloalkyl group, a C_1-C_4 haloalkoxy-C_1-C_4 haloalkyl group, a C_1-C_6 alkylcarbonyl group, a C_2-C_6 alkenyl group, a C_2-C_6 alkynyl group, a C_2-C_6 alkynyl group optionally substituted by a halogen atom, a C_1-C_6 alkylthio group, a C_1-C_6 haloalkylthio group, -$(CH_2)_pNR^{a1}R^{a2}$ (p, R^{a1} and R^{a2} have the same definition as given in the (0).), or the general formula (I-A)

[0127]

[Chem 44]



(I-A)

{wherein,

ring B is a C_3-C_7 cycloalkyl, an azetidinyl, a pyrrolidinyl, a piperidyl, a piperazinyl, a morpholino, a phenyl, a pyrrolyl, a furyl, a thienyl, an imidazolyl, a pyrazolyl, an oxazolyl, a thiazolyl, a triazolyl, a pyridyl, a pyrazinyl, a pyridazinyl, or a pyrimidinyl,

L^1 is a single bond, -CH_2-, -CH_2O-, -OCH_2-, -CH_2CH_2-, or -CH_2OCH_2-,

R^{8a}, R^{8b} and R^{8c} are, independently each other, a hydrogen atom, a halogen atom, a cyano group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_3-C_7 cycloalkyl group, a C_3-C_7 cycloalkyloxy group, a heterocycloalkyl group, a heterocycloalkyloxy group, a C_2-C_6 alkenyl group, or a C_2-C_6 alkynyl group.}.

[0128]

Regarding the heteroaromatic amide derivative represented by the general formula (I) or (I-E2) of the present invention, preferable compounds are then explained.

[0129]

In one embodiment of the present invention, preferable compounds of the heteroaromatic amide derivative represented by the general formula (I-E2) are the heteroaromatic amide derivatives or salt thereof set forth in the above described (4) to (15).

[0130]

In another embodiment of the present invention, for example, the present inventive compounds belonging to the following "derivative" are preferable in the compounds of the heteroaromatic amide derivative represented by the general formula (I) or the general formula (I-E2). Any "derivative" includes pharmaceutically acceptable salt thereof, and one compound can belong to plural "derivative" groups.

[0131]

Type (a) derivative:

A group of compounds wherein, in the general formula (I) or the general formula (I-E2), X^1-X^2 is C-N, and Y^1 is –O-; specifically, a 2,3-dihydropyrazolo[5,1-b]oxazole derivative, a 6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine derivative, a 5,6,7,8-tetrahydropyrazolo[5,1-b][1,3]oxepin derivative and so on.

Type (b) derivative:

A group of compounds wherein, in the general formula (I) or the general formula (I-E2), X^1-X^2 is C-N, and $Y^1$is -CH_2-; specifically, a 4,5,6,7-tetrahydropyrazolo[1, 5-a]pyrazine derivative, a 4,5,6,7-tetrahydropyrazolo[1, 5-a]pyridine derivative, a 6,7-dihydro-4H-pyrazolo[5,1-c][1,4]oxazine derivative and so on.

Type (c) derivative:

A group of compounds wherein, in the general formula (I) or the general formula (I-E2), X^1-X^2 is N-C, and Y^1 is -CH_2-; specifically, a 5,6,7,8-tetrahydroimidazo[1,2-a]pyridine derivative, a 5,6,7,8-tetrahydroimidazo[1,2-a]pyrazine derivative, a 5, 6-dihydro-8H-imidazo[2, 1-c][1,4]oxazine derivative and so on.

Type (d) derivative:

Heteroaromatic amide derivatives of the general formula (I) or the general formula (I-E2), wherein R^2 is an optionally substituted saturated, partially saturated or unsaturated 3- to 7-membered monocyclic ring.

[0132]

Each "derivative" is then explained separately to show compounds in preferable embodiments. Meanwhile, any compound in each "derivative" comprises optically active substances and pharmaceutically acceptable salt thereof.

[0133]

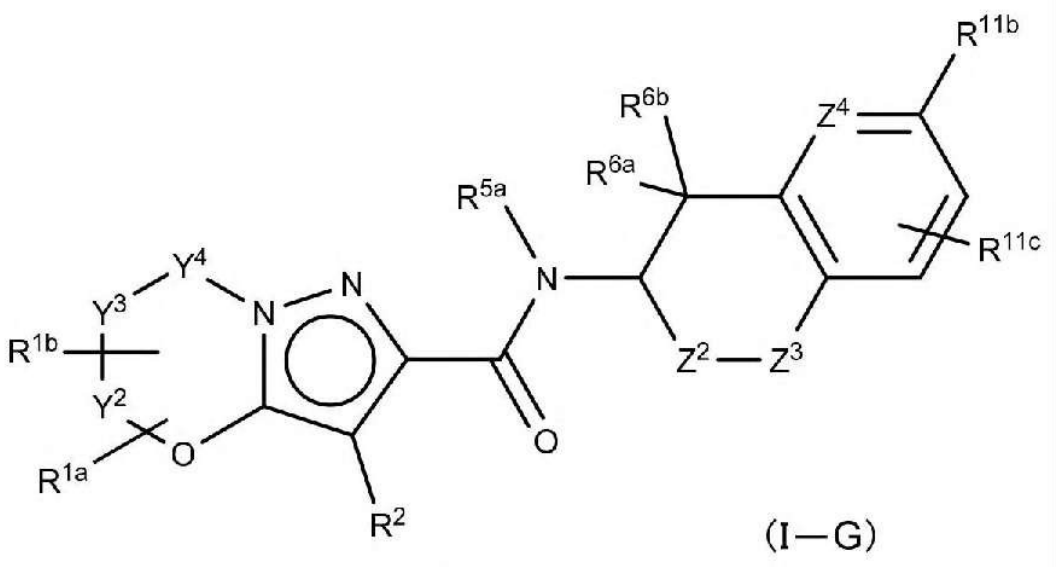
As type (a) derivatives in the present inventive general formula (I) or general formula (I-E2), the following compounds are preferable:

[0134]

a1) A heteroaromatic amide derivative or salt thereof represented by the general formula (I-G) below:

[0135]

[Chem 45]



[wherein,

Y^2, Y^3, Y^4, R^{1a}, R^{1b}, R^{6a}, and R^{6b} have the same definition as given in the (0),

Z^2-Z^3, Z^4, R^{5a}, R^{11b}, and R^{11c} have the same definition as given in the (7),

R^2 is a hydrogen atom, a halogen atom, a hydroxy group, or a cyano group,

with a proviso that at least one of Y^2, Y^3, or Y^4 is $-CR^{4a}R^{4b}-$, $CR^{4a}H-$, $-CH_2CR^{4a}R^{4b}-$, $-CH_2CR^{4a}H-$, or $-NR^{4c}-$ (R^{4a}, R^{4b} and R^{4c} have the same definition as given in the (0).).]

[0136]

a2) The heteroaromatic amide derivative or salt thereof described in the a1), wherein in the general formula (I-G),

Y^2, Y^3 and Y^4 together form

$-CR^{4a}HCH_2CH_2-$, $-CR^{4a}R^{4b}CH_2CH_2-$, $-CH_2CH_2-$, $-CR^{4a}HCH_2-$, $-CR^{4a}R^{4b}CH_2-$, $-CH_2CH_2CH_2CH_2-$, $-CR^{4a}HCH_2CH_2CH_2-$, or $-CH_2CR^{4a}HCH_2CH_2-$ (R^{4a}, R^{4b} have the same definition as given in the (0).).

[0137]

a3) The heteroaromatic amide derivative or salt thereof described in the a2) or a3), wherein in the general formula (I-G),

Z^2-Z^3 is -CH_2O-, -CH_2S-, -CH_2NR^{f1}-, -CH_2CH_2-, or -$CONR^{f1}$- (R^{f1} and R^{f2} have the same definition as given in the (7).),

R^{5a}, R^{6a} and R^{6b} are hydrogen atoms.

[0138]

a4) The heteroaromatic amide derivative or salt thereof in any one of the a1) to a3), wherein in the general formula (I-G),

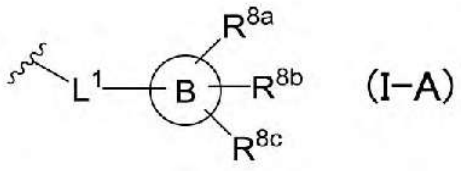
Z^2-Z^3 is -CH_2O-,

R^{11a} is a hydrogen atom, a halogen atom, a cyano group, a C_1-C_6 alkyl group, or a C_1-C_6 haloalkyl group,

R^{11b} and R^{11c} are, independently each other, a hydrogen atom, a halogen atom, a cyano group, a cyanomethyl group, a formyl group, a nitro group, a carboxamide group, a hydroxy group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group optionally substituted by a dimethylaminocarbonyl group or a dimethylamino group, a C_1-C_4 haloalkoxy-C_1-C_4 alkyl group, a C_1-C_4 alkoxy-C_1-C_4 haloalkyl group, a C_1-C_4 haloalkoxy-C_1-C_4 haloalkyl group, a C_1-C_6 alkylcarbonyl group, a C_2-C_6 alkenyl group, a C_2-C_6 alkynyl group, a C_2-C_6 alkynyl group optionally substituted by a halogen atom, a C_1-C_6 alkylthio group, a C_1-C_6 haloalkylthio group, -$(CH_2)_pNR^{a1}R^{a2}$ (p, R^{a1} and R^{a2} have the same definition as given in the (0).), or a group represented by the general formula (I-A)

[0139]

[Chem 46]



(I-A)

{wherein,

ring B is a C_3-C_7 cycloalkyl, an azetidinyl, a pyrrolidinyl, a piperidyl, a piperazinyl, a morpholino, a phenyl, a pyrrolyl, a furyl, a thienyl, an imidazolyl, a pyrazolyl, an oxazolyl, a thiazolyl, a triazolyl, a pyridyl, a pyrazinyl, a pyridazinyl, or a pyrimidinyl,

L^1 is a single bond, -CH_2-, -CH_2O-, -OCH_2-, -CH_2CH_2-, or -CH_2OCH_2- (R^{a1} and R^{a2} have the same definition as given in the (0).),

R^{8a}, R^{8b} and R^{8c} are, independently each other, a hydrogen atom, a halogen atom, a cyano group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_3-C_7 cycloalkyl group, a C_3-C_7 cycloalkyloxy group, a heterocycloalkyl group, a heterocycloalkyloxy group, a C_2-C_6 alkenyl group, or a C_2-C_6 alkynyl group.}.

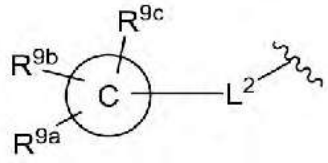
[0140]

a5) The heteroaromatic amide derivative or salt thereof in any one of the a1) to a4), wherein in the general formula (I-G),

R^{4a} is a halogen atom, a hydroxy group, a cyano group, a C_1-C_6 alkyl group, a C_1-C_6 alkyl group optionally substituted by a hydroxy group, a C_1-C_6 haloalkyl group, a C_1-C_6 haloalkyl group optionally substituted by a hydroxy group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group optionally substituted by a C_1-C_4 haloalkoxy group, a C_1-C_4 haloalkoxy-C_1-C_4 alkyl group, a C_1-C_4 alkoxy-C_1-C_4 haloalkyl group, a C_1-C_4 haloalkoxy-C_1-C_4 haloalkyl group, a C_1-C_6 alkylcarbonyl group, a C_1-C_6 alkoxycarbonyl group, a C_1-C_6 haloalkylcarbonyl group, a C_3-C_7 cycloalkyl group, a C_3-C_7 cycloalkyl group optionally substituted by a halogen atom or a C_1-C_4 haloalkyl group, a heterocycloalkyl group, C_2-C_6 alkenyl group, a C_2-C_6 alkenyloxy group, a C_2-C_6 alkenyloxy-C_1-C_4 alkyl group, a C_2-C_6 alkenyloxy-C_1-C_4 alkyl group optionally substituted by a halogen atom, a C_2-C_6 alkynyl group, a C_2-C_6 alkynyl group optionally substituted by a halogen atom or methoxy group, a C_2-C_6 alkynyloxy-C_1-C_4 alkyl group, a C_1-C_4 haloalkoxy-C_1-C_4 alkoxy group, a C_1-C_6 alkylthio group, C_1-C_6 haloalkylthio group, a C_1-C_4 alkylthio-C_1-C_4 alkyl group, a C_1-C_4 haloalkylthio-C_1-C_4 alkyl group, $-(CH_2)_qNR^{b1}R^{b2}$ (q, R^{b1} and R^{b2} have the same definition as given in the (0).), or a group represented by the general formula (I-B)

[0141]

[Chem 47]



(I-B)

{wherein,

ring C is a C_3-C_7 cycloalkyl, an azetidinyl, a pyrrolidinyl, a piperidyl, a piperazinyl, a morpholino, a phenyl, a pyrrolyl, a furyl, a thienyl, an imidazolyl, a pyrazolyl, an oxazolyl, a thiazolyl, a triazolyl, a pyridyl, a pyrazinyl, a pyridazinyl, or a pyrimidinyl,

L^2 is a single bond, -CH=CH-, -C≡C-,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-,

-$(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}O(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-,
-$(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}NR^{c}(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-,
-$(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}CO(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-,
-$(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}S(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-, or
-$(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}SO(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$ (R^{10a}, R^{10b}, R^{10c}, R^{10d}, R^{10e}, R^{10f}, R^{10g}, R^{10h}, r1, r2, r3, r4 and R^{c} have the same definition as given in the (0).),

R^{9a}, R^{9b} and R^{9c} are, independently each other, a hydrogen atom, a halogen atom, a hydroxy group, a cyano group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_1-C_6 alkoxycarbonyl group, a heterocycloalkyloxy group, or -$(CH_2)_sNR^{d1}R^{d2}$ (s, R^{d1} and R^{d2} have the same definition as given in the (0).).}.

[0142]

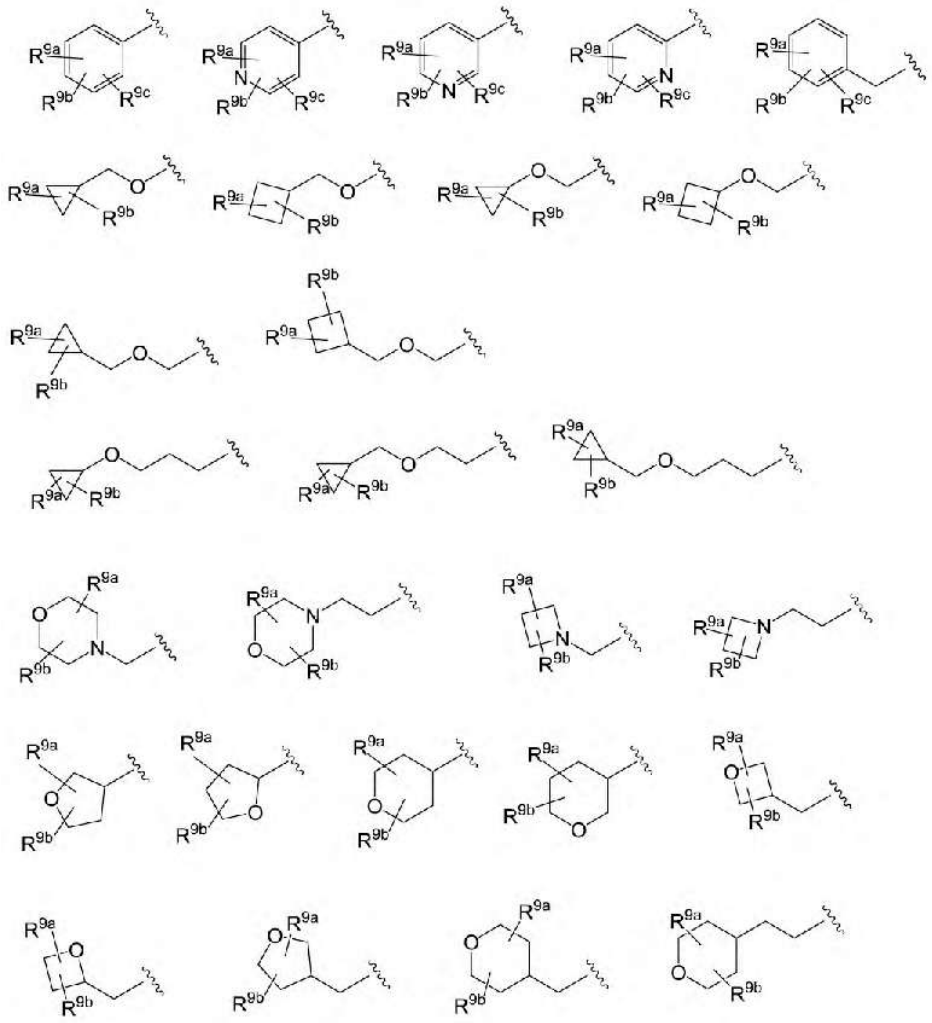
a6) The heteroaromatic amide derivative or salt thereof in any one of the a1) to a5), wherein in the general formula (I-G),

Y^2, Y^3 and Y^4 together form -$CR^{4a}HCH_2CH_2$-,

R^{4a} each independently are a halogen atom, a hydroxy group, a cyano group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group optionally substituted by a C_1-C_4 haloalkoxy group, a C_1-C_4 haloalkoxy-C_1-C_4 alkyl group, a C_1-C_4 haloalkoxy-C_1-C_4 alkoxy group, a C_1-C_4 alkylthio-C_1-C_4 alkyl group, a C_1-C_4 haloalkylthio-C_1-C_4 alkyl group, -$(CH_2)_qNR^{b1}R^{b2}$ (q, R^{b1} and R^{b2} have the same definition as given in the (0).), or substituents selected from the group consisting of the following formulae:

[0143]

[Chem 48]



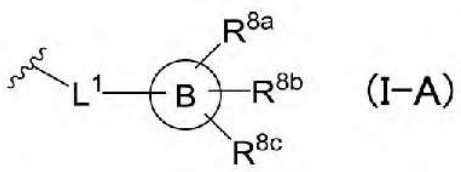
(wherein R^{9a}, R^{9b} and R^{9c} have the same definition as given in the (0).),

R^{11a} is a hydrogen atom,

R^{11b} and R^{11c} are, independently each other, a hydrogen atom, a halogen atom, a cyano group, a cyanomethyl group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group, a C_1-C_4 haloalkoxy-C_1-C_4 alkyl group, a C_2-C_6 alkenyl group, a C_2-C_6 alkynyl group, $-(CH_2)_pNR^{a1}R^{a2}$ (p is 1, and R^{a1} and R^{a2} are, independently each other, a hydrogen atom, a methyl group, an ethyl group, or a 2,2,2-trifluoroethyl group.), or a group represented by the general formula (I-A)

[0144]

[Chem 49]



{wherein,

ring B is a C_3-C_7 cycloalkyl, a morpholino, a phenyl, a pyrazolyl, a pyridyl, a pyrazinyl, a pyridazinyl, or a pyrimidinyl,

L^1 is a single bond,

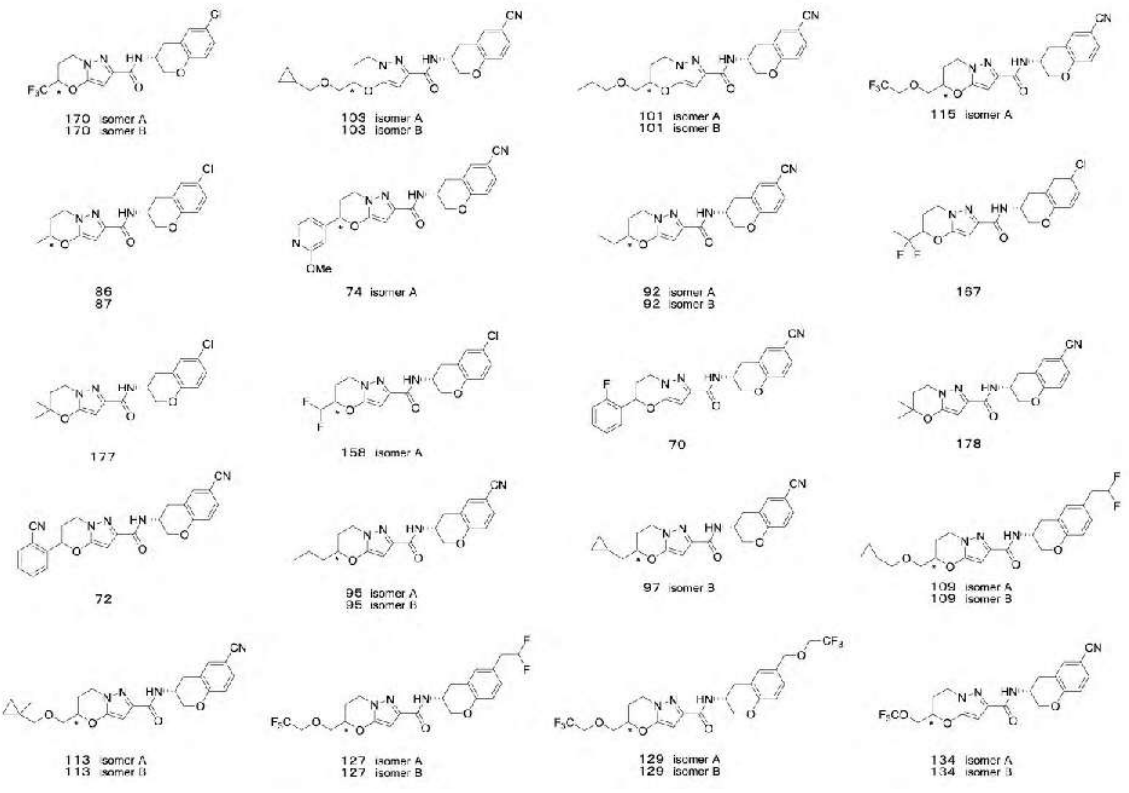
R^{8a}, R^{8b} and R^{8c} are, independently each other, a hydrogen atom, a halogen atom, a cyano group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, or a C_1-C_6 haloalkoxy group.}.

[0145]

a7) The heteroaromatic amide derivative or salt thereof in the a1), wherein the compound represented by the general formula (I-G) is the following (the meaning of the numbers and asterisks (*) are as those given in the (15)):

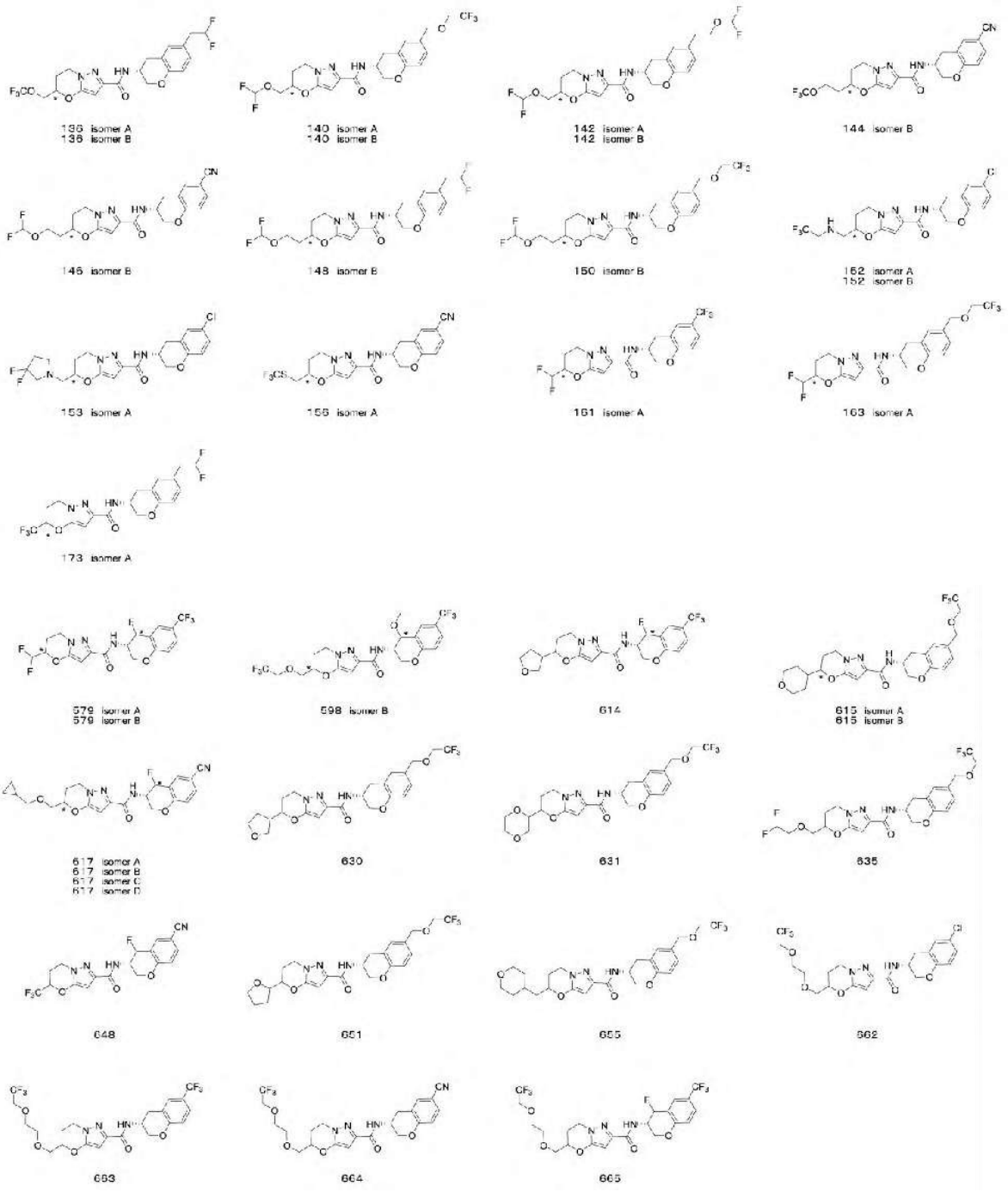
[0146]

[Chem 50]



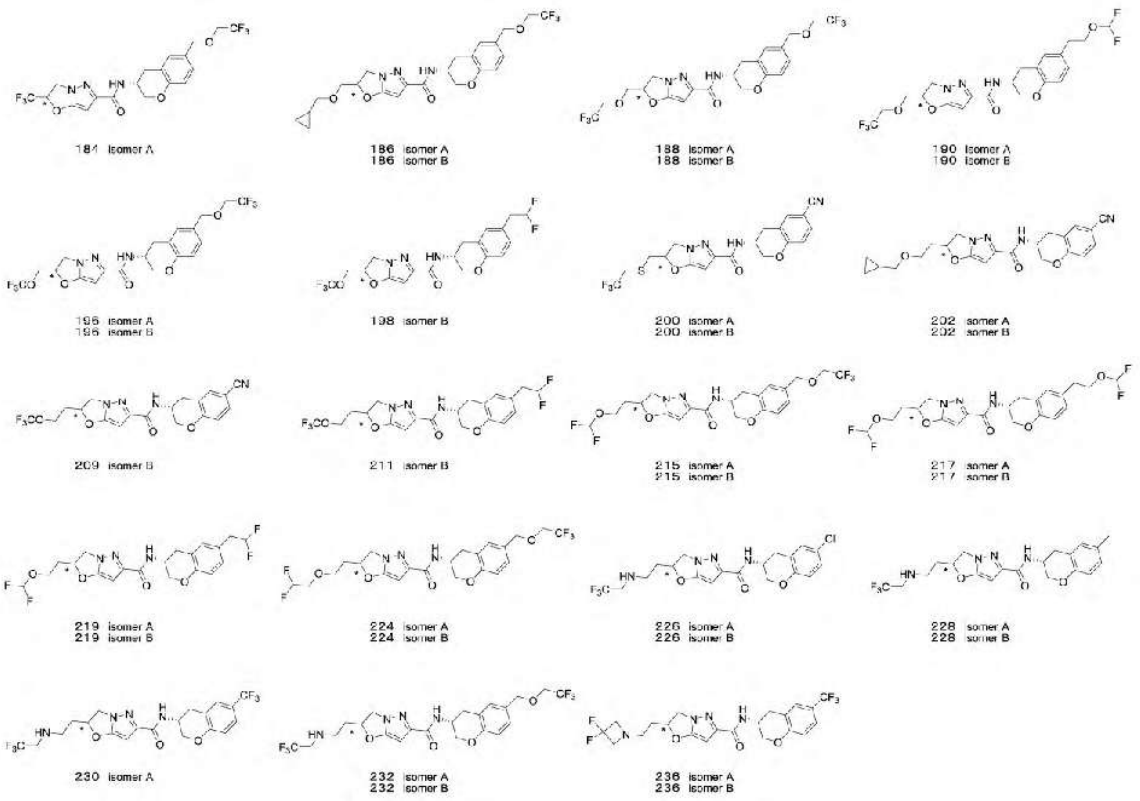
[0147]

[Chem 51]


136 isomer A
136 isomer B
140 isomer A
140 isomer B
142 isomer A
142 isomer B
144 isomer B
146 isomer B
148 isomer B
150 isomer B
152 isomer A
152 isomer B
153 isomer A
155 isomer A
161 isomer A
163 isomer A
173 isomer A
579 isomer A
579 isomer B
598 isomer B
614
615 isomer A
615 isomer B
617 isomer A
617 isomer B
617 isomer C
617 isomer D
630
631
635
648
651
655
662
663
664
665

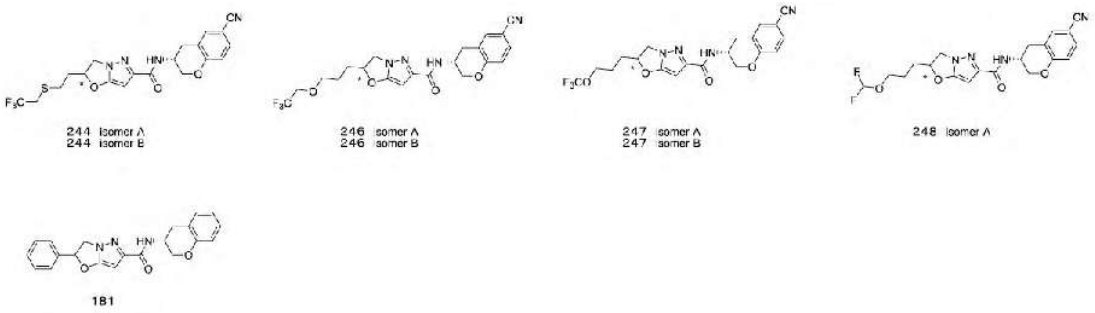
[0148]

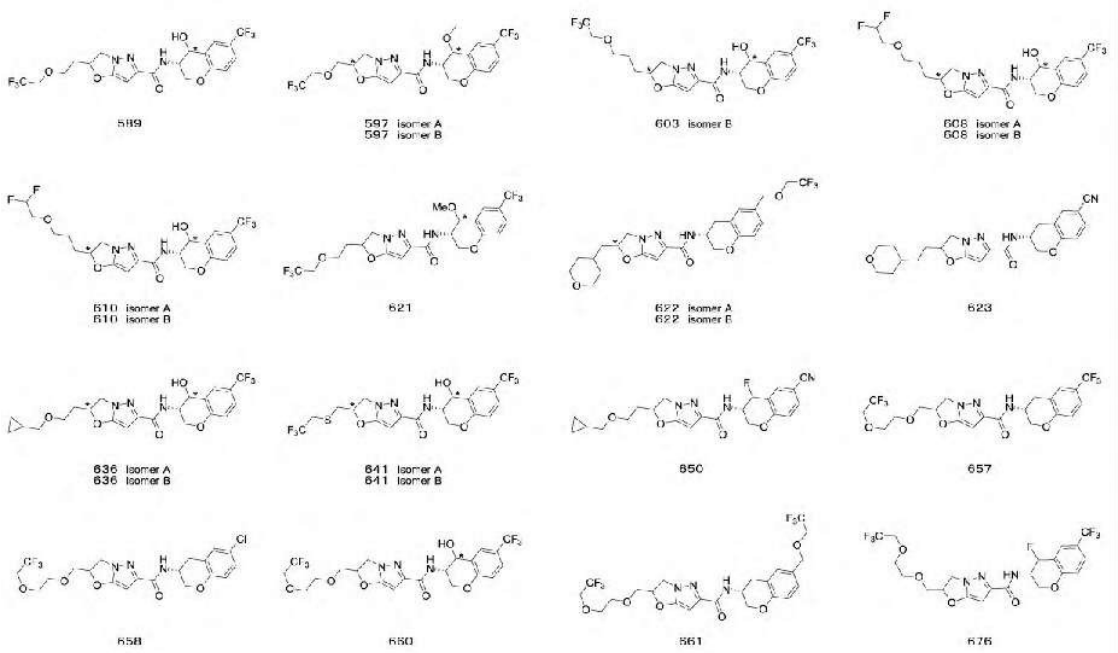
[Chem 52]


184 isomer A
186 isomer A
186 isomer B
188 isomer A
188 isomer B
190 isomer A
190 isomer B
196 isomer A
196 isomer B
198 isomer B
200 isomer A
200 isomer B
202 isomer A
202 isomer B
209 isomer B
211 isomer B
215 isomer A
215 isomer B
217 isomer A
217 isomer B
219 isomer A
219 isomer B
224 isomer A
224 isomer B
226 isomer A
226 isomer B
228 isomer A
228 isomer B
230 isomer A
232 isomer A
232 isomer B
236 isomer A
236 isomer B

[0149]

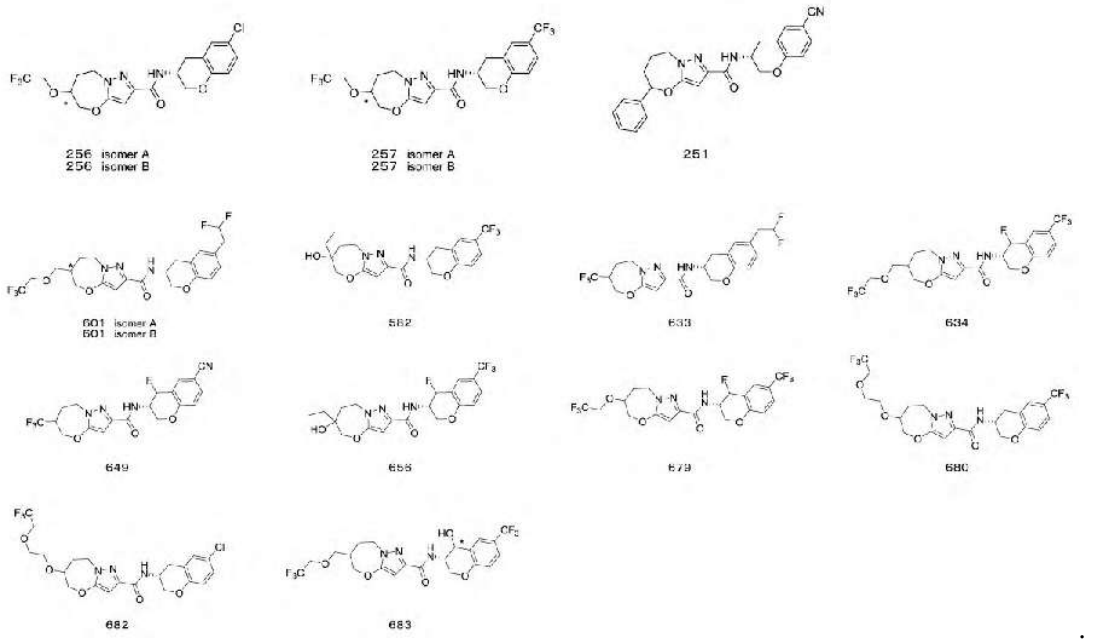
[Chem 53]


244 isomer A
244 isomer B
246 isomer A
246 isomer B
247 isomer A
247 isomer B
248 isomer A
181



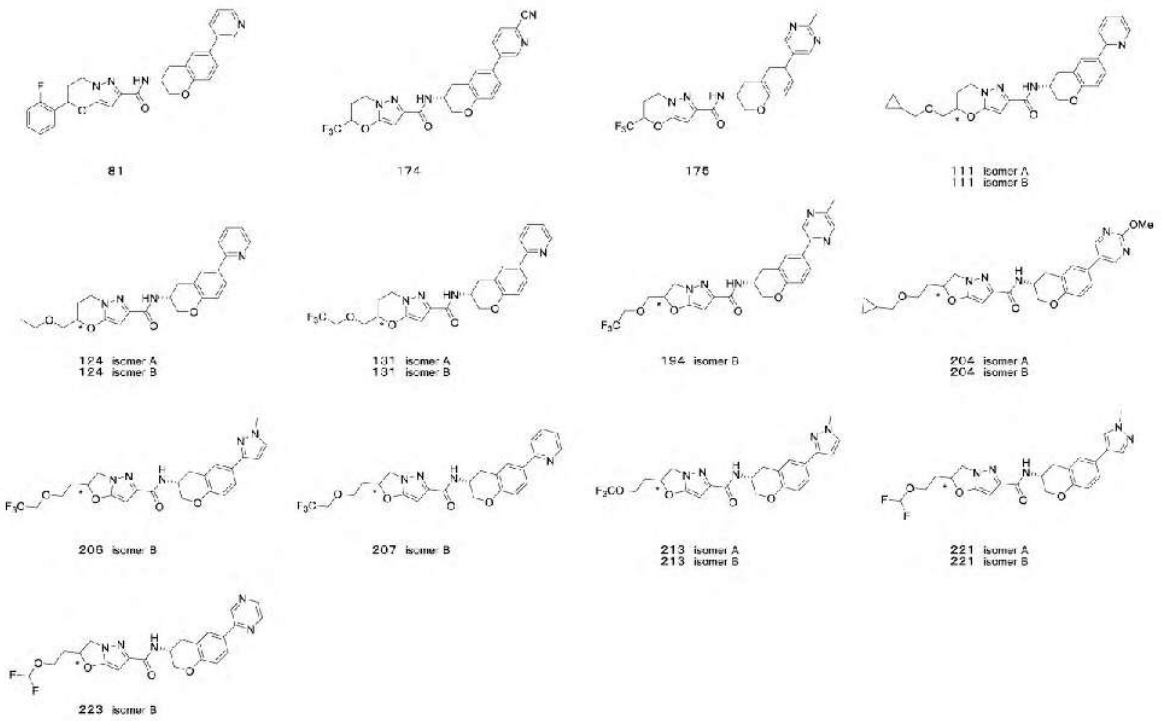
[0150]

[Chem 54]



[0151]

[Chem 55]



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[0152]

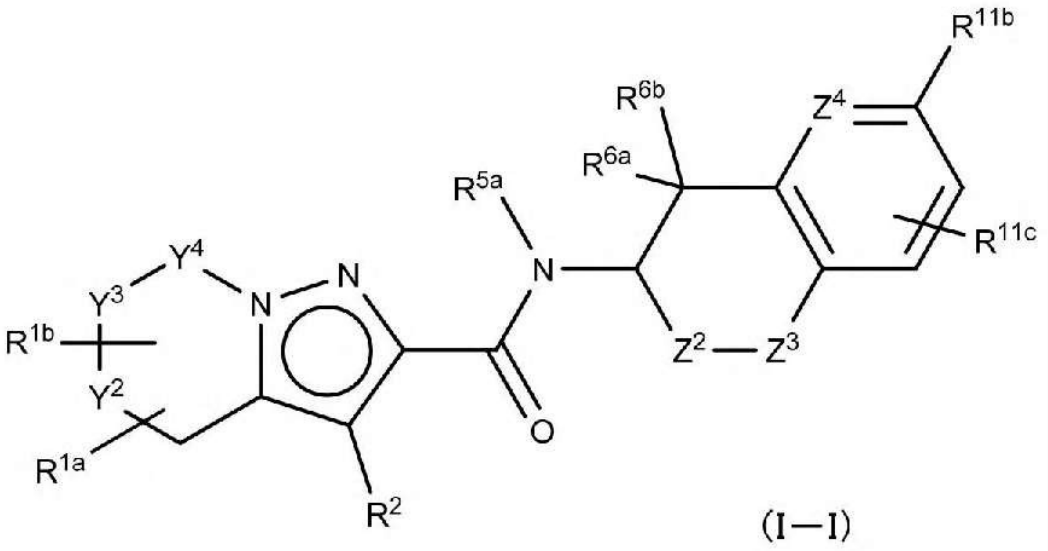
As type (b) derivatives in the present inventive general formula (I) or general formula (I-E2), the following compounds are preferable:

[0153]

b1) A heteroaromatic amide derivative or salt thereof represented by the general formula (I-I):

[0154]

[Chem 56]



[wherein,

Y^2, Y^3, Y^4, R^{1a}, R^{1b}, R^2, R^{6a}, and R^{6b} have the same definition as given in the (0),

Z^2-Z^3, Z^4, R^{5a}, R^{11b}, and R^{11c} have the same definition as given in in the (7) (with a proviso that at least one of Y^2, Y^3, or Y^4 is $-CR^{4a}R^{4b}-$, $-CR^{4a}H-$, $-CH_2CR^{4a}R^{4b}-$, $-CH_2CR^{4a}H-$, or $-NR^{4c}-$ (R^{4a}, R^{4b} and R^{4c} have the same definition as given in in the (0).).].

[0155]

b2) The heteroaromatic amide derivative or salt thereof set forth in the b1), wherein in the general formula (I-I),

Y^2, Y^3 and Y^4 together form

$-OCH_2CH_2-$, $-OCH_2CH_2CH_2-$,

$-CR^{4a}HCH_2CH_2-$, $-CR^{4a}R^{4b}CH_2CH_2-$, $-CH_2CR^{4a}HCH_2-$, or $-NR^{4c}CH_2CH_2-$ (R^{4a}, R^{4b} and R^{4c} have the same definition as given in the (0).).

[0156]

b3) The heteroaromatic amide derivative or salt thereof of the b1) or b2), wherein in the general formula (I-I),

Z^2-Z^3 is $-CH_2O-$, $-CH_2S-$, $-CH_2NR^{f1}-$, $-CH_2CH_2-$, or $-CONR^{f1}-$ (R^{f1} and R^{f2} have the same definition as given in the (7).),

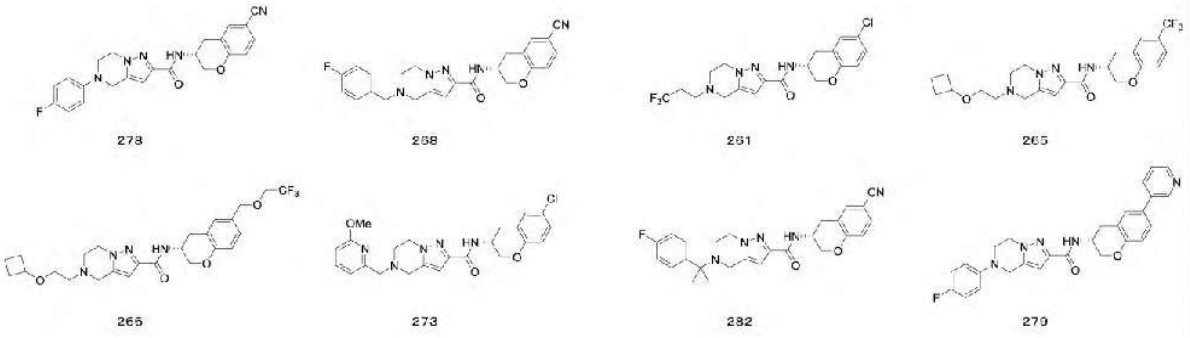
R^{5a}, R^{6a} and R^{6b} are hydrogen atoms.

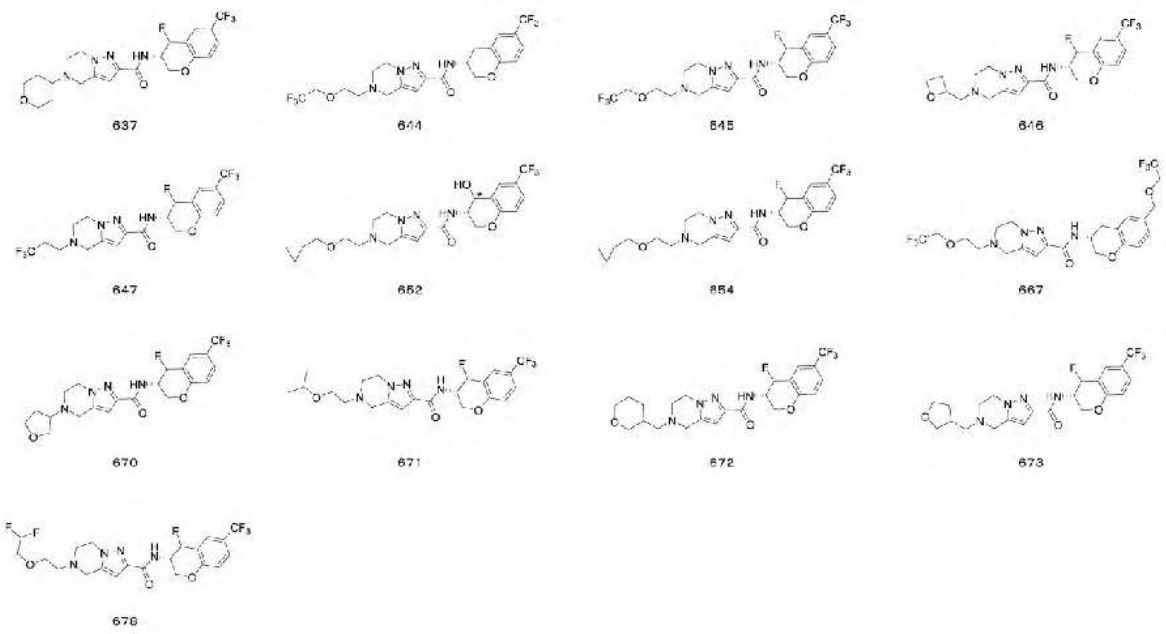
[0157]

b4) The heteroaromatic amide derivative or salt thereof set forth in the b1), wherein the compound represented by the general formula (I-I) is the following (the meaning of the numbers is as those given in the (15)),

[0158]

[Chem 57]





[0159]

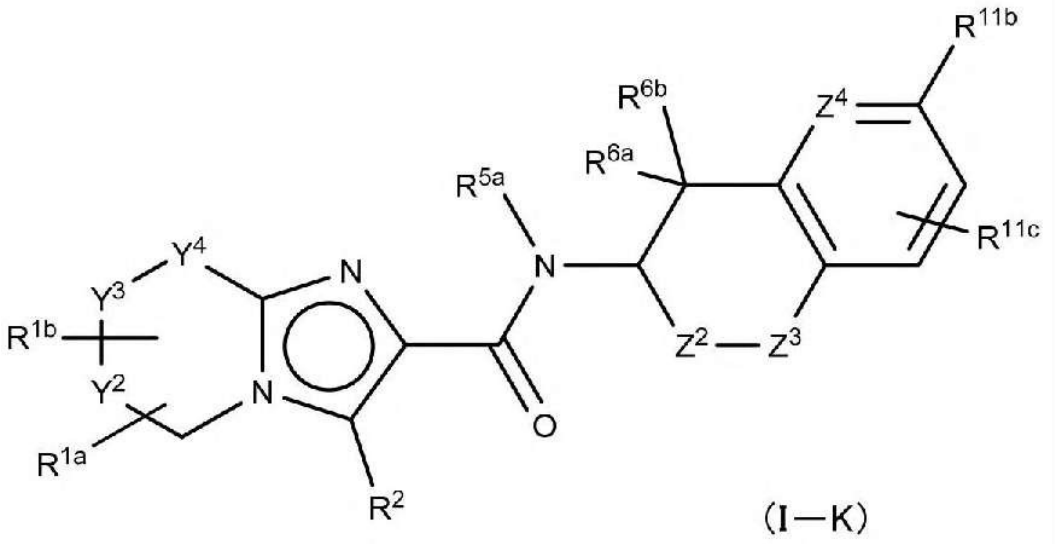
As type (c) derivatives in the present inventive general formula (I) or general formula (I-E2), the following compounds are preferable:

[0160]

c1) A heteroaromatic amide derivative or salt thereof represented by the general formula (I-K):

[0161]

[Chem 58]



[wherein,

Y^2, Y^3, Y^4, R^{1a}, R^{1b}, R^2, R^{6a}, and R^{6b} have the same definition as given in the (0),

Z^2-Z^3, Z^4, R^{5a}, R^{11b}, and R^{11c} have the same definition as given in the (7) (with a proviso that ring C is not a phenyl ring when Y^2, Y^3 and Y^4 together form $-CR^{4a}HCH_2CH_2-$, R^2 is a hydrogen atom, R^{4a} is a group represented by the general formula (I-B), and L^2 is a single bond , and

with a proviso that at least one of Y^2, Y^3, or Y^4 is $-CR^{4a}R^{4b}-$, $-CR^{4a}H-$, $-CH_2CR^{4a}R^{4b}-$, $-CH_2CR^{4a}H-$, or $-NR^{4c}-$ (R^{4a}, R^{4b} and R^{4c} have the same definition as given in the (0).).].

[0162]

c2) The heteroaromatic amide derivative or salt thereof set forth in the c1), wherein in the general formula (I-K),

Y^2, Y^3 and Y^4 together form

$-CR^{4a}HOCH_2-$, $-CR^{4a}HCH_2CH_2-$,

$-CH_2NR^{4c}CH_2-$, $-CR^{4a}HNR^{4c}CH_2-$, or $-CR^{4a}HNHCH_2-$ (R^{4a} and R^{4c} have the same definition as given in the (0).).

[0163]

c3) The heteroaromatic amide derivative or salt thereof of the c1) or c2), wherein in the general formula (I-K),

Z^2-Z^3 is $-CH_2O-$, $-CH_2S-$, $-CH_2NR^{f1}-$, $-CH_2CH_2-$, or $-CONR^{f1}-$ (R^{f1} and R^{f2} have the same definition as given in the (7).),

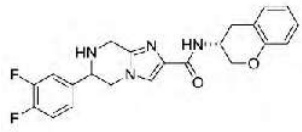
R^{5a}, R^{6a} and R^{6b} are a hydrogen atom.

[0164]

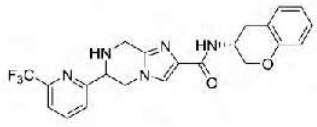
c4) The heteroaromatic amide derivative or salt thereof of the c1), wherein the compound represented by the general formula (I-K) is the following (the meaning of the numbers is as those given in the (15)):

[0165]

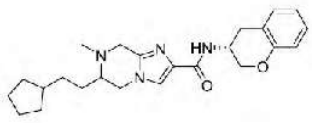
[Chem 59]



44



46



52

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[0166]

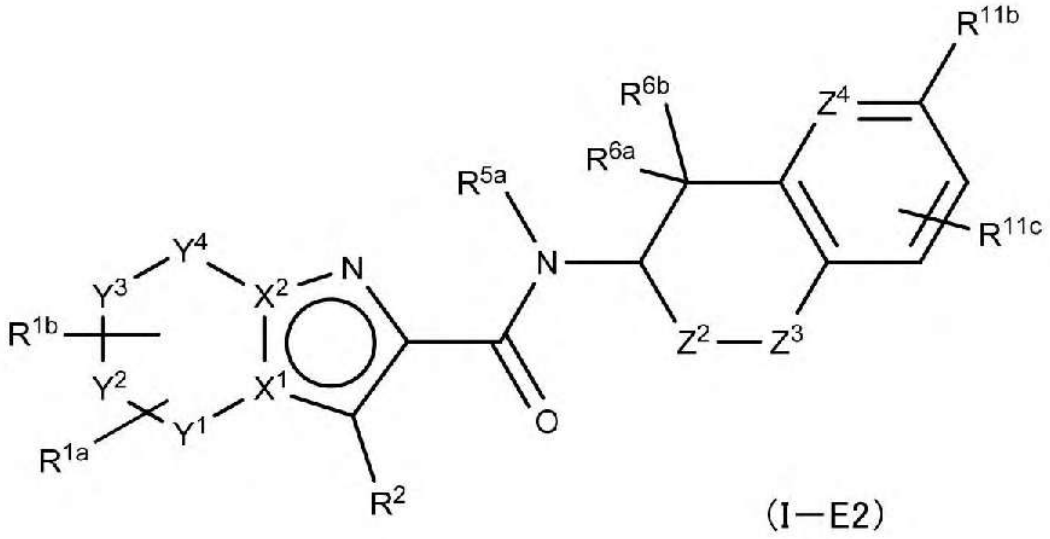
As type (d) derivatives in the present inventive general formula (I) or general formula (I-E2), the following compounds are preferable:

[0167]

d1) A heteroaromatic amide derivative or salt thereof represented by the general formula (I-E2):

[0168]

[Chem 60]



(I—E2)

[wherein,

R^{1a}, R^{1b}, R^{6a}, and R^{6b} have the same definition as given in the (0),

Z^2-Z^3, Z^4, R^{5a}, R^{11b}, and R^{11c} have the same definition as given in the (7),

R^2 is an optionally substituted saturated, partially saturated or unsaturated 3- to 7-membered monocyclic ring, and

Y^1, Y^2, Y^3 and Y^4 together form

$-OCH_2CH_2CH_2-$, $-OCR^{4a}HCH_2CH_2-$, $-OCR^{4a}R^{4b}CH_2CH_2-$

$-OCH_2CH_2-$, $-OCR^{4a}HCH_2-$, $-OCR^{4a}R^{4b}CH_2-$,

$-OCH_2CH_2CH_2CH_2-$, $-OCR^{4a}HCH_2CH_2CH_2-$, $-OCR^{4a}R^{4b}CH_2CH_2CH_2-$,

$-OCH_2CR^{4a}HCH_2CH_2-$, $-OCH_2CR^{4a}R^{4b}CH_2CH_2-$,

$-CH_2OCH_2CH_2-$, $-CH_2OCH_2CH_2CH_2-$, $-CH_2CH_2OCH_2-$, $-CH_2CR^{4a}HOCH_2-$

$-CH_2CH_2CH_2CH_2-$, $-CH_2CR^{4a}HCH_2CH_2-$, $-CH_2CR^{4a}R^{4b}CH_2CH_2-$,

$-CH_2CH_2CR^{4a}HCH_2-$, $-CH_2CH_2CR^{4a}R^{4b}CH_2-$,

$-CH_2SCH_2CH_2-$, $-CH_2SO_2CH_2CH_2-$,

$-NHCH_2CH_2CH_2-$, $-NR^{4c}CH_2CH_2CH_2-$, $-NR^{4c}CR^{4a}HCH_2CH_2-$, $-NHCR^{4a}HCH_2CH_2-$,

$-CH_2NR^{4c}CH_2CH_2-$, $-CH_2NR^{4c}CR^{4a}HCH_2-$, $-CH_2NHCR^{4a}HCH_2-$,

$-CH_2CH_2NR^{4c}CH_2-$, $-CH_2CR^{4a}HNR^{4c}CH_2-$, or $-CH_2CR^{4a}HNHCH_2-$ (R^{4a}, R^{4b} and R^{4c} have the same definition as given in the (0).),

X^1-X^2 is N-C or C-N (with a proviso that Y^1, Y^2, Y^3 and Y^4 do not together form $-OCH_2CH_2CH_2-$, $-OCR^{4a}HCH_2CH_2-$, or $-OCR^{4a}R^{4b}CH_2CH_2-$ in the case of C-N.).].

[0169]

d2) The heteroaromatic amide derivative or salt thereof set forth in the d1), wherein in the general formula (I-E2),

Z^2-Z^3 is -CH_2O-, -CH_2S-, -CH_2NR^{f1}-, -CH_2CH_2-, or -$CONR^{f1}$- (R^{f1} and R^{f2} have the same definition as given in the (7).),

R^{5a}, R^{6a} and R^{6b} are a hydrogen atom.

[0170]

d3) The heteroaromatic amide derivative or salt thereof set forth in any one of the d1) to d2), wherein, in the general formula (I-E2),

R^2 is a phenyl, a pyrrolyl, a furyl, a thienyl, an imidazolyl, a pyrazolyl, an oxazolyl, a thiazolyl, a triazolyl, a pyridyl, a pyrazinyl, a pyridazinyl, a pyrimidinyl, a tetrazolyl, an isothiazolyl, an oxazolyl, an isoxazolyl, or a thiadiazolyl, wherein each is optionally substituted by a halogen atom, a cyano group, a C_1-C_4 alkyl group, a C_1-C_4 haloalkyl group, a C_1-C_4 alkoxy group, a C_1-C_4 haloalkoxy group or -$NR^{d1}R^{d2}$ (R^{d1} and R^{d2} are, independently each other, a hydrogen atom, a C_1-C_4 alkyl group, or a C_1-C_4 haloalkyl group.).

[0171]

d4) The heteroaromatic amide derivative or salt thereof set forth in any one of the d1) to d3), wherein in the general formula (I-E2),

R^2 is a phenyl, a pyrazolyl, a triazolyl, a pyridyl, or a pyrazinyl, wherein each is optionally substituted by a halogen atom, a cyano group, a C_1-C_4 alkyl group, a C_1-C_4 haloalkyl group, a C_1-C_4 alkoxy group, a C_1-C_4 haloalkoxy group or -$NR^{d1}R^{d2}$ (R^{d1} and R^{d2} are, independently each other, a hydrogen atom, a C_1-C_4 alkyl group, or a C_1-C_4 haloalkyl group.).

[0172]

d5) The heteroaromatic amide derivative or salt thereof set forth in any one of the d1) to d4), wherein in the general formula (I-E2),

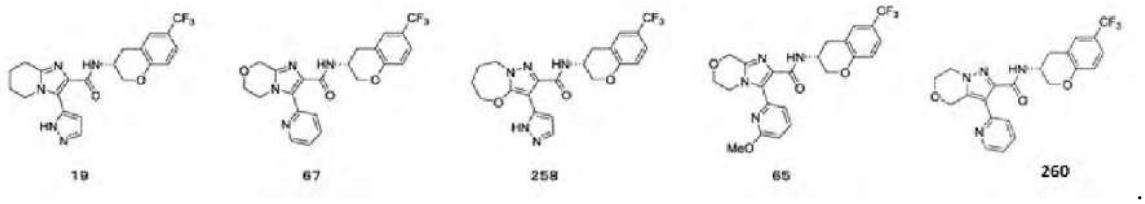
R^2 is a phenyl, a pyrazolyl, or a pyridyl, wherein each is optionally substituted by a halogen atom, a methyl group, an ethyl group, a trifluoromethyl group, a trifluoromethoxy group, a trifluoroethyl group, a trifluoroethoxy group or -NHR^{d2} (R^{d2} is a methyl group, an ethyl group, a trifluoromethyl group, or a trifluoroethyl group.).

[0173]

d6) The heteroaromatic amide derivative or salt thereof set forth in the d1), wherein the compound represented by the general formula (I) or the general formula (I-E2) is the following (the meaning of the numbers is as those given in the (15)):

[0174]

[Chem 61]



[0175]

As the salt of the present inventive compound represented by the general formula (I), the pharmaceutically acceptable salt is preferable. The "pharmacologically acceptable salt" is not particularly limited as long as it is a pharmacologically acceptable salt. It includes inorganic acid salts such as hydrochloride, hydrobromide, nitrate, sulfate, phosphate; organic carboxylic acid salts such as acetate, oxalate, fumarate, maleate, malonate, citrate, succinate, lactate, tartrate and malate; aromatic carboxylic acid salts such as salicylate and benzoate; organic sulfonates such as methanesulfonate, tosylate and benzenesulfonate; alkali metal salts such as lithium salt, sodium salt and potassium salt; alkaline earth metal salts such as calcium salt, magnesium salt and so on.

[0176]

In the present inventive compound represented by the general formula (I), a racemate, diastereo isomers and each optically active substance thereof are included in the present invention when an asymmetric carbon exists, and any of (E) isomer, (Z) isomer and a mixture thereof are included in the present invention when geometrical isomers exist.

[0177]

In the present inventive compound represented by the general formula (I), the solvates such a hydrate and so on are also included in the present invention when these exist.

[0178]

The compounds represented by the general formula (I), that is the heteroaromatic amide derivative of the present invention, can be produced by various methods; it can be produced, for example, by the methods shown below, methods similar to the methods shown below, or by appropriately combining synthesis methods known to those skilled in the art. Any of the starting materials and reaction reagents used in these syntheses is commercially available or can be prepared by using commercially available compounds according to methods well known to those skilled in the art. In addition, extraction, purification and so on may be performed in the usual organic chemistry experiments. Furthermore, the order of the steps to be performed can appropriately be changed for all the following steps.

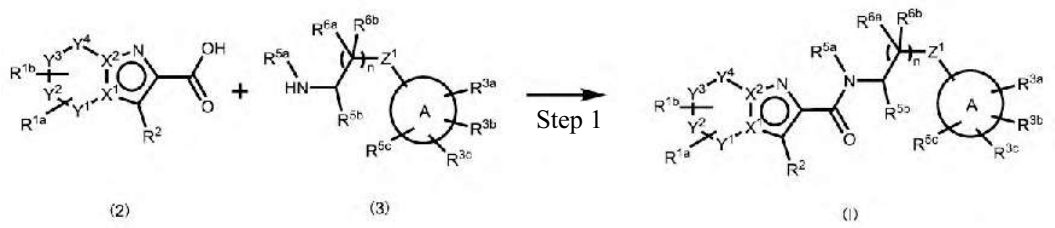
[0179]

The compound represented by the general formula (I) can be produced, for example, by a method shown by the following reaction scheme-1.

<Reaction scheme-1>

[0180]

[Chem 62]



[wherein, ring A, R^{1a}, R^{1b}, R^2, R^{3a}, R^{3b}, R^{3c}, R^{5a}, R^{5b}, R^{5c}, R^{6a}, R^{6b}, n, X^1, X^2, Y^1, Y^2, Y^3, Y^4 and Z^1 are as defined for the general formula (I) in the (0)]

[0181]

(Step 1)

In Step 1, the compound represented by the general formula (I) can be produced by condensation reaction of the compound represented by the general formula (2) and the compound represented by the general formula (3), wherein condensation reaction uses a condensing reagent in the presence or absence of a base. As the condensing reagents, N,N'-dicyclohexylcarbodiimide (DCC), 1-ethyl-3- (3-dimethylaminopropyl)carbodiimide hydrochloride (EDC), 1,1'-carbonyldiimidazole (CDI), 2-chloro-1-methylpyridinium iodide, propylphosphonic anhydride (cyclic trimer), O-(7-azabenzotriazol-1-yl)-N,N,N',N'-tetramethyluronium hexafluorophosphate (HATU) and so on can be recited.

As the base, organic bases such as trimethylamine, triethylamine, diisopropylethylamine, tripropylamine, triisopropylamine, tributylamine, N-methylmorpholine, pyridine, 4-(N,N-dimethylamino)pyridine, N,N-dimethylaniline, N,N-diethylaniline, 1, 5-diazabicyclo[4.3.0]non-5-ene, 1,4-diazabicyclo[2.2.2]octane (DABCO), 1,1,3,3-tetramethylguanidine, or 1,8-diazabicyclo[5.4.0]-7-undecene (DBU) can be recited.

As the reaction solvent, halogenated hydrocarbon solvents such as dichloromethane and so on; esters such as ethylacetate and so on; ethers such as tetrahydrofuran and so on; amides such as N,N-dimethylformamide, N,N-dimethylacetoamide and so on; ketones such as acetone, methylethylketone and so on; aromatic hydrocarbon solvents such as toluene and so on; and a mixed solvent of these and so on can be recited. If necessary, a reaction reagent such as 1-hydroxybenzotriazole (HOBt) and so on may be added.

Reaction temperature is not particularly limited; the reaction is normally performed at 0°C to 100°C. Reaction time is not particularly limited; 1 hour to 24 hours is preferable.

[0182]

In addition, after the reaction intermediate is derivatized from the compound represented by the general formula (2) by using an activator for a carboxyl group, the compound represented by general formula (I) can be produced by reacting with the compound represented by the general formula (3).

As the activator for a carboxylic group, thionyl chloride, oxalyl chloride, phosphorus oxychloride, phosgene, triphosgene, 1,1'-carbonyldiimidazole, ethyl chlorocarbonate and so on can be recited.

As the reaction solvent, aromatic hydrocarbon solvents such as benzene, toluene, chlorobenzene, nitrobenzene, xylene and so on; halogenated hydrocarbon solvents such as chloroform, dichloromethane and so on; ethers such as tetrahydrofuran and so on; ketones such as acetone, methylethylketone and so on; nitriles such as acetonitrile, propionitrile and so on; and a mixed solvent of these and so on can be recited.

Reaction temperature is not particularly limited; the reaction is normally performed at 0°C to 100°C. Reaction time is not particularly limited; 1 hour to 24 hours is preferable.

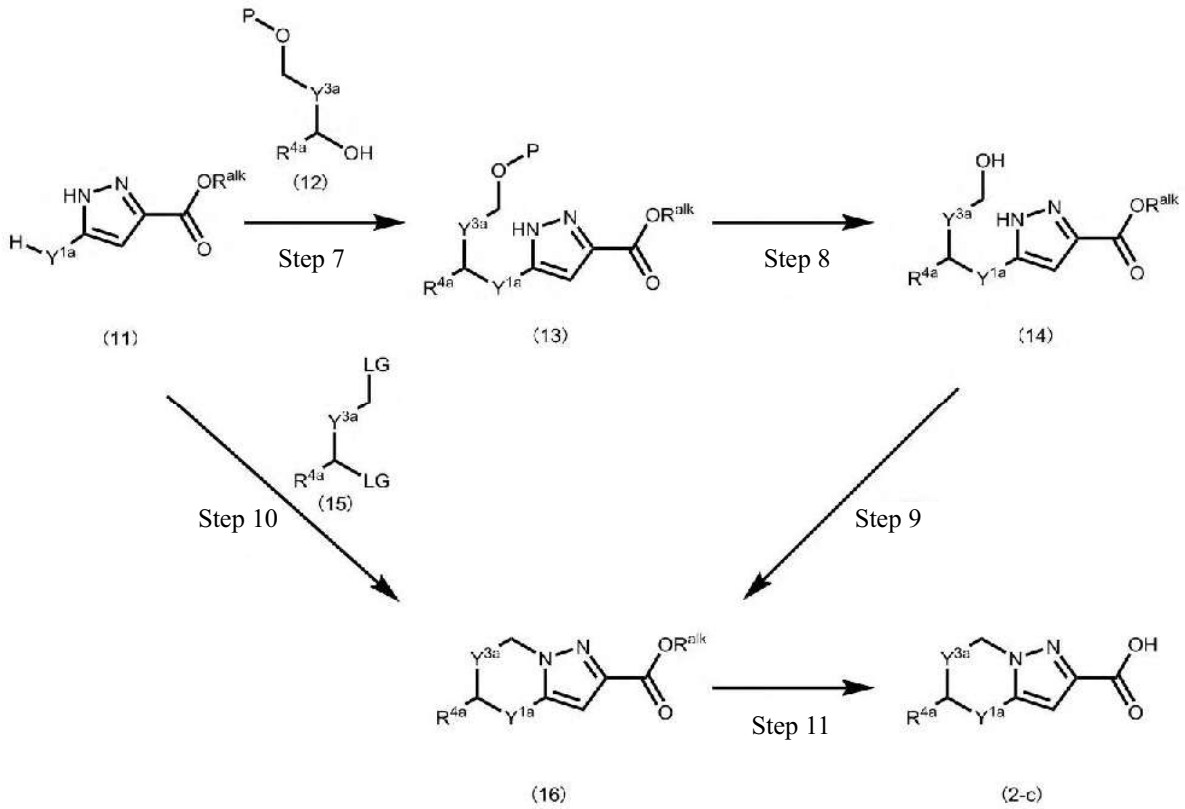
[0183]

Among the compounds represented by the general formula (2) in the reaction scheme-1, the compound represented by the general formula (2-c) can be produced, for example, by the method indicated by the following reaction scheme-3.

<Reaction scheme-3>

[0184]

[Chem 63]



[wherein,

R^{4a} is as defined for the general formula (I) in the (0).

R^{alk} is an alkyl group having 1 to 8 carbon atoms, P is a protecting group, LG is a leaving group (for example, chlorine atom, bromine atom, iodine atom, methanesulfonyloxy group, trifluoromethanesulfonyloxy group, or p-toluenesulfonyloxy group and so on), Y^{1a} is O, or NH, and Y^{3a} is a single bond, methylene or ethylene.]

[0185]

The protecting group represented by P are not particularly limited as long as it is generally used as a protecting group for a hydroxy group, the following can be recited for example: lower alkyl groups such as a methyl group and so on; lower alkoxyalkyl groups such as a methoxymethyl group, an ethoxyethyl group and so on; optionally substituted benzyl groups (as the substituent, a nitro group, a lower alkoxy group and so on can be recited); lower alkoxycarbonyl groups; halogeno lower alkoxycarbonyl groups; optionally substituted bezyloxycarbonyl groups (as the substituent, a nitro group, lower alkoxy group and so on can be recited); acyl groups such as an acetyl group, a benzoyl group and so on; a triphenylmethyl group; a tetrahydropyranyl group ; tri-substituted silyl groups such as a trimethylsilyl group, triethylsilyl group, a t-butyldimethylsilyl group, a triisopropylsilyl group, a dimethylhexylsilyl group, a t-butyldiphenylsilyl group and so on.

[0186]

(Step 7)

In Step 7, the compound represented by the general formula (13) can be produced by reacting the compound represented by the general formula (11) and the compound represented by the general formula (12) with an azodicarboxylic acid derivative and phosphine derivative.

As the azodicarboxylic acid derivative, ethyl azodicarboxylate, isopropyl azodicarboxylate, 1,1'-(azodicarbonyl)dipyperidine and so on can be recited.

As the phosphine derivative, triphenylphosphine, tri-n-butylphosphine and so on can be recited. In addition, a phopsphorane reagent such as cyanomethylenetributylphopsphorane, cyanomethylenetrimethylphopsphorane and so on can be used for performing the similar reaction instead of the azodicarboxylic acid derivative and the phosphine derivative.

The reaction solvent is not particularly limited as long as it is a neutral solvent; for example, tetrahydrofuran, toluene or a mixture thereof can be recited.

Reaction temperature is not particularly limited; the reaction is normally perfomed at 0°C to 80°C. Reaction time is not particularly limited; 1 hour to 24 hours is preferable.

[0187]

In addition, the compound represented by the general formula (13) can also be produced by reacting with the compound represented by the general formula (11) in the presence of a base after the hydroxy group in the compound represented by the general formula (12) is converted into a leaving group by a method well known to those skilled in the art.

As the reagent converting into the leaving group, the following can be recited: Thionyl chloride, sulfuryl chloride, oxalyl chloride, phosphorus trichloride, phosphorus pentachloride, phosphorus tribromide, phosphorus pentabromide, carbon tetrabromide, dimethylbromosulfonium bromide, thionyl bromide, phosphorus triiodide, p-toluene sulfonyl chloride, methanesulfonyl chloride, trifluoromethanesulfonyl chloride, trifluoromethanesulfonic anhydride and so on.

As the base, the following can be recited: Inorganic bases such as potassium carbonate, potassium bicarbonate, potassium acetate, sodium acetate, sodium carbonate, sodium bicarbonate, cesium carbonate, lithium carbonate, tripotassium phosphate, potassium tert-butoxide, sodium tert-butoxide, potassium fluoride, potassium hexamethyldisilazane or sodium hydride and so on; organic bases described in the above (Step 1).

As the reaction solvent, aromatic hydrocarbons such as benzene, toluene, xylene and so on; halogenated hydrocarbons such as dichloromethane, chloroform, 1,2-dichloroethane and so on; nitriles such as acetonitrile, propionitrile and so on; ethers such as diethyl ether,

tetrahydrofuran, 1,4-dioxane, 1,2-dimethoxyethane and so on; aprotic polar solvents such as N,N-dimethylformamide, N,N-dimethylacetamide, N-methylpyrrolidone, dimethylsulfoxide and so on; and mixture solvents thereof and so on can be recited without being limited thereto.

Reaction temperature is not particularly limited; the reaction is normally performed at room temperature to 140°C. Reaction time is not particularly limited; 1 hour to 24 hours is preferable.

[0188]

(Step 8)

In step 8, the compound represented by the general formula (14) can be produced by the deprotecting reaction for the compound represented by the general formula (13). Such deprotecting reactions may be performed according to methods well known to those skilled in the art (for example, methods described in Green and Wuts, "Protective Groups in Organic Synthesis (3rd edition, 1999)").

[0189]

(Step 9)

In Step 9, the compound represented by the general formula (16) can be produced by reacting the compound represented by the general formula (14) in the presence or absence of a base with a halogenating reagent and a phosphine derivative.

As the base, the base described in the above (Step 7) is preferable for example.

As the halogenating reagent, carbon tetrachloride, carbon tetrabromide, hexachloroacetone, hexabromoacetone, triphosgene, lithium bromide, methyl iodide, bromine and iodine and so on can be recited.

As the phosphine derivative, triphenylphosphine, tri-n-butylphosphine and so on can be recited.

The reaction solvent is not particularly limited as long as it does not significantly inhibit the reaction, and the solvents described in (Step 7) can be recited for example.

Reaction temperature is not particularly limited; the reaction is normally performed at room temperature to 120°C. Reaction time is not particularly limited; 1 hour to 24 hours is preferable.

[0190]

(Step 10)

In Step 10, the compound represented by the general formula (16) can be produced by a cyclization reaction of the compound represented by the general formula (11) and the compound represented by the general formula (15) in the presence or absence of a base.

The bases described in the (Step 7) above are preferable for example.

To smoothly perform the reaction, an additive may be co-present. As the additive, potassium iodide, sodium iodide, tetrabutylammonium iodide, potassium bromide, sodium bromide, tetrabutylammonium bromide and so on can be recited.

The reaction solvent is not particularly limited as long as it does not significantly inhibit the reaction, and the solvents described in (Step 7) can be recited for example.

Reaction temperature is not particularly limited; the reaction is normally performed at room temperature to 120°C. Reaction time is not particularly limited; 1 hour to 24 hours is preferable.

[0191]

(Step 11)

In Step 11, the compound represented by the general formula (2-c) can be produced by hydrolyzing the compound represented by general formula (16) in the presence of a base or acid, which is a method similar to one described in step 4 in reaction scheme-1.

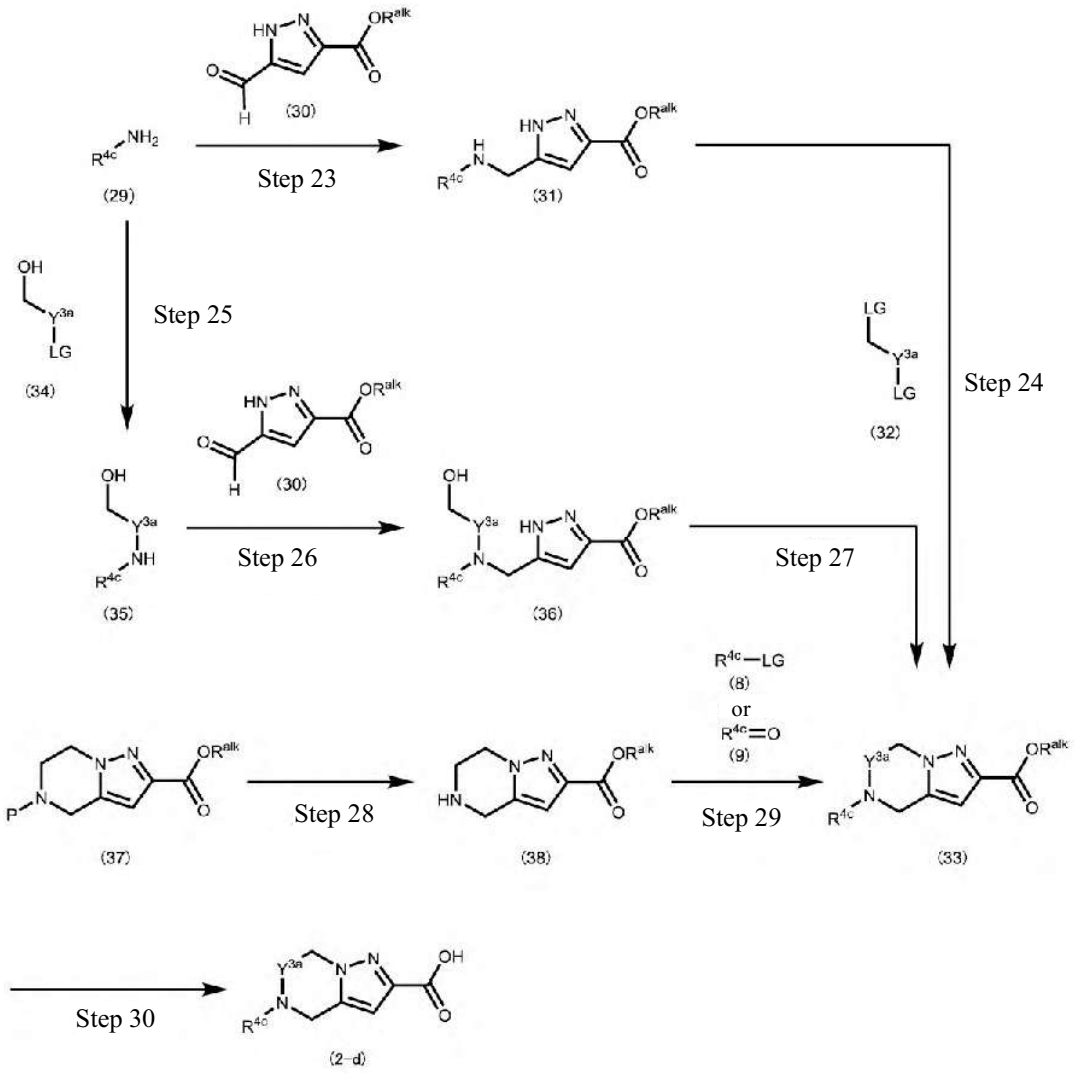
[0192]

Among the compounds represented by the general formula (2) in the reaction scheme-1, the compound represented by the general formula (2-d) can be produced by the method shown by the following reaction scheme-5 for example.

<Reaction scheme-5>

[0193]

[Chem 64]



[wherein, R^{4c} is as defined for the general formula (I) in the (0). In addition, R^{alk} is an alkyl group having 1 to 8 carbon atoms, P is a protecting group, LG is a leaving group (for example, a chlorine atom, a bromine atom, an iodine atom, a methanesulfonyloxy group, a trifluoromethanesulfonyloxy group, or a p-toluene sulfonyloxy group and so on), Y^{3a} is a methylene or an ethylene.]

[0194]

As the protecting group represented by P, being not particularly limited as long as it is generally used as a protecting group for an amino group, for example, the following can berecited: A tert-butoxycarbonyl (Boc) group, a bezyloxycarbonyl (Cbz), a 9-fluorenylmethyloxycarbonyl (fmoc), an acetyl (Ac) group, a trifluoroacetyl group, benzyl (Bn) group, a 4-methoxybenzyl (PMB) group and so on.

[0195]

(Step 23)

In Step 23, the compound represented by the general formula (31) can be produced by a reductive alkylization reaction with the compound represented by the general formula (29) and the compound represented by the general formula (30) in the presence or absence of an acid or a base, using a reducing reagent.

As the base, the bases described in the (Step 7) above are preferable for example.

As the acid to be used, formic acid, acetic acid, propionic acid, isobutyric acid, hexanic acid, p-toluenesulfonic acid or benzoic acid and so on can be recited.

As the reducing reagent, sodium borohydride, sodium triacetoxyborohydride, sodium cyanoborohydride, dimethylamine borane, triethylamine borane, trimethylamine borane, tert-butylamine borane, N,N-diethylaniline borane or 2-picoline borane and so on can be recited.

The reaction solvent is not particularly limited as long as it does not significantly inhibit the reaction, and the solvents described in (Step 7) can be recited for example.

Reaction temperature is not particularly limited; the reaction is normally performed at 0°C to 100°C. Reaction time is not particularly limited; 1 hour to 24 hours is preferable.

[0196]

(Step 24)

In Step 24, the compound represented by the general formula (33) can be produced by a cyclization reaction with the compound represented by the general formula (31) and the compound represented by the general formula (32) in the presence or absence of a base, which is a method similar to one described in Step 10 in reaction scheme-3.

[0197]

(Step 25)

In Step 25, the compound represented by the general formula (35) can be produced by the reaction with the compound represented by the general formula (29) and the compound represented by the general formula (34) in the presence or absence of a base.

As the base, the base described in the above (Step 7) is preferable for example.

To smoothly perform the reaction, an additive may be co-present; as the additive, the additive described in (Step 10) can be recited.

The reaction solvent is not particularly limited as long as it does not significantly inhibit the reaction, and the solvents shown in (Step 7) can be recited for example.

Reaction temperature is not particularly limited; the reaction is normally perfomed at room temperature to 120°C. Reaction time is not particularly limited; 1 hour to 24 hours is preferable.

[0198]

(Step 26)

In Step 26, the compound represented by the general formula (36) can be produced by a reductive alkylization reaction with the compound represented by the general formula (35) and the compound represented by the general formula (30) in the presence or absence of an acid or base by using a reducing reagent, which is a method similar to one described in Step 23 in reaction scheme-5.

[0199]

(Step 27)

In Step 27, the compound represented by the general formula (33) can be produced by reacting the compound represented by the general formula (36) in the presence or absence of a base with a halogenating reagent and phosphine derivative, which is a method similar to one described in Step 9 in reaction scheme-3.

[0200]

(Step 28)

In step 28, the compound represented by the general formula (38) can be produced by a deprotecting reaction with the compound represented by the general formula (37). Such deprotecting reactions may be performed according to methods well known to those skilled in the art (for example, methods described in Green and Wuts, "Protective Groups in Organic Synthesis (3rd edition, 1999)").

[0201]

(Step 29)

In Step 29, the compound represented by the general formula(33) can be produced by reactingthe compound represented by the general formula (38) with the compound represented by the general formula (8) or the compound represented by the general formula (9), which is a method similar to one described in Step 5 in scheme-2.

[0202]

(Step 30)

In Step 30, the compound represented by the general formula (2-d) can be produced by hydrolyzing the compound represented by the general formula (33) in the presence of a base or acid, which is a method similar to one described in Step 4 in scheme-2.

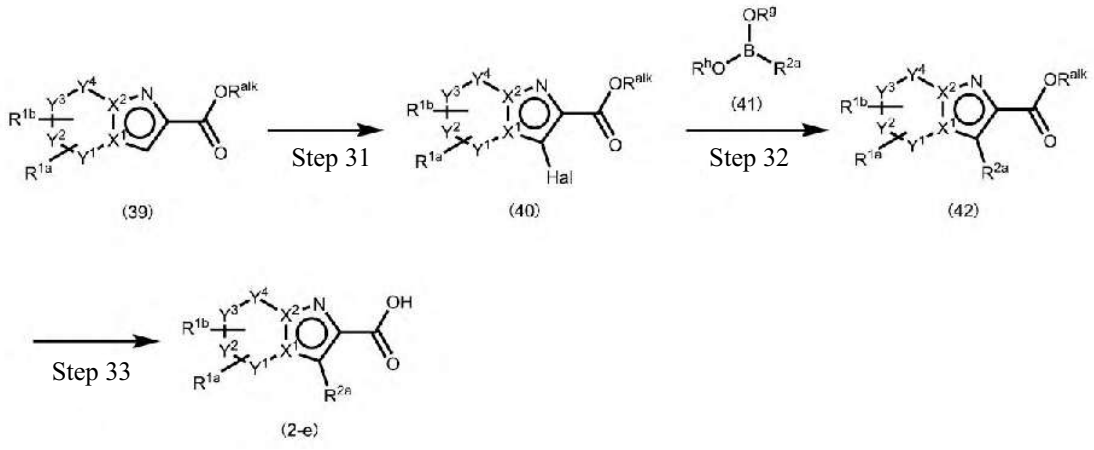
[0203]

Among the compounds represented by the general formula (2) in the reaction scheme-1, the compound represented by the general formula (2-e) can be produced by the method shown by the following reaction scheme-6 for example.

<Reaction scheme-6>

[0204]

[Chem 65]



[wherein,

R^{1a}, R^{1b}, X^1, X^2, Y^1, Y^2, Y^3 and Y^4 are as defined for the general formula (I) in the (0).

R^{alk} is an alkyl group having 1 to 8 carbon atoms,

R^g and R^h are, independently each other, a hydrogen atom or an optionally substituted alkyl group, or

R^g and R^h form an optionally substituted non-aromatic hetero ring with the oxygen atoms bonded thereto and the boron atom bonded to the oxygen atom,

R^{2a} is an optionally substituted partially-saturated or unsaturated 3- to 7-membered monocyclic ring,

Hal is a halogen atom (for example, chlorine atom, bromine atom, iodine atom).]

[0205]

(Step 31)

In Step 31, the compound represented by the general formula (40) can be produced by subjecting the compound represented by the general formula (39) to a halogenating reagent.

As the halogenating reagent, chlorine, bromine, iodine, N-chlorosuccinimide, N-bromosuccinimide, N-iodosuccinimide, 1,3-dichloro-5,5-dimethylhydantoin, 1,3-dibromeo-5,5-dimethylhydantoin and so on can be recited.

An appropriate acid such as acetic acid, trifluoroacetic acid, hydrochloric acid and so on may be added at this reaction.

The reaction solvent is not particularly limited as long as it does not significantly inhibit the reaction, and the solvents described in (Step 7) can be recited for example.

Reaction temperature is not particularly limited; the reaction is normally performed at

room temperature to 140°C. Reaction time is not particularly limited; 1 hour to 24 hours is preferable.

[0206]

(Step 32)

In Step 32, the compound represented by the general formula (42) can be produced by reacting the compound represented by the general formula (41) with the compound represented by the general formula (40) in the co-presence of a palladium catalyst and base.

As the palladium catalyst, the following can be recited: Palladium metals such as palladium-carbon and palladium black and so on; organic palladium salt such as tetrakis(triphenylphosphine)palladium, dichlorobis(triphenylphosphine)palladium, palladium acetate, palladium chloride-1,1'-bis(diphenylphosphino)ferrocene or bis(di-tert-butyl (4-dimethylaminophenyl) phosphine) dichloropalladium (II); and polymer-supported organic palladium complexes such as polymer-supported bis(acetate) triphenylphosphine palladium (II) and polymer-supported di(acetate)dicyclohexylphenylphosphine palladium (II), and so on. These may be used in combination.

The addition amount of the palladium catalyst relative to the compound represented by the general formula (40) normally is 1 to 50 mol%, preferably 5 to 20 mol%.

As the base, for example, the base described in the above (Step 7) is preferable.

To smoothly perform the reaction, an additive may be co-present; as the additive, the following can be recited: Trialkylphosphines such as trimethylphosphine and tritert-butylphosphine and so on; tricycloalkylphosphines such as tricyclohexylphosphine and so on; triarylphosphines such as triphenylphosphine and tritolylphosphine and so on;trialkylphosphites such as trimethylphosphite, triethylphosphite and tributylphosphite and so on; tricycloalkylphosphites such as tricyclohexylphosphite and so on; triarylphosphites such as triphenylphosphite and so on; imidazolium salt such as 1,3-bis(2,4,6-trimethylphenyl)imidazolium chloride and so on; diketones such as acetylacetone and octafluoro acetylacetone and so on; amines such as trimethylamine, triethylamine, tripropylamine, triisopropylamine and tributylamine and so on;1,1’-bis(diphenylphosphino)ferrocene; 2,2’-bis(diphenylphosphino)-1,1’-binaphtyl; 2-dicyclohexylphosphino-2’,6’-dimethoxybiphenyl; 2-dicyclohexylphosphino-2’,4’,6’-triisopropylbiphenyl; 2-(di-tert-butylphosphino)-2’,4’,6’-triisopropylbiphenyl; 2-dicyclohexylphosphino-2’-(N,N-dimethylamino)biphenyl; 4,5-bis(diphenylphosphino)-9,9-dimethylxanthene; and 2-(di-tert-butylphosphino)biphenyl. These additives may be used in combination.

The reaction solvent is not particularly limited as long as it does not significantly inhibit

the reaction, and the solvents described in (Step 7) can be recited for example.

Reaction temperature is not particularly limited; the reaction is normally performed at room temperature to 140°C. Reaction time is not particularly limited; 1 hour to 24 hours is preferable.

[0207]

(Step 33)

In Step 33, the compound represented by the general formula (2-e) can be produced by hydrolyzing the compound represented by the general formula (42) in the presence of a base or acid, which is a method similar to one described in Step 4 in scheme-2.

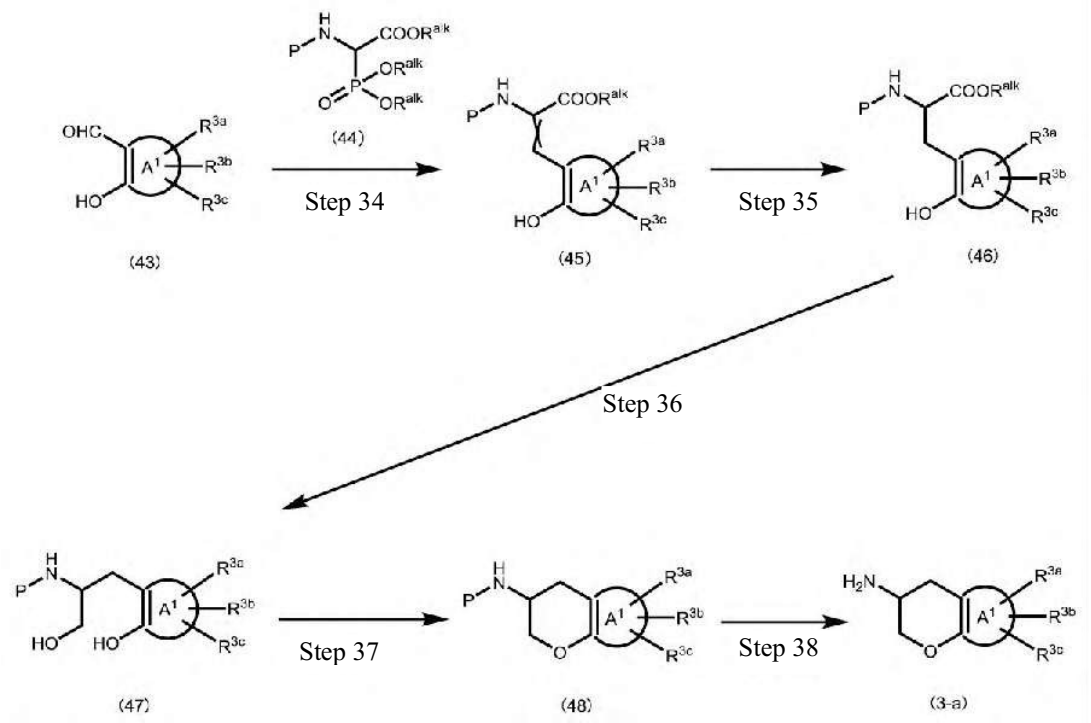
[0208]

Among the compounds represented by the general formula (3) in the reaction scheme-1, the compound represented by the general formula (3-a) can be produced, for example, by the method shown by the following reaction scheme-7.

<Reaction scheme-7>

[0209]

[Chem 66]



[wherein,

R^{3a}, R^{3b}, R^{3c} are as defined for the general formula (I) in the (0).

Ring A^1 is a 3- to 7-membered monocyclic aromatic ring, R^{alk} is an alkyl group having 1 to 8 carbon atoms, and P is a protecting group.]

[0210]

As the protecting group represented by P, protecting groups described in <Reaction scheme-5> can be recited.

[0211]

(Step 34)

In Step 34, the compound represented by the general formula (45) can be produced by reacting the compound represented by the general formula (44) with the compound represented by the general formula (43) in the presence of a base.

As the base, for example, the bases described in (Step 1) are preferable.

The reaction solvent is not particularly limited as long as it does not significantly inhibit the reaction. For example, the solvents described in (Step 7), esters such as ethyl acetate and so on and a mixed solvent thereof can be recited.

Reaction temperature is not particularly limited; the reaction is normally performed at room temperature to 120°C. Reaction time is not particularly limited; 1 hour to 24 hours is preferable.

[0212]

(Step 35)

In Step 35, the compound represented by the general formula (46) can be produced by a catalytic reduction reaction with the compound represented by the general formula (45) in the presence of a transition metal catalyst and hydrogen.

As the transition metal catalyst, palladium on carbon, palladium hydroxide, Raney nickel, platinum oxide and so on can be recited.

The amount of the transition metal catalyst added is, relative to the weight of the compound represented by the general formula (45), normally five times or less, and preferably 0.01 to 0.5 times.

The reaction solvent is not particularly limited as long as it does not significantly inhibit the reaction, the following can be recited: Alcohols such as methanol and ethanol; esters such as methyl acetate and ethyl acetate; ethers such as diethyl ether, tetrahydrofuran, 1,4-dioxane and 1,2-dimethoxyethane; aprotic polar solvents such as N,N-dimethylformamide, N,N-dimethylacetamide, N-methylpyrrolidone and dimethylsulfoxide; protic polar solvents such as acetic acid; water; and mixed solvents thereof.

Reaction temperature is not particularly limited; the reaction is normally performed at 0°C to 80°C under the normal pressure or pressurized conditions. Reaction time is not particularly limited; 1 hour to 24 hours is preferable.

[0213]

(Step 36)

In Step 36, the compound represented by the general formula (47) can be produced by the reduction of an ester of the compound represented by the general formula (46) using a reducing reagent to an alcohol.

As the reductant, lithium aluminum hydride, sodium borohydride, lithium borohydride, borane and so on can be recited.

The reaction solvent is not particularly limited as long as it does not significantly inhibit the reaction, the following can be recited: Aromatic hydrocarbons such as benzene, toluene and xylene; alcohols such as methanol, ethanol and 2-propanol; ethers such as diethyl ether, tetrahydrofuran, and 1,4-dioxane; aprotic polar solvents such as N,N-dimethylformamide, N,N-dimethylacetamide, N-methylpyrrolidone, and dimethylsulfoxide; and mixed solvents thereof.

Reaction temperature is not particularly limited; the reaction is normally performed at 0°C to 100°C. Reaction time is not particularly limited; 1 hour to 24 hours is preferable.

[0214]

(Step 37)

In Step 37, the compound represented by the general formula (48) can be produced by reacting an azodicarboxylic acid derivative and phosphine derivative with the compound represented by the general formula (47).

As the azodicarboxylic acid derivative, ethyl azodicarboxylate, isopropyl azodicarboxylate, 1,1'-(azodicarbonyl)dipiperizine and so on can be recited.

As the phosphine derivative, triphenylphosphine, tri-n-butylphosphine and so on can be recited.

In addition, a phopsphorane reagent such as cyanomethylenetributylphopsphorane, cyanomethylenetrimethylphopsphorane and so on can be used for performing the similar reaction instead of the azodicarboxylic acid derivative and phosphine derivative.

The reaction solvent is not particularly limited as long as it is a neutral solvent; for example, tetrahydrofuran, toluene or a mixture thereof can be recited.

Reaction temperature is not particularly limited; the reaction is normally performed at 0°C to 80°C. Reaction time is not particularly limited; 1 hour to 24 hours is preferable.

[0215]

(Step 38)

In Step 38, the compound represented by the general formula (3-a) can be produced by a deprotecting reaction of the compound represented by the general formula (48). Such

deprotecting reactions may be performed according to methods well known to those skilled in the art (for example, methods described in Green and Wuts, "Protective Groups in Organic Synthesis (3rd edition, 1999)").

[0216]

In the above production method, the starting material, intermediate or final product can also be induced to other compounds included by the present invention by appropriately converting the functional group. Conversion of the functional group can be performed by a method well known to those skilled in the art (for example, the method described in "Comprehensive Organic Transformations" by R.C. Larock, 1989 and so on).

[0217]

The compound represented by the general formula (I) produced by the aforementioned method may be isolated and purified as a free compound, salt thereof, solvate such as a hydrate or ethanol solvate thereof or crystal polymorphic substance. The pharmaceutically acceptable salt of the compound of the present invention can be produced by a conventional salt formation reaction. The isolation and purification may be performed by applying chemical operations such as extraction fractionation, crystallization, and various fractional chromatographies.

[0218]

In addition, an optically active compound can be obtained as a stereochemically pure isomer by selecting an appropriate raw material compound or by a conventional optical resolution of a racemate. For example, in the case of optical resolution of a racemate using a chiral column, a method known to those skilled in the art (see, for example, "Separation of optical isomers" Quarterly Chemical Review No. 6, 1989, Chemical Society of Japan, Society Publishing Center) can be employed. Furthermore, as chiral columns, various ones are commercially available and suitable one may appropriately be selected; as preferred examples, CHIRALPAK IA, CHIRALPK IB, and CHIRALPAK IC manufactured by Daicel Corporation can be recited.

[0219]

The present inventive compounds may have optical isomers, stereoisomers, tautomers and/or geometric isomers; in addition, the present inventive compounds include all possible isomers including the above mentioned isomers and mixtures thereof. Likewise, raw materials and intermediates for synthesizing the present inventive compounds may also have optical isomers, stereoisomers, tautomers and/or geometric isomers, and the raw materials and intermediates for producing the present inventive compound also includes all possible isomers including the above mentioned isomers and mixtures thereof.

[0220]

Prodrugs of the present inventive compound can be produced, for example, by substituting an appropriate functional group existing on the present inventive compound with an appropriate protecting group in accordance with a method known to those skilled in the art (for example, a method described in “Design of Prodrugs” by H. Bundgaard, Elseverer, 1985 and so on).

[0221]

Because the present inventive compounds or salts thereof selectively inhibit Nav1.7 over Nav1.5, they have little concern about a side effects derived from Nav1.5 inhibition and very effectively act on a wide range of pathological conditions associated with Nav1.7. Even though various pathological conditions are associated with Nav1.7, the present inventive compounds or salts thereof are, for example, effective for treating or preventing pain. More specifically, the present inventive compounds or salts thereof are useful, in particular, for treating or preventing acute pain, chronic pain, nociceptive pain, neuropathic pain and headache.

In addition, the present inventive compounds or salts thereof are useful, in particular, for treating or preventing acute or chronic pruritus and autonomic nervous system disorder.

[0222]

Nociceptive pain is pain caused by tissue injury or by intense stimuli with the potential to cause injury, including the following pain:

Perioperative pain; chronic postsurgical pain; posttraumatic pain; inflammatory pain; cancer-related pain; pain associated with osteoarthritis; herpes zoster pain; renal colics; bladder pain; visceral pain; toothache; pain after tooth extraction; pain related to heart disease; pain associated with pancreatitis; pain associated with contusion or sprain; back pain; pain associated with musculoskeletal disorders and pain associated with chronic arthropathy.

Inflammatory pain includes pain associated with pathological conditions associated with the following inflammatory factors:

Rheumatoid arthritis; interstitial cystitis; skin diseases (for example, sunburn, burns, eczema, dermatitis, or psoriasis); eye diseases (for example, glaucoma, retinitis, retinopathy, uveitis or acute ocular tissue disorders); lung diseases (for example, asthma, bronchitis, allergic rhinitis, chronic obstructive pulmonary disease, acute respiratory distress syndrome or farmer's lung); pathological conditions associated with infections such as influenza or colds; digestive tract diseases (for example, aphthous ulcer, irritable bowel syndrome, inflammatory bowel syndrome, atopic gastritis, functional gastrointestinal disorder, gastroesophageal reflux disease, Crohn's disease, ileitis or ulcerative colitis); dysmenorrhea; organ transplantation; vascular

diseases; periarteritis nodosa; thyroiditis; aplastic anemia; Hodgkin's disease; scleroderma; myasthenia gravis; systemic lupus erythematosus; Behcet's disease; Sjogren's syndrome; nephrotic syndrome; polymyositis; gingivitis; and fever.

Cancer-related pain includes pain associated with tumors, pain associated with cancer therapy.

Pain associated with musculoskeletal disorders includes myalgia, fibromyalgia, polymyositis, purulent myositis, temporomandibular myofascial pain. The back pain includes pain due to disc herniation, abnormalities in lumbar spine joint, sacroiliac joint, paraspinal muscles or posterior longitudinal ligament.

The chronic arthropathy includes rheumatoid arthritis, osteoarthritis, rheumatoid spondylitis, gouty arthritis and juvenile arthritis.

[0223]

Neuropathic pain is pain caused by damage in the nervous system by trauma or disease, and neuropathic pain includes many disorders derived from various causes. Neuropathic pain includes the following pain without being limited thereto:

Peripheral neuropathic pain; central neuropathic pain; postherpetic neuralgia; diabetic neuropathy; trigeminal neuralgia; nonspecific low back pain; cancer neuropathic pain; pain associated with Parkinson's disease; pain associated with multiple neurosclerosis; HIV-related neuropathic pain; sciatica; complex regional pain syndrome; spinal canal stenosis; carpal tunnel syndrome; phantom limbpain; post-stroke pain; pain associated with spinal cord injury; pain associated with epilepsy; pain associated with convulsions; pain associated with vitamin deficiency; familial erythromelalgia; primary erythromelalgia; paroxysmal extreme pain disorder, orofacial pain; and pain resulted from burning mouth syndrome, toxins or chronic inflammatory conditions.

These neuropathic pain include spontaneous pain, sensory disturbance and sensory abnormalities, hyperesthesia, high sensitivity to noxious stimuli (heat, cold, mechanical hyperalgesia), painful sensation to innocuous stimuli (dynamic, static, thermal or cold allodynia), hypoalgesia and so on.

[0224]

The headaches include migraine, cluster headache, tension headache, combined headache, headache associated with vascular disorders, secondary headache, autonomic cephalalgias and so on.

[0225]

Pruritus includes itching associated with skin disease, drug eruption, pruritus in

hemodialysis, eye pruritus, ear pruritus, pruritus caused by an insect bite, opioid-induced pruritus, pruritus associated with infections virus and so on, cutaneous lymphoma and neuropathic pruritus.

[0226]

Autonomic nervous system disorder includes autonomic dysfunction, neurological gastritis, irritable bowel syndrome, Meniere's disease, hyperventilation syndrome and autonomic neuropathy.

Note that the diseases mediated by the action of Nav1.7 are recited above as examples and said diseases are not limited to those described above.

[0227]

The medicament comprising the compound of the present invention or salt thereof as an active ingredient is formulated from the compound of the present invention or salt thereof alone or as a mixture with a pharmacologically acceptable solid or liquid carrier to be used in formulating. It can be formulated by conventional methods in the technical field. Examples of the pharmacologically acceptable solid or liquid carrier to be used in formulating include the following:

For example, excipients, binders, disintegrants, disintegration aids, fluidizers, lubricants, stabilizers, coating agents, plasticizers, brighteners, bases, emulsifiers, thickeners, suspension agents, dispersants, solvents, solubilizers, solubilization aids, surfactants, antioxidants, buffers, isotonic agents, pH adjusters, preservatives, antiseptic agents, fragrances, colorants, sweeteners, flavoring agents and other additives.

[0228]

The present inventive medicament can be administered orally or parenterally to mammals (e.g. humans, monkeys, cows, horses, pigs, dogs, cats, rabbits, guinea pigs, rats, mice and so on). As examples of dosage forms for administering present inventive medicament the following can be recited:

For example, tablets (including sugar-coated tablets, film-coated tablets), capsules, granules, powders, oral liquid medicines, syrups, oral jelly agents, tablets for oral cavity, liquid medicines for oral cavity, sprays for oral cavity, semisolids for oral cavity, injections, dialysis agents, inhalants, eye drops, eye ointments, ear drops, nasal drops, suppositories, semi-solid preparations for rectum, enemas, tablets for vagina, suppositories for vagina, topical solid agent, topical liquids agent (including liniments and lotions), sprays, ointments, creams, gels, patches and so on.

In addition, if necessary, another drug may be blended to the present inventive medicament.

[0229]

When the present inventive compound is orally administered, the dosage form is not particularly limited as long as the dosage form is used as a pharmaceutical composition for oral administration; for example, it is possible to prepare a dosage form such as tablets, capsules, granules or syrups and so on. When the present inventive medicament including these dosage forms is prepared, each dosage form can be prepared by a conventional method in the present technical field.

In addition, the dose and frequency of administration of the present inventive medicament are not limited, and can be determined and/or adjusted with considering the age and weight of the subject to be administered. For example, in orally administering to an adult patient, an active ingredient, the compound of the present invention or salt thereof, is normally administered in a dose of about 0.001 mg to about 1000 mg per kg body weight at a time and it may be administered at a normal frequency.

[Example]

[0230]

Hereinbelow, features of the present invention will more specifically be explained by reciting examples and test examples.

The materials, the amount used, the ratios, the processing content,, the processing procedures and so on indicated in the following Examples can appropriately be changed as long as not departing from the subject matter of the present invention.

Hence the scope of the present invention should not be interpreted limitatively by the specific examples shown hereinbelow.

[0231]

The ^{1}H-NMR spectra shown hereinbelow were measured by a JNM-ECA400 type spectrometer (400 MHz, manufactured by JEOL Ltd.) or AVANCEIII HD400 type (400 MHz, manufactured by Bruker BioSpin Co., Ltd.), by using deuterated chloroform ($CDCl_3$), deuterated dimethyl sulfoxide (DMSO-d_6), deuterated methanol (CD_3OD) as a solvent, and tetramethylsilane (TMS) as an internal standard. In the measurement results for the chemical shift, the δ value was expressed in ppm and the J value of the coupling constant was expressed in Hz. In the abbreviation, “s” means “singlet”, “d” means “doublet”, “t” means “triplet”, “q” means “quartert”, “m” means “multiplet” and “br” means “broad”. Mass spectrum (ESI-MS) was measured by electrospray ionization with Exactive (manufactured by Thermo Fisher

Scientific Co., Ltd.). The chemical structural formulae and physical property values of the compound in each Example are shown in the tables shown below.

[0232]

Ac: acetyl

ADDP: 1,1'-(azodicarbonyl) dipiperidine

$(A^{ta}Phos)_2PdCl_2$: bis(di-tert-butyl(4-dimethylaminophenyl)phosphine)dichloropalladium(II)

Bn: benzyl

Boc: tert-butoxycarbonyl

Bu: butyl

CAN: ammonium cerium (IV) nitrate

DAST: N,N-diethylaminosulfur trifluoride

DBU: diazabicycloundecene

DCE: 1,2-dichloroethane

DCM: dichloromethane

DDQ: 2,3-dichloro-5,6-dicyano-p-benzoquinone

DIAD: diisopropyl azodicarboxylate

DIEA: N,N-diisopropylethylamine

DMAP: N,N-dimethyl-4-aminopyridine

DME: 1,2-dimethoxyethane

DMF: N,N-dimethylformamide

DMSO: dimethyl sulfoxide

Et: ethyl

EDCI: 1-(3-dimethylaminopropyl)-3-ethylcarbodiimide

HATU: O-(7-azabenzotriazol-1-yl)-N,N,N’,N’-tetramethyluronium hexafluorophosphate

HOBt: 1-hydroxybenzotriazole

HPLC: high performance liquid chromatography

i: iso

IPA: isopropyl alcohol

Me: methyl

Ms: methanesulfonyl

n: normal

NBS: N-bromosuccinimide

NCS: N-chlorosuccinimide

NIS: N-iodosuccinimide

NMM: N-methylmorpholine

nor-AZADO: 9-azanor adamantane N-oxyl

p: para

Ph: phenyl

PTSA: p-toluenesulfonic acid

TBAB: tetrabutylammonium bromide

TBA-HS: tetrabutylammonium hydrogen sulfate

TBAI: tetrabutylammonium iodide

TBAF: tetrabutylammonium fluoride

TBDPS: tert-butyldiphenylsilyl

tert: tertiary

tBuXphos: 2-di-tert-butylphosphino-2',4',6'-triisopropylbiphenyl

Tf: trifluoromethylsulfonyl

TEA: triethylamine

TFA: trifluoroacetic acid

TFAA: trifluoroacetic anhydride

THF: tetrahydrofuran

TMEDA: tetramethylethylenediamine

TMS: trimethylsilyl

TMG: 1,1,3,3-tetramethylguanidine

Ts: p-toluenesulfonyl

Xantphos Pd G3: [(4,5'-bis(diphenylphosphino)-9,9'-dimethylxanthene)-2-(2'-amino-1,1'-biphenyl)]palladium(II) methanesulfonate

The asterisks (*) appearing in the structural formulae in the Examples denote that the corresponding asymmetric carbon has a single steric structure. Regarding the notations of "isomer A", "isomer B", "isomer C" and "isomer D", among the plural compounds indicated by the same Example number, the isomers are specified as "isomer A", "isomer B", "isomer C" and "isomer D" in accordance with the order of collection by the high performance liquid chromatography in the Example.

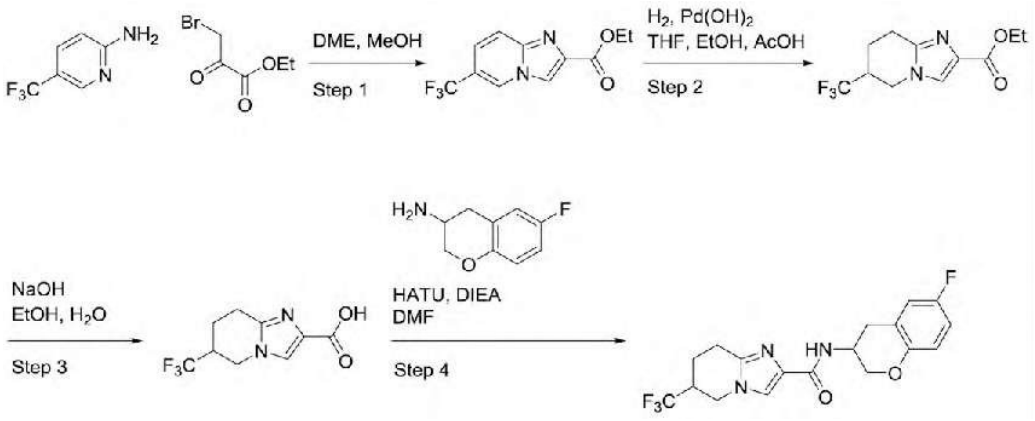
[0233]

Example 1

Production of N-(6-fluorochroman-3-yl)-6-(trifluoromethyl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxamide

[0234]

[Chem 67]



[0235]

Step 1

To a mixed solution of 5-(trifluoromethyl)pyridin-2-amine (835 mg, 5.15 mmol) in 1,2-dimethoxyethane (12.9 mL) and methanol (12.9 mL) was added ethyl bromopyruvate (776 μL, 6.18 mmol), and the mixture was stirred for 14 hours at 80°C. After concentrating the reaction solution under reduced pressure, the residue was purified by silica gel column chromatography to give ethyl 6-(trifluoromethyl)imidazo[1,2-a]pyridine-2-carboxylate (amount 557 mg, yield 42%).

[0236]

Step 2

To a mixed solution of ethyl 6-(trifluoromethyl)imidazo[1,2-a]pyridine-2-carboxylate (5.96 g, 23.1 mmol) in tetrahydrofuran (100 mL), ethanol (100 mL) and acetic acid (11.9 mL) was added 20% palladium hydroxide on carbon (2.43 g). The mixture was stirred under pressurized conditions (about 3 atm) at hydrogen atmospherefor 16 hours at room temperature. The reaction solution was filtered through celite and the solvent was evaporated off under reduced pressure. To the residue was added toluene, and the solvent was evaporated off under reduced pressure to give ethyl 6-(trifluoromethyl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxylate (amount 6.42 g) as a crude product.

[0237]

Step 3

To a solution of ethyl 6-(trifluoromethyl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxylate (6.42 g, 24.5 mmol) in ethanol (49 mL) was added 4 mol/L aqueous solution of sodium hydroxide (24.5 mL, 98.0 mmol), and the mixture was stirred for 3 hours at room temperature. To the reaction solution, 1 mol/L hydrochloric acid (98.0 mL, 98.0 mmol) was added, and then the solvent was evaporated off under reduced pressure. To the residue was

added toluene, the solvent was evaporated off under reduced pressure, and the procedure was repeated three times to give 6-(trifluoromethyl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxylic acid (amount 11.2 g, yield 98%) as a mixture with 4 equivalents of sodium chloride.

[0238]

Step 4

To a suspension of 6-(trifluoromethyl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxylic acid (a mixture with 4 equivalents of sodium chloride) (30.0 mg, 0.0641 mmol) in N,N-dimethylformamide (641 μL) were added HATU (29.2 mg, 0.0769 mmol), N,N-diisopropylethylamine (55 μL, 0.32 mmol) and 6-fluorochroman-3-amine hydrochloride (14.4 mg, 0.0705 mmol), and the mixture was stirred for 6 hours at 40°C. To the reaction solution, water and ethyl acetate were added, and the mixture was partitioned. Thereafter, the organic layer was washed with saturated brine and dried over anhydrous magnesium sulfate. After the solvent was evaporated off under reduced pressure, the residue was purified by silica gel column chromatography to give N-(6-fluorochroman-3-yl)-6-(trifluoromethyl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxamide (amount 17.9 mg, yield 73%).

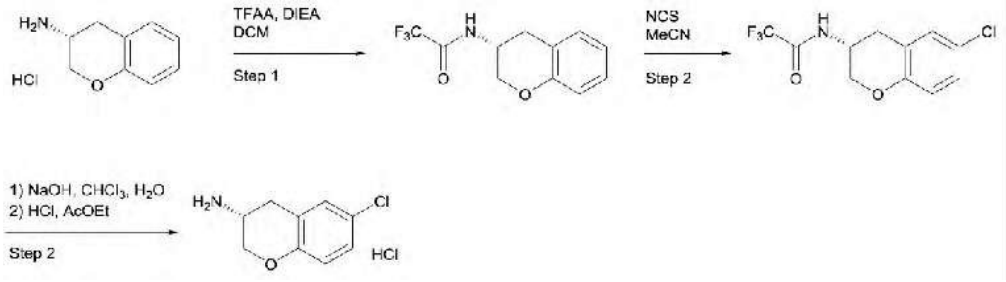
[0239]

Reference Example 1

Production of (R)-6-chlorochroman-3-amine hydrochloride

[0240]

[Chem 68]



[0241]

Step 1

To a suspension of (R)-chroman-3-amine hydrochloride (200 mg, 1.08 mmol) in dichloromethane (11 mL) were added N,N-diisopropylethylamine (555 μL, 3.23 mmol) and trifluoroacetic anhydride (180 μL, 1.29 mmol), and the mixture was stirred for 2 hours at room temperature. After concentrating the reaction solution under reduced pressure, the residue was purified by silica gel column chromatography to give (R)-N-(chroman-3-yl)-2,2,2-trifluoroacetamide (amount 245 mg, yield 93%).

[0242]

Step 2

To a solution of (R)-N-(chroman-3-yl)-2,2,2-trifluoroacetamide (4.00 g, 16.3 mmol) in acetonitrile (100 mL), N-chlorosuccineimide (2.60 g, 19.5 mmol) was added, and the mixture was stirred for 6 hours at 70°C. To the reaction solution were added saturated aqueous solution of sodium hydrogen carbonate and ethyl acetate, and the mixture was partitioned. Thereafter, the organic layer was washed with saturated brine and dried over anhydrous magnesium sulfate. The solvent was evaporated off under reduced pressure to give (R)-N-(6-chlorochroman-3-yl)-2,2,2-trifluoroacetamide (amount 4.60 g, yield 100%).

[0243]

Step 3

To a solution of (R)-N-(6-chlorochroman-3-yl)-2,2,2-trifluoroacetamide (297 mg, 1.06 mmol) in chloroform (2.7 mL), 4 mol/L aqueous solution of sodium hydroxide (2.7 mL, 10.8 mmol) was added, and the mixture was stirred for 17 hours at room temperature. Water and chloroform were added to the reaction solution, and the mixture was partitioned. The organic layer was dried over anhydrous sodium sulfate. The solvent was evaporated off under reduced pressure and the residue was purified by silica gel column chromatography. To a solution of the purified compound in ethyl acetate, 4 mol/L hydrogen chloride-ethyl acetate solution was added, and then precipitated solid was filtered to give (R)-6-chlorochroman-3-amine hydrochloride (amount 60.9 mg, yield 67%).

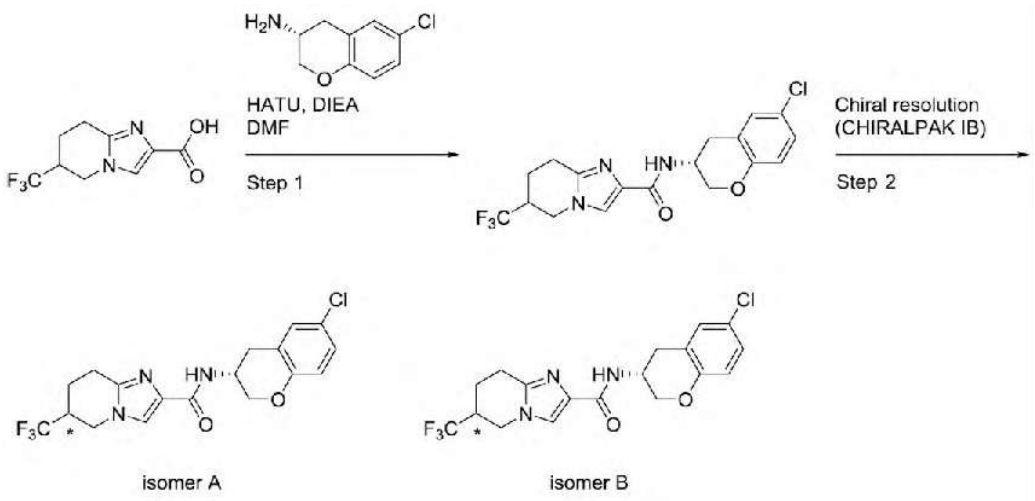
[0244]

Example 2

Production and isomeric separation of N-((R)-6-chlorochroman-3-yl)-6-(trifluoromethyl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxamide

[0245]

[Chem 69]



[0246]

Step 1

To a suspension of 6-(trifluoromethyl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxylic acid (a mixture with 4 equivalents of sodium chloride) (128 mg, 0.273 mmol) synthesized by a method described in Step 3 in Example 1 in N,N-dimethylformamide (2.27 mL) were added HATU (95.0 mg, 0.250 mmol), N,N-diisopropylethylamine (195 μL, 1.14 mmol) and (R)-6-chlorochroman-3-amine hydrochloride (50.0 mg, 0.227 mmol) synthesized by a method described in Reference Example 1, and the mixture was stirred for 15 hours at room temperature. Water was added to the reaction solution, and the precipitated solid was collected by filtration. The obtained solid was purified by silica gel column chromatography to give N-((R)-6-chlorochroman-3-yl)-6-(trifluoromethyl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxamide (amount 60.9 mg, yield 67%).

[0247]

Step 2

N-((R)-6-Chlorochroman-3-yl)-6-(trifluoromethyl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxamide (50.0 mg, 0.125 mmol) was dissolved into ethanol (20 mL), and the solution was subjected to HPLC fractionation (column: CHIRALPAK IB, developing solvent: ethanol/n-hexane=50/50, flow rate: 5.0 mL/min, room temperature)to give isomer A (amount 16.8 mg, yield 34%) and isomer B (amount 14.3 mg, yield 29%).

[0248]

The compound of Example 3 was synthesized from the compound of Example 2 (isomer A) under the scheme depicted in the figure below.

[0249]

[Chem 70]



[0250]

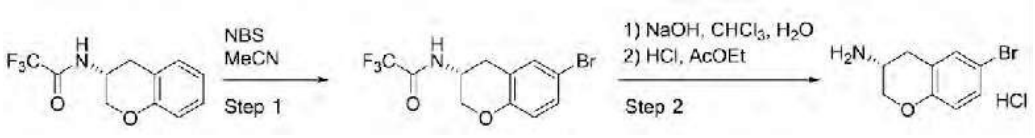
The compound of Example 4 was synthesized from the compound of Example 2 (isomer B) by a method similar to Example 3.

[0251]

The compound of Reference Example 2 ((R)-6-bromochroman-3-amine hydrochloride) was synthesized under the scheme depicted in the figure below.

[0252]

[Chem 71]



[0253]

The compound of Example 5 was synthesized by methods similar to those described in Example 1 and Reference Example 2.

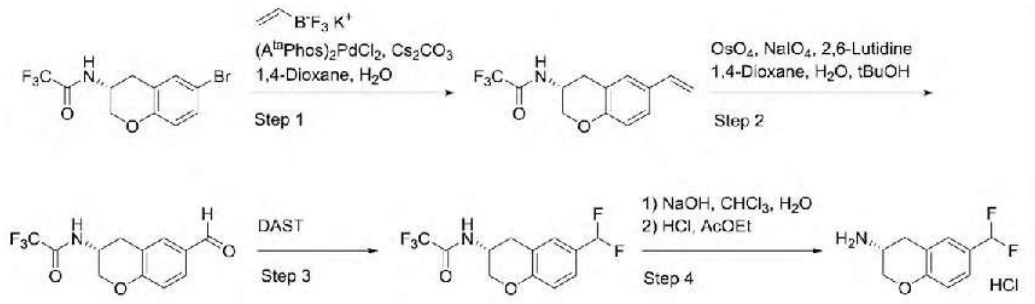
[0254]

Reference Example 3

Production of (R)-6-(difluoromethyl)chroman-3-amine hydrochloride

[0255]

[Chem 72]



[0256]

Step 1

A mixed suspension of (R)-N-(6-bromochroman-3-yl)-2,2,2-trifluoroacetamide (6.47 g, 20.0 mmol), potassium vinyl trifluoroborate (4.01 g, 29.9 mmol), cesium carbonate (13.0 g, 39.9

mmol) and bis(di-tert-butyl (4-dimethylaminophenyl)phosphine)dichloropalladium (II) (707 mg, 0.998 mmol) in 1,4-dioxane (167 mL) and water (33 mL) was stirred for 15 hours at 100°C. To the reaction solution, water and ethyl acetate were added, and the mixture was partitioned. Thereafter, the organic layer was washed with saturated brine and dried over anhydrous sodium sulfate. After the solvent was evaporated off under reduced pressure, the residue was purified by silica gel column chromatography to obtain (R)-2,2,2-trifluoro-N-(6-vinylchroman-3-yl)acetamide (amount 3.03 g, yield 56%).

[0257]

Step 2

To a solution of (R)-2,2,2-trifluoro-N-(6-vinylchroman-3-yl)acetamide (3.03 g, 11.2 mmol) in 1,4-dioxane were added water (37 mL), 2,6-lutidine (2.6 mL, 22.3 mmol), sodium periodate (9.56 g, 44.7 mmol) and 2.5w/v% osmium tetroxide t-butanol solution (5.7 mL, 0.56 mmol), and the mixture was stirred for 3 hours at room temperature. Water and ethyl acetate was added to the reaction solution and the mixture was filtered. After the filtrate was partitioned, the organic layer was washed with saturated brine and dried over anhydrous sodium sulfate. After the solvent was evaporated off under reduced pressure, the residue was purified by silica gel column chromatographyto to obtain (R)-2,2,2-trifluoro-N-(6-formylchroman-3-yl)acetamide (amount 2.56 g, yield 84%).

[0258]

Step 3

To (R)-2,2,2-trifluoro-N-(6-formylchroman-3-yl)acetamide (1.45 g, 5.31 mmol), N,N-diethylaminosulfur trifluoride (2.8 mL, 21.2 mmol) was added, and the mixture was stirred for 5 days at room temperature. The reaction solution was diluted with dichloromethane, added dropwise to a mixed liquid of chloroform and water, and then the mixture was partitioned. The organic layer was dried over anhydrous magnesium sulfate, and the solvent was evaporated off under reduced pressure. The residue was purified by silica gel column chromatography to give (R)-N-(6-(difluoromethyl)chroman-3-yl)-2,2,2-trifluoroacetamide (amount 1.11 g, yield 71%).

[0259]

Step 4

(R)-6-(Difluoromethyl)chroman-3-amine hydrochloride was obtained by a method similar to Step 3 in Reference Example 1, using (R)-N-(6-(difluoromethyl)chroman-3-yl)-2,2,2-trifluoroacetamide instead of (R)-N-(6-chlorochroman-3-yl)-2,2,2-trifluoroacetamide

[0260]

The compound of Example 6 was synthesized by methods similar to those described in

Example 1 and Reference Example 3.

[0261]

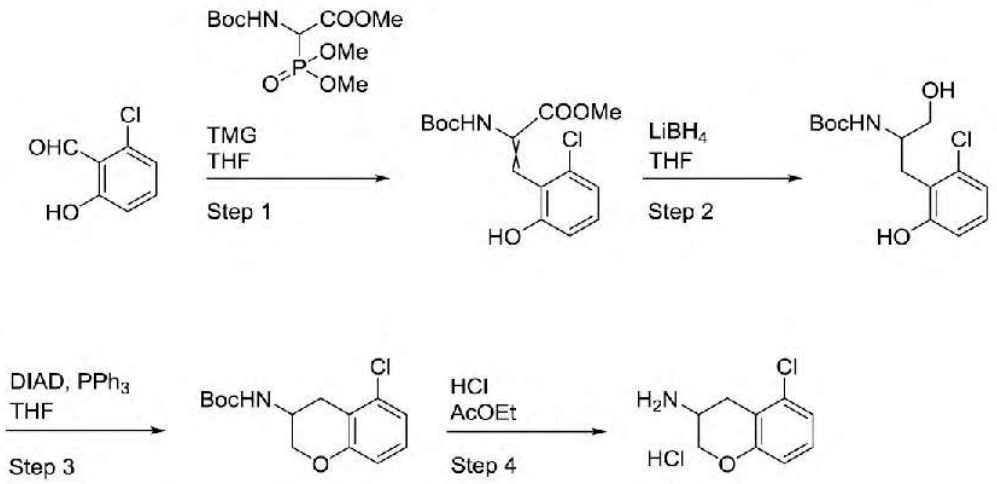
The compounds of Example 7 were obtained by separating the compound of Example 6.

[0262]

The compound of Reference Example 4 (5-chlorochroman-3-amine hydrochloride) was synthesized under the scheme depicted in the figure below.

[0263]

[Chem 73]



[0264]

The compound of Example 8 was synthesized by methods similar to those described in Example 1 and Reference Example 4.

[0265]

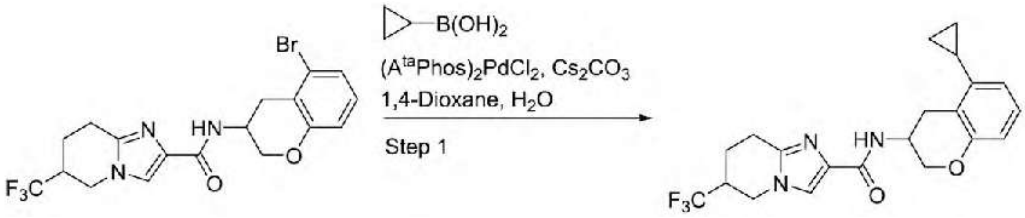
The compounds of Example 9 (isomer A and isomer B) were synthesized by a method similar to Example 1.

[0266]

The compound of Example 10 was synthesized from the compound of Example 9 under the scheme depicted in the figure below.

[0267]

[Chem 74]

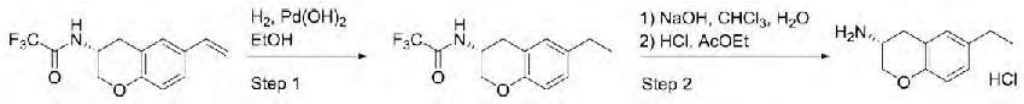


[0268]

The compound of Reference Example 5 ((R)-6-ethylchroman-3-amine hydrochloride) was synthesized under the scheme depicted in the figure below.

[0269]

[Chem 75]



[0270]

The compound of Example 11 was synthesized by methods similar to those described in Example 1 and Reference Example 5.

[0271]

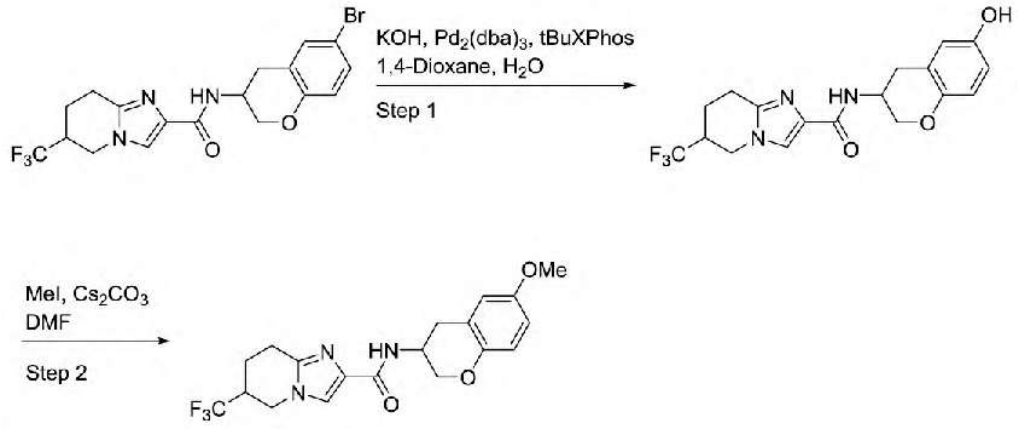
The compound of Example 12 was synthesized by a method similar to Example 1.

[0272]

The compound of Example 13 was synthesized from the compound of Example 12 under the scheme depicted in the figure below.

[0273]

[Chem 76]

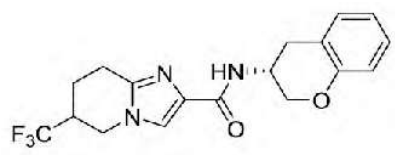


[0274]

The compound of Reference Example 7 (shown in the figure below.) was synthesized by a method similar to Example 1, using (R)-chroman-3-amine hydrochloride instead of 6-fluorochroman-3-amine hydrochloride in Step 4

[0275]

[Chem 77]



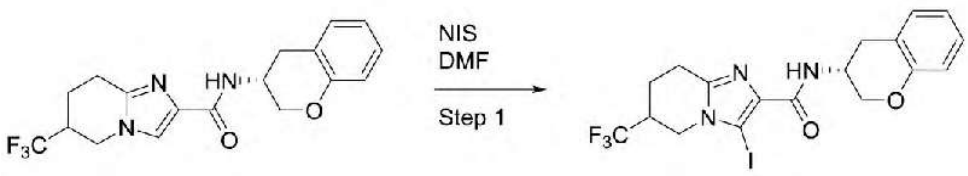
[0276]

Example 14

Production of N-((R)-chroman-3-yl)-3-iodo-6-(trifluoromethyl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxamide

[0277]

[Chem 78]



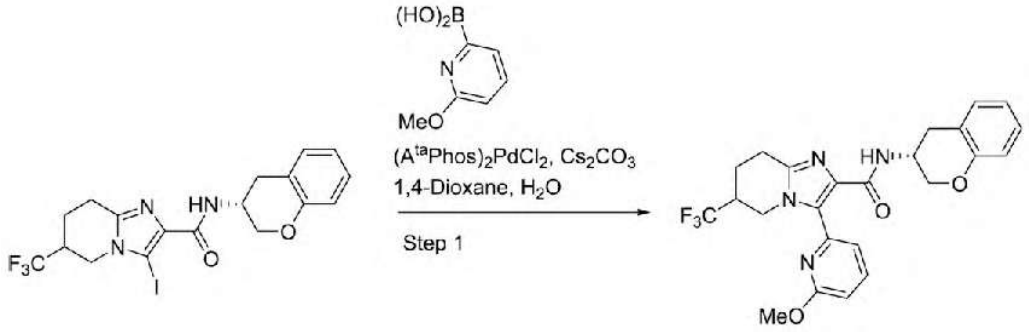
[0278]

To a solution of N-((R)-chroman-3-yl)-6-(trifluoromethyl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxamide synthesized by the method described in Reference Example 7 (79.7 mg, 0.218 mmol) in N,N-dimethylformamide (2.2 mL), N-iodosuccineimide (73.6 mg, 0.327 mmol) was added, and the mixture was stirred for 14 hours at 80°C. In addition, N-iodosuccineimide (73.6 mg, 0.327 mmol) was added, and the mixture was stirred for 8 hours at 100°C. Water and ethyl acetate were added to the reaction solution, and the mixture was partitioned. After the organic layer was washed with saturated brine, dried over anhydrous sodium sulfate and the solvent was evaporated off under reduced pressure. The residue was purified by silica gel column chromatography to give N-((R)-chroman-3-yl)-3-iodo-6-(trifluoromethyl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxamide (amount 97.5 mg, yield 91%).

[0279]

The compound of Example 15 was synthesized from the compound of Example 14 under the scheme depicted in the figure below.

[Chem 79]

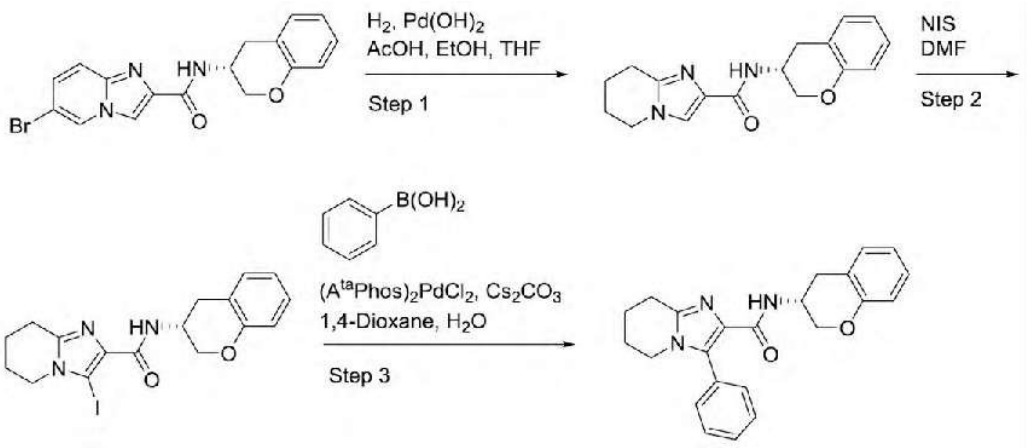


[0280]

The compound of Example 16 was synthesized from the compound of Reference Example 9 under the scheme depicted in the figure below.

[0281]

[Chem 80]



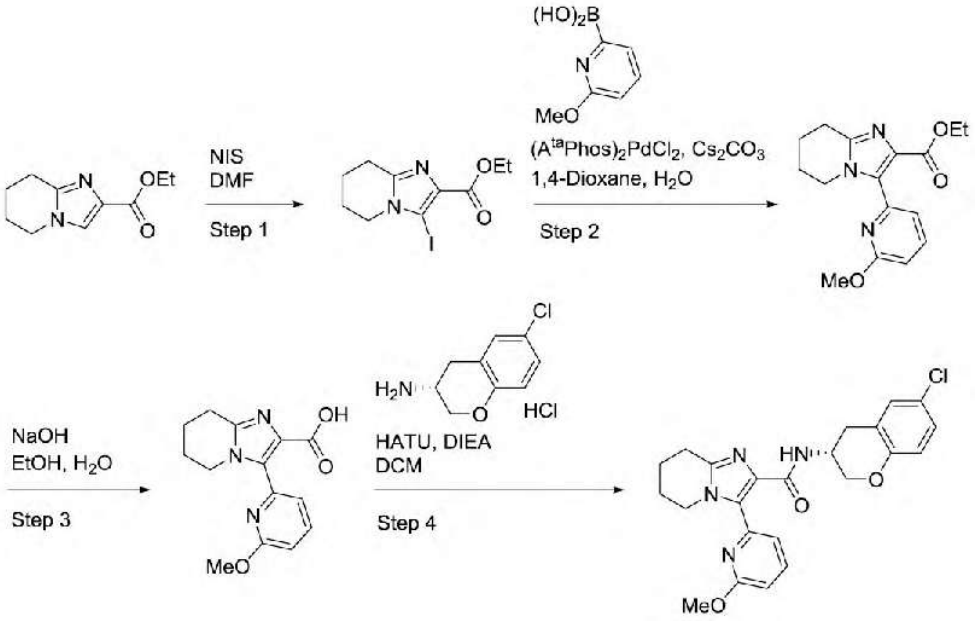
[0282]

Example 17

Production of (R)-N-(6-chlorochroman-3-yl)-3-(6-methoxypyridin-2-yl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxamide

[0283]

[Chem 81]



[0284]

Step 1

Ethyl 3-iodo-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxylate was obtained by a

method similar to Example 14, using ethyl 5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxylate instead of N-((R)-chroman-3-yl)-6-(trifluoromethyl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxamide.

[0285]

Step 2

Ethyl 3-(6-methoxypyridin-2-yl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxylate was obtained by a method similar to Example 15, using ethyl 3-iodo-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxylate instead of N-((R)-chroman-3-yl)-3-iodo-6-(trifluoromethyl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxamide.

[0286]

Step 3

3-(6-Methoxypyridin-2-yl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxylic acid was obtained as a mixture with 4 equivalents of sodium chloride by a method similar to Step 3 in Example 1, using ethyl 3-(6-methoxypyridin-2-yl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxylate instead of ethyl 6-(trifluoromethyl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxylate.

[0287]

Step 4

(R)-N-(6-Chlorochroman-3-yl)-3-(6-methoxypyridin-2-yl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxamide was obtained by a method similar to Step 4 in Example 1, using 3-(6-methoxypyridin-2-yl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxylic acid instead of 6-(trifluoromethyl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxylic acid, and using (R)-6-chlorochroman-3-amine hydrochloride synthesized by a method described in Reference Example 1 instead of 6-fluorochroman-3-amine hydrochloride.

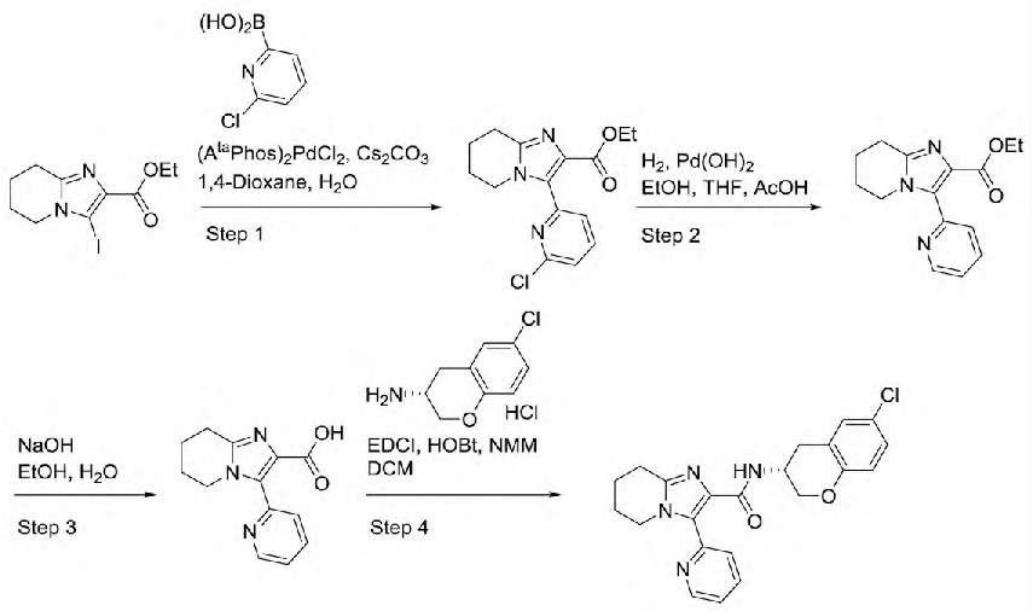
[0288]

Example 18

Production of (R)-N-(6-chlorochroman-3-yl)-3-(pyridin-2-yl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxamide

[0289]

[Chem 82]



[0290]

Step 1

Ethyl 3-(6-chloropyridin-2-yl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxylate was obtained by a method similar to Step 2 in Example 17, using 6-(chloropyridin-2-yl)boronic acid instead of 6-methoxypyridine-2- boronic acid.

[0291]

Step 2

To a solution of ethyl 3-(6-chloropyridin-2-yl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxylate (1.05 g, 3.43 mmol) in tetrahydrofuran (10 mL) were added ethanol (10 mL), acetic acid (1.8 mL) and 20% palladium hydroxide on carbon (0.72 g), and the mixture was stirred for 2 hours in hydrogen atmosphere (under balloon pressure) at 50°C. The reaction solution was filtered through Celite, and then the solvent was evaporated off under reduced pressure. The residue was purified by silica gel column chromatography to give ethyl 3-(pyridin-2-yl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxylate (amount 900 g, yield 97%).

[0292]

Step 3

3-(Pyridin-2-yl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxylic acid was obtained as a mixture with 4 equivalents of sodium chloride by a method similar to Step 3 in Example 1, using ethyl 3-(pyridin-2-yl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxylate instead of ethyl 6-(trifluoromethyl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxylate.

[0293]

Step 4

To suspension of 3-(pyridin-2-yl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxylic acid (4, sodium chloride mixture) (15 mg, 0.031 mmol), (R)-6-chlorochroman-3-amine hydrochloride synthesized by a method described in Reference Example 1 (6.9 mg, 0.031 mmol), 1-hydroxybenzotriazole (7.2 mg, 0.047 mmol) and 1-ethyl-3-(3-dimethylaminopropyl)carbodiimide hydrochloride (9.0 mg, 0.047 mmol) in dichloromethane (1 mL), 4-methylmorpholine (21 μL, 0.19 mmol) was added, and the mixture was stirred for 2 hours at room temperature. Water and ethyl acetate was added to the reaction solution, and the mixture was partitioned. After drying the organic layer with anhydrous sodium sulfate, the solvent was evaporated off under reduced pressure. The residue was purified by silica gel column chromatography to give (R)-N-(6-chlorochroman-3-yl)-3-(pyridin-2-yl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxamide (amount 8.0 mg, yield 62%).

[0294]

The compound of Reference Example 8 (shown in the figure below.) was synthesized by a method similar to Step 2 to Step 3 in Example 17.

[0295]

[Chem 83]



[0296]

The compound of Example 19 was synthesized from the compound of Reference Example 8 and the compound of Reference Example 43 by a method similar to Step 4 in Example 18.

[0297]

The compound of Example 20 was synthesized from the compound of Reference Example 8 and the compound of Reference Example 44 by a method similar to Step 4 in Example 18.

[0298]

The compound of Example 21 was synthesized by a method similar to Example 17.

[0299]

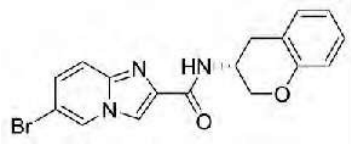
The compound of Example 22 was synthesized by a method similar to Example 17.

[0300]

The compound of Reference Example 9 (shown in the figure below.) was synthesized by a method similar to Step 4 in Example 1.

[0301]

[Chem 84]

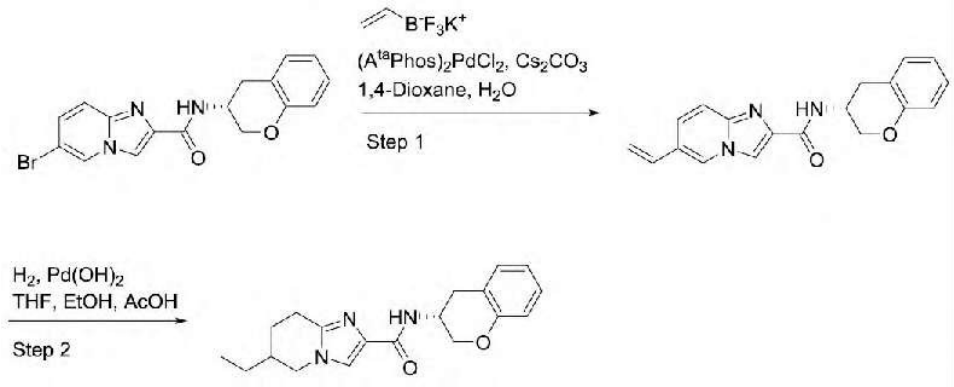


[0302]

The compound of Example 23 was synthesized from the compound of Reference Example 9 under the scheme depicted in the figure below.

[0303]

[Chem 85]



[0304]

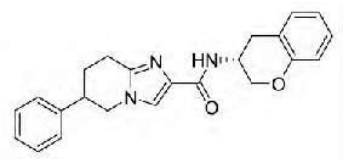
The compound of Example 24 was synthesized by a method similar to Example 23.

[0305]

The compound of Reference Example 10 (shown in the figure below.) was synthesized by a method similar to Example 23.

[0306]

[Chem 86]

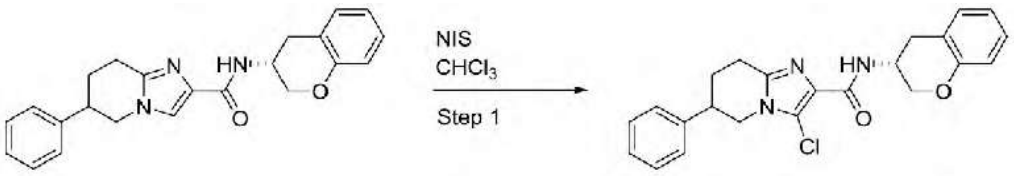


[0307]

The compound of Example 25 was synthesized from the compound of Reference Example 10 under the scheme depicted in the figure below.

[0308]

[Chem 87]

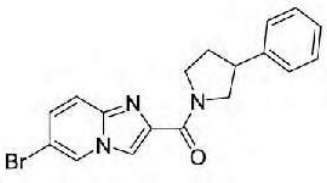


[0309]

The compound of Reference Example 11 (shown in the figure below.) was synthesized by a method similar to Reference Example 9.

[0310]

[Chem 88]



[0311]

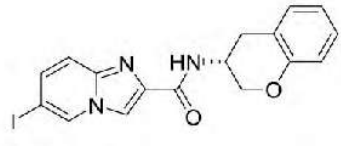
The compound of Example 26 was synthesized from the compound of Reference Example 11 by a method similar to Example 23.

[0312]

The compound of Reference Example 12 (shown in the figure below.) was synthesized by a method similar to Step 4 in Example 1.

[0313]

[Chem 89]



[0314]

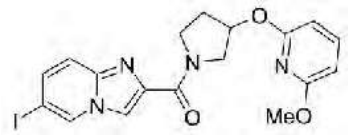
The compound of Example 27 was synthesized from the compound of Reference Example 12 by a method similar to Example 23.

[0315]

The compound of Reference Example 13 (shown in the figure below.) was synthesized by a method similar to Reference Example 12.

[0316]

[Chem 90]



[0317]

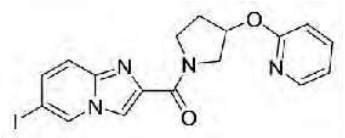
The compound of Example 28 was synthesized from the compound of Reference Example 13 by a method similar to Example 23.

[0318]

The compound of Reference Example 14 (shown in the figure below.) was synthesized by a method similar to Reference Example 12.

[0319]

[Chem 91]

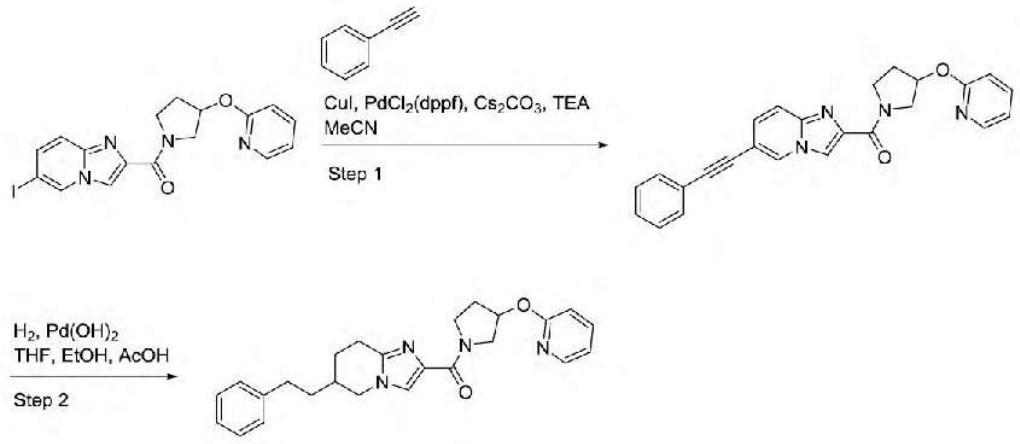


[0320]

The compound of Example 29 was synthesized from the compound of Reference Example 14 under the scheme depicted in the figure below.

[0321]

[Chem 92]

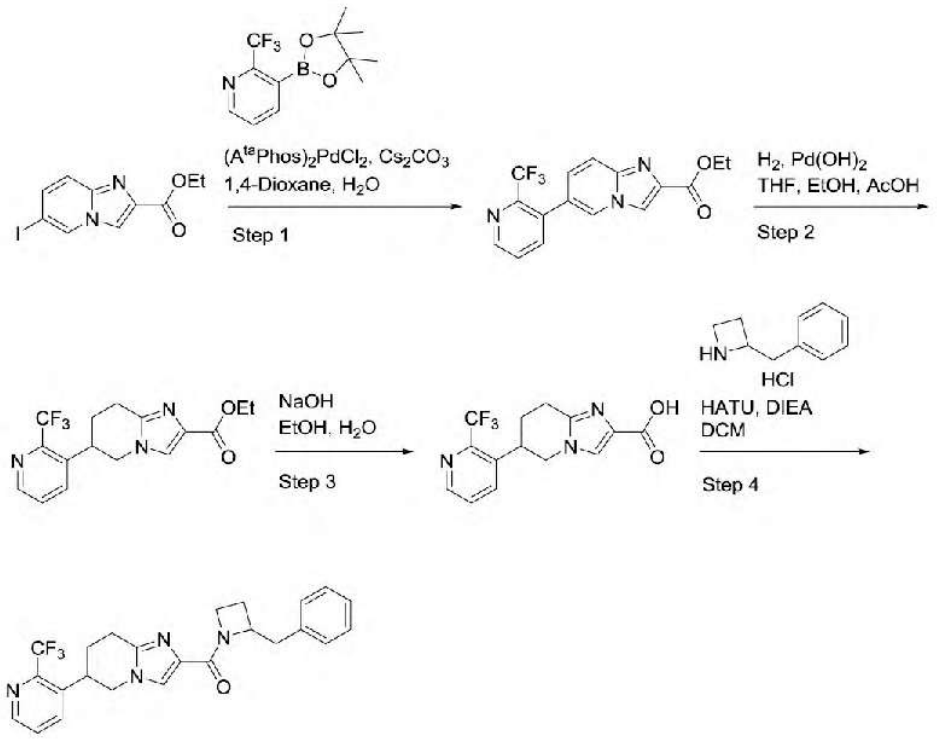


[0322]

The compound of Example 30 was synthesized under the scheme depicted in the figure below.

[0323]

[Chem 93]

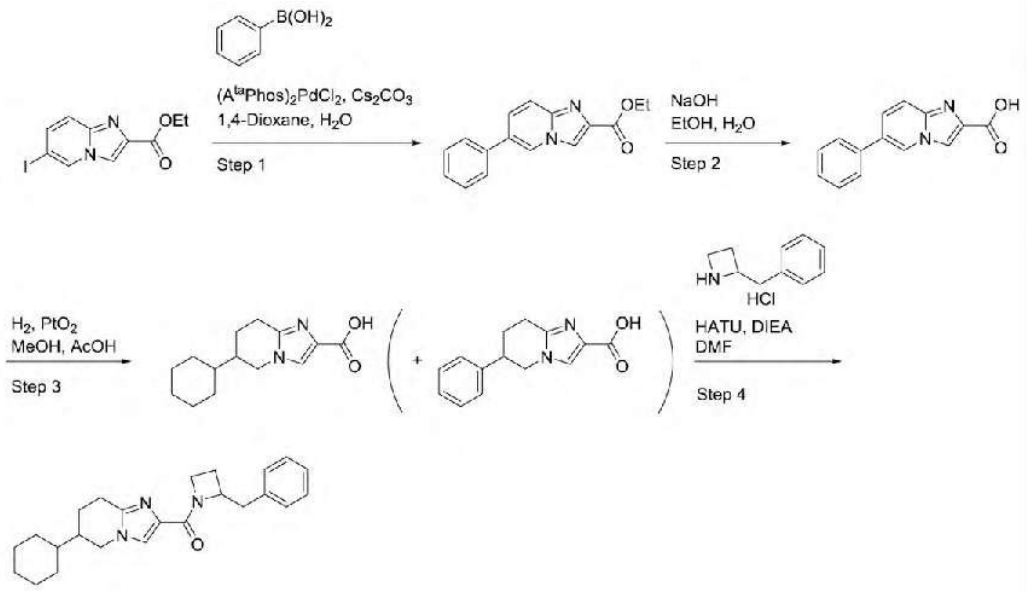


[0324]

The compound of Example 31 was produced under the scheme depicted in the figure below.

[0325]

[Chem 94]

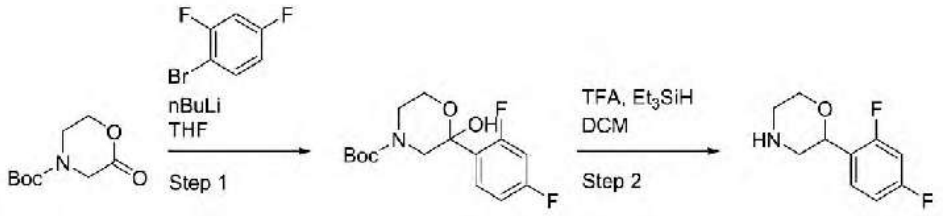


[0326]

The compound of Reference Example 15 (2-(2,4-difluorophenyl)morpholine) was synthesized under the scheme depicted in the figure below.

[0327]

[Chem 95]

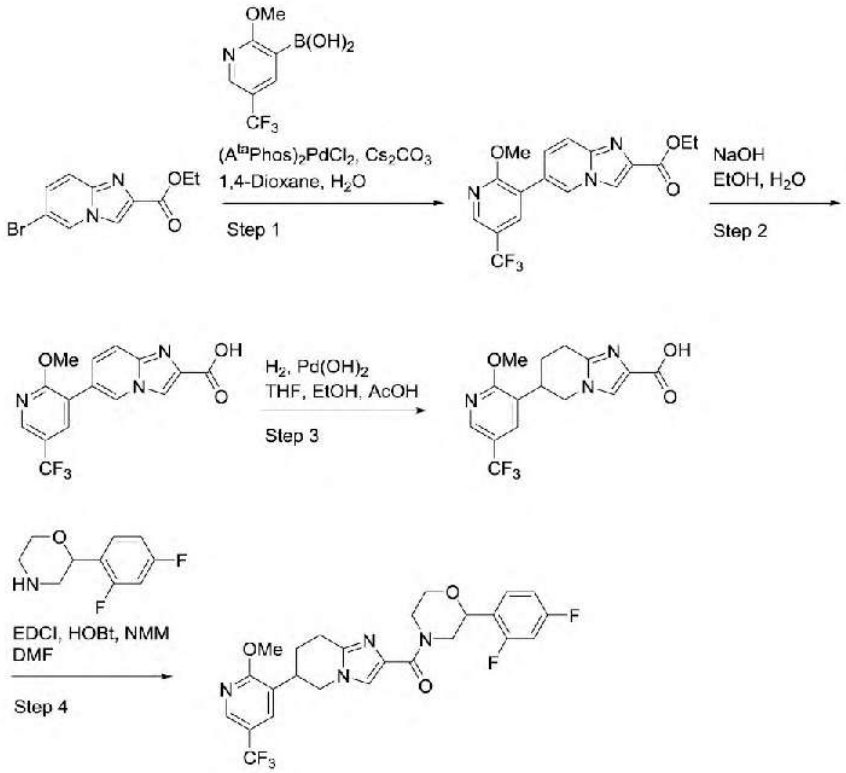


[0328]

The compound of Example 32 was synthesized under the scheme depicted in the figure below.

[0329]

[Chem 96]

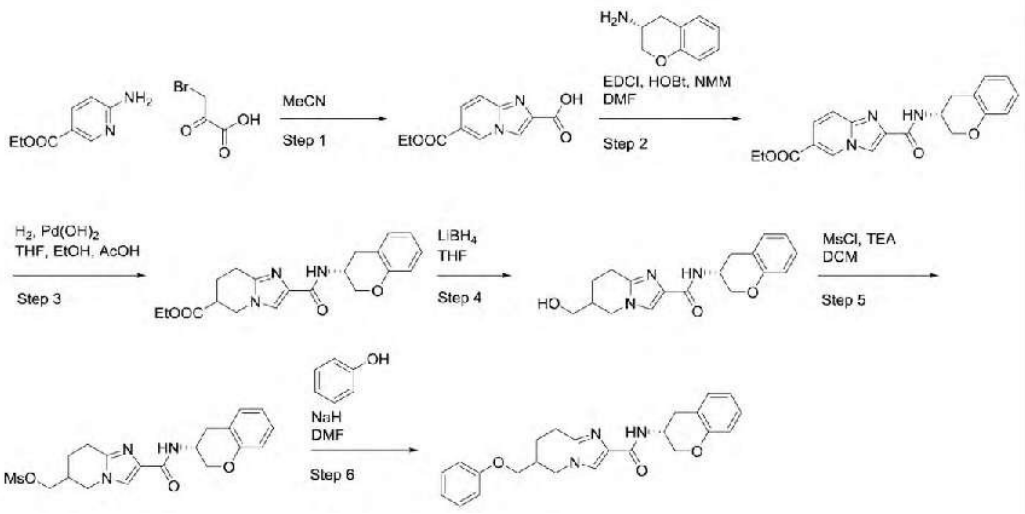


[0330]

The compound of Example 33 was synthesized under the scheme depicted in the figure below.

[0331]

[Chem 97]

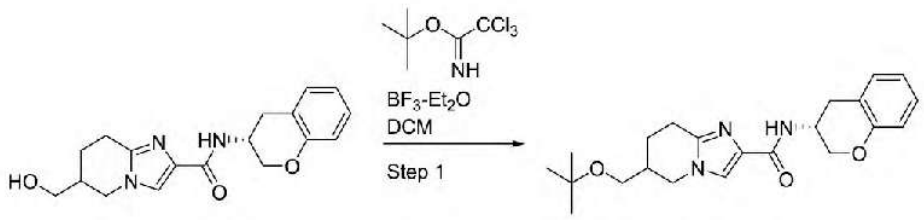


[0332]

The compound of Example 34 was synthesized from the compound synthesized in Step 4 in Example 33 under the scheme depicted in the figure below.

[0333]

[Chem 98]

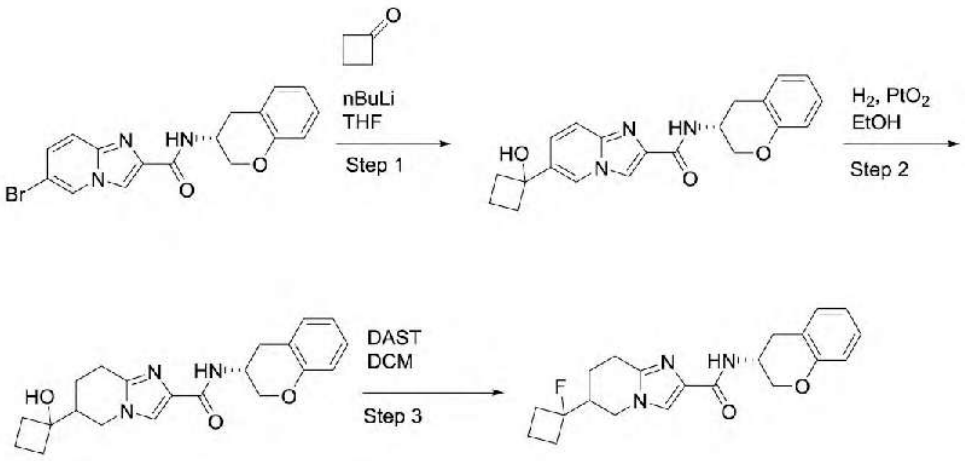


[0334]

The compound of Example 35 was synthesized from the compound of Reference Example 9 under the scheme depicted in the figure below.

[0335]

[Chem 99]

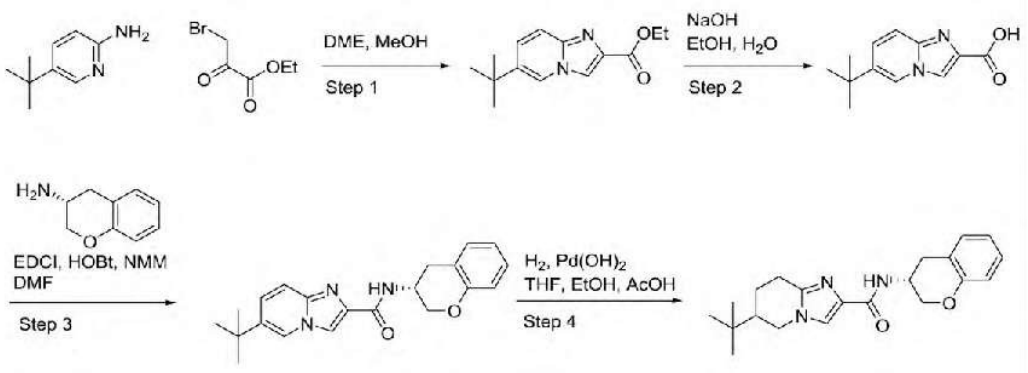


[0336]

The compound of Example 36 was synthesized under the scheme depicted in the figure below.

[0337]

[Chem 100]



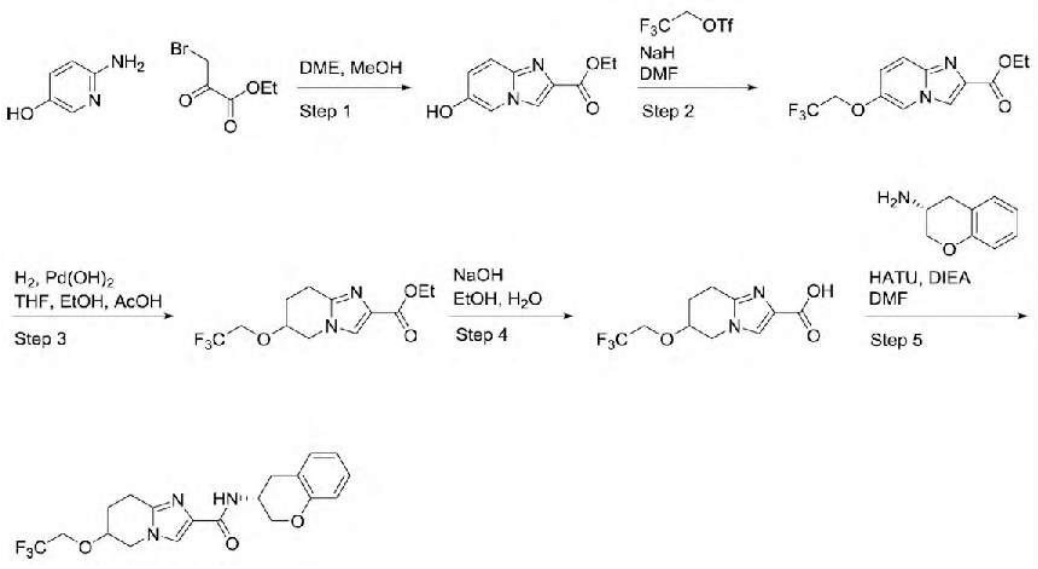
[0338]

Example 37

Production of N-((R)-chroman-3-yl)-6-(2,2,2-trifluoroethoxy)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxamide

[0339]

[Chem 101]



[0340]

Step 1

Ethyl 6-hydroxyimidazo[1,2-a] pyridine-2-carboxylate was obtained by a method similar to Step 1 in Example 1, using 6-aminopyridin-3-ol instead of 5-(trifluoromethyl)pyridin-2-amine.

[0341]

Step 2

To ice cold solution of ethyl 6-hydroxyimidazo[1,2-a]pyridine-2-carboxylate (1.38 g, 6.69 mmol) in N,N-dimethylformamide (34 mL), sodium hydride (60% in oil) (535 mg, 13.4 mmol) was added. After stirring for 5 minutes, 2,2,2-trifluoroethyl trifluoromethanesulphonate (1.93 mL, 13.4 mmol) was added, and the mixture was stirred for 1 hour at 80°C. Water and ethyl acetate were added to the reaction solution, and then the mixture was partitioned. The organic layer was washed with saturated brine and dried over anhydrous sodium sulfate. The solvent was evaporated off under reduced pressure. The residue was purified by silica gel column chromatography to give ethyl 6-(2,2,2-trifluoroethoxy)imidazo[1,2-a]pyridine-2-carboxylate (amount 1.55 g, yield 80%).

[0342]

Step 3

Ethyl 6-(2,2,2-trifluoroethoxy)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxylate was obtained by a method similar to Step 2 in Example 1, using ethyl 6-(2,2,2-trifluoroethoxy)imidazo[1,2-a]pyridine-2-carboxylate instead of ethyl 6-(trifluoromethyl)imidazo[1,2-a]pyridine-2-carboxylate.

[0343]

Step 4

6-(2,2,2-Trifluoroethoxy)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxylic acid was obtained by a method similar to Step 3 in Example 1, using ethyl 6-(2,2,2-trifluoroethoxy)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxylate instead of ethyl 6-(trifluoromethyl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxylate.

[0344]

Step 5

N-((R)-Chroman-3-yl)-6-(2,2,2-trifluoroethoxy)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxamide was obtained by a method similar to Step 4 in Example 1, using 6-(2,2,2-trifluoroethoxy)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxylic acid instead of 6-(trifluoromethyl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxylic acid, and, using (R)-chroman-3-amine hydrochloride instead of 6-fluorochroman-3-amine hydrochloride.

[0345]

The compound of Example 38 was synthesized from the compound synthesized in Step 4 in Example 37 and the compound of Reference Example 1 by a method similar to Step 4 in Example 1.

[0346]

The compounds of Example 39 were obtained by separating the compound of Example 38.

[0347]

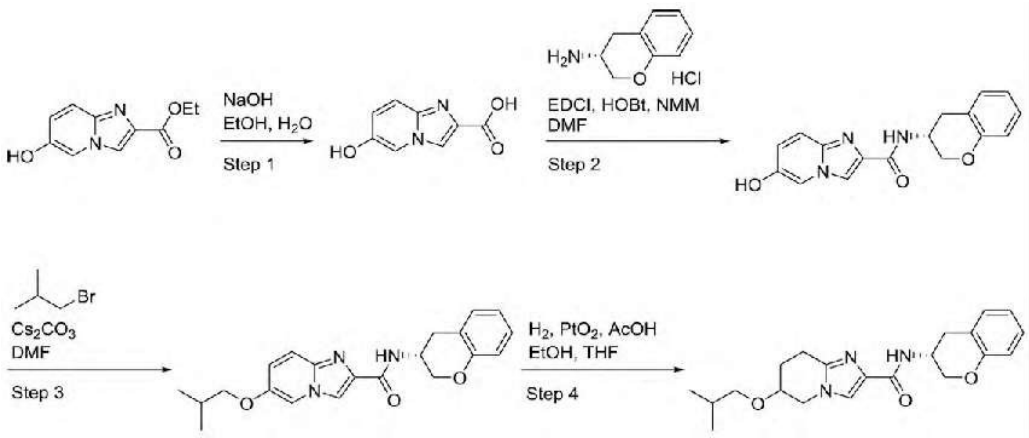
The compound of Example 40 was synthesized from the compound synthesized in Step 4 in Example 37 and the compound of Reference Example 3 by a method similar to Step 4 in Example 1.

[0348]

The compound of Example 41 was synthesized under the scheme depicted in the figure below.

[0349]

[Chem 102]

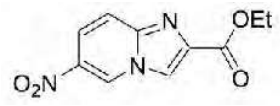


[0350]

The compound of Reference Example 16 (shown in the figure below.) was synthesized by a method similar to Step 1 in Example 1.

[0351]

[Chem 103]

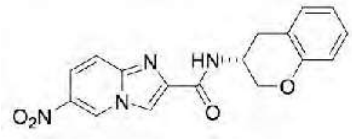


[0352]

The compound of Reference Example 17 (shown in the figure below.) was synthesized from the compound of Reference Example 16 by a method similar to Step 1 to Step 2 in Example 41.

[0353]

[Chem 104]

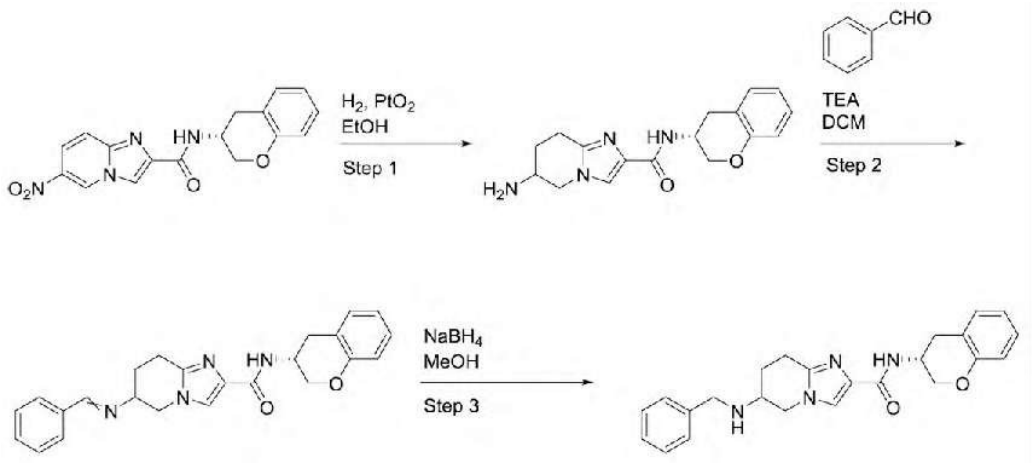


[0354]

The compound of Example 42 was synthesized under the scheme depicted in the figure below.

[0355]

[Chem 105]

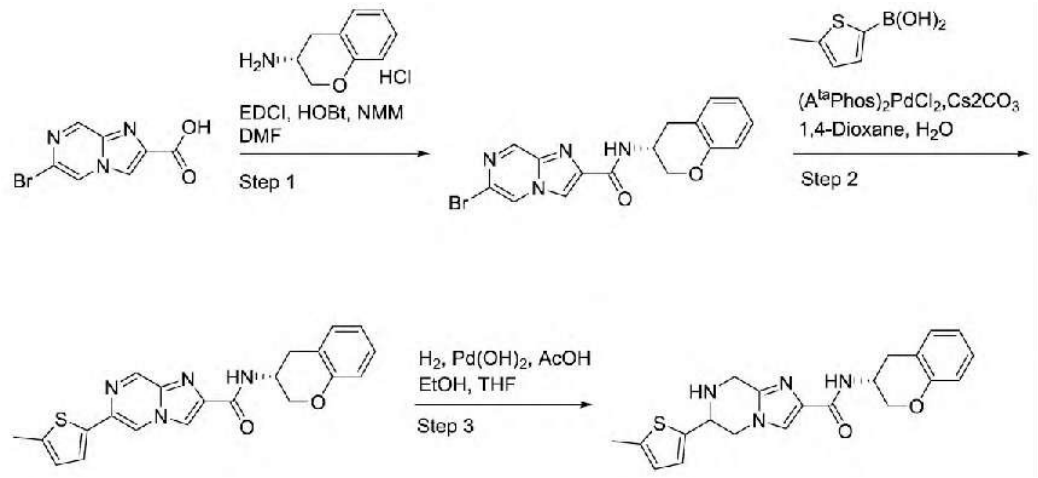


[0356]

The compound of Example 43 was synthesized under the scheme depicted in the figure below.

[0357]

[Chem 106]



[0358]

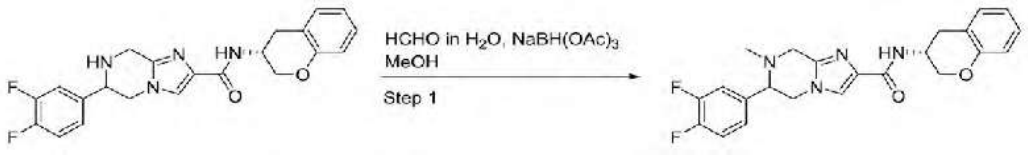
The compound of Example 44 was synthesized by a method similar to Example 43.

[0359]

The compound of Example 45 was synthesized from the compound of Example 44 under the scheme depicted in the figure below.

[0360]

[Chem 107]



[0361]

The compound of Example 46 was synthesized by a method similar to Example 43.

[0362]

The compound of Example 47 was synthesized from the compound of Example 46 by a method similar to Example 45.

[0363]

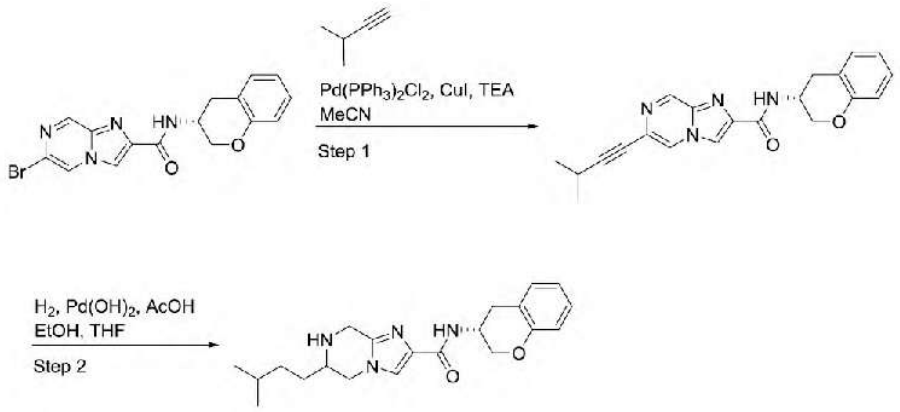
The compound of Example 48 was synthesized by a method similar to Example 43.

[0364]

The compound of Example 49 was synthesized under the scheme depicted in the figure below.

[0365]

[Chem 108]



[0366]

The compound of Example 50 was synthesized from the compound of Example 49 by a method similar to Example 45.

[0367]

The compound of Example 51 was synthesized by a method similar to Example 49.

[0368]

The compound of Example 52 was synthesized from the compound of Example 51 by a method similar to Example 45.

[0369]

The compound of Example 53 was synthesized by a method similar to Example 49.

[0370]

The compound of Example 54 was synthesized from the compound of Example 53 by a method similar to Example 45.

[0371]

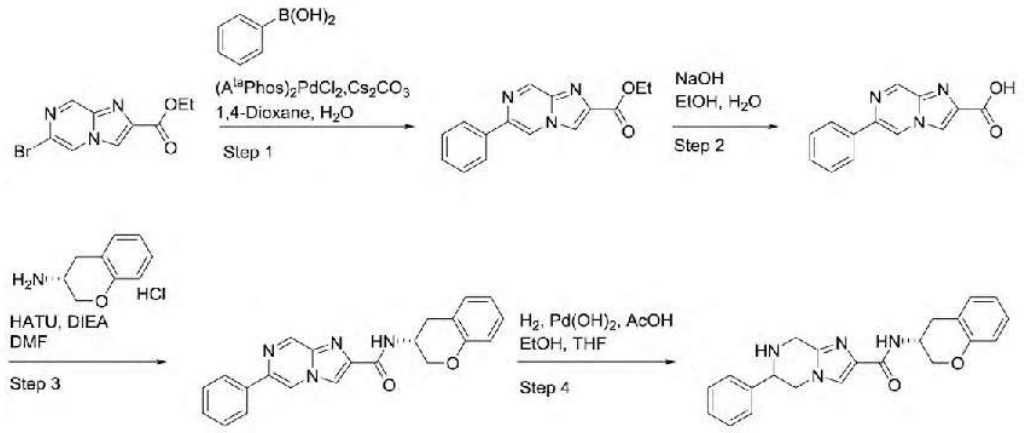
The compound of Example 55 was synthesized by a method similar to Example 49.

[0372]

The compound of Example 56 was synthesized under the scheme depicted in the figure below.

[0373]

[Chem 109]



[0374]

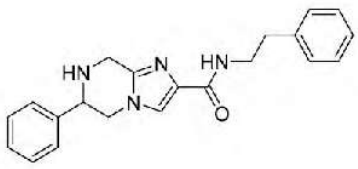
The compound of Example 57 was synthesized from the compound of Example 56 by a method similar to Example 45.

[0375]

The compound of Reference Example 18 (shown in the figure below.) was synthesized by a method similar to Example 56.

[0376]

[Chem 110]



[0377]

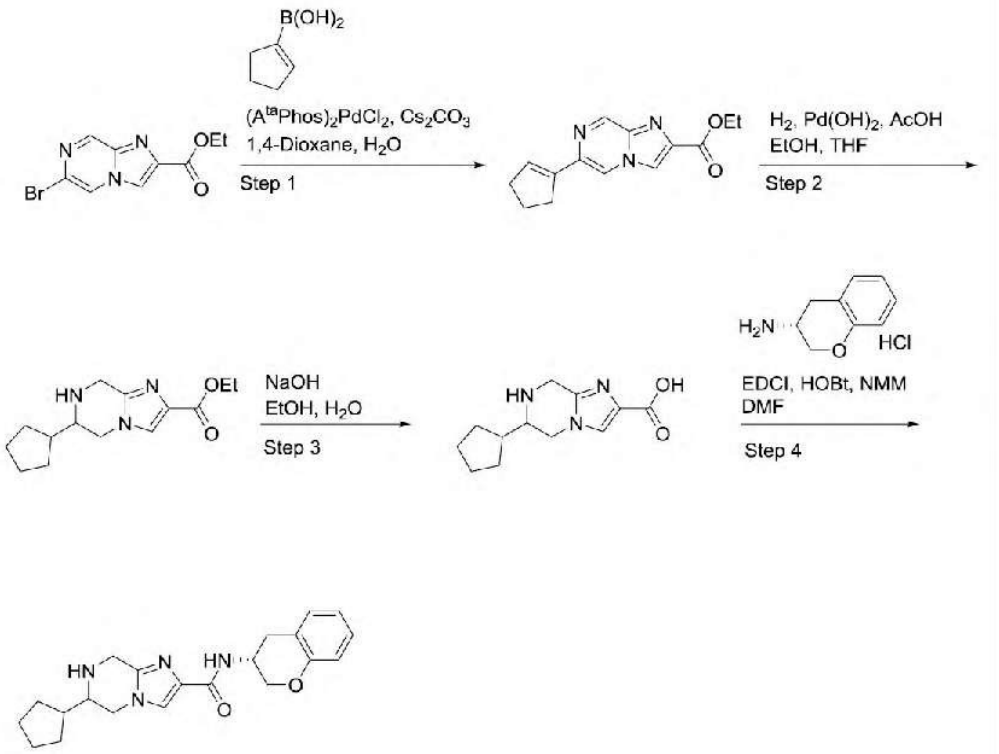
The compound of Example 58 was synthesized from the compound of Reference Example 18 by a method similar to Example 45.

[0378]

The compound of Example 59 was synthesized under the scheme depicted in the figure below.

[0379]

[Chem 111]

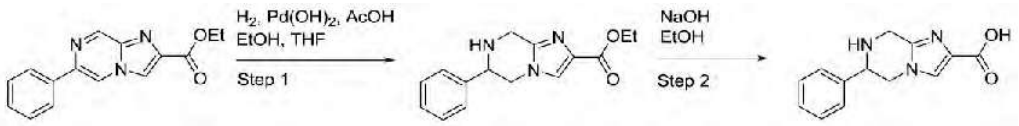


[0380]

The compound of Reference Example 19 was synthesized from the compound synthesized in Step 1 in Example 56 under the scheme depicted in the figure below.

[0381]

[Chem 112]



[0382]

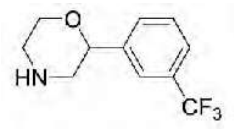
The compound of Example 60 was synthesized from the compound of Reference Example 19 by a method similar to Step 4 in Example 59.

[0383]

The compound of Reference Example 20 (shown in the figure below.) was synthesized by a method similar to Reference Example 15.

[0384]

[Chem 113]



[0385]

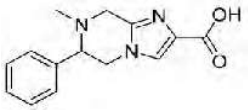
The compound of Example 61 was synthesized from the compound of Reference Example 19 and the compound of Reference Example 20 by a similar method similar to Step 4 in Example 59.

[0386]

The compound of Reference Example 21 (shown in the figure below.) was synthesized from the compound synthesized in Step 1 in Reference Example 19 by methods similar to those described in Example 45 and Step 2 in Reference Example 19.

[0387]

[Chem 114]

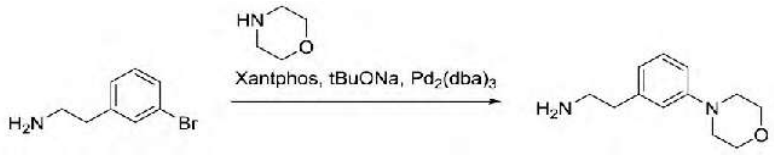


[0388]

The compound of Reference Example 22 was synthesized under the scheme depicted in the figure below.

[0389]

[Chem 115]



[0390]

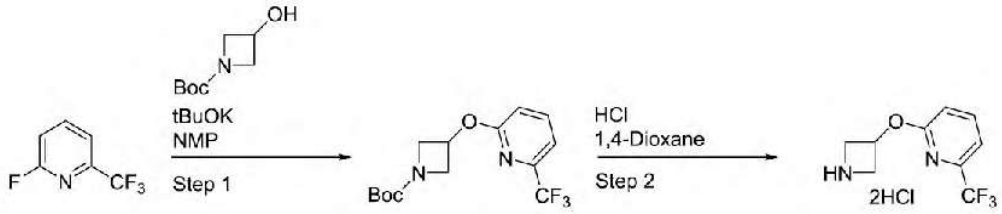
The compound of Example 62 was synthesized from the compound Reference Example 21 and the compound Reference Example 22 by a method similar to Step 3 in Example 56.

[0391]

The compound of Reference Example 23 (2-(azetidin-3-yloxy)-6-(trifluoromethyl)pyridine dihydrochloride) was synthesized under the scheme depicted in the figure below.

[0392]

[Chem 116]



[0393]

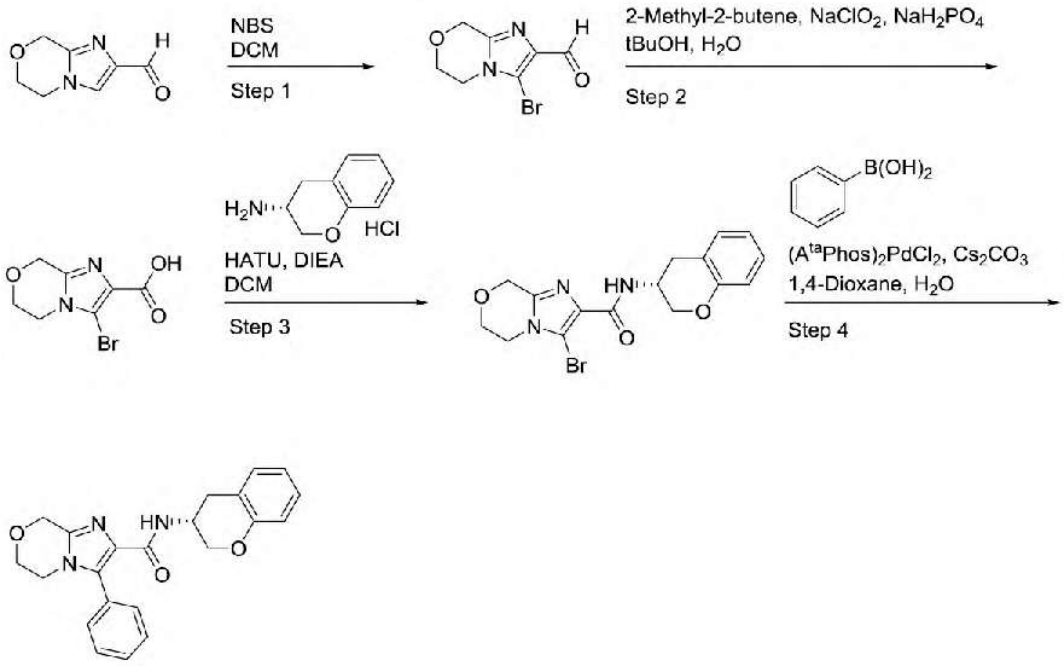
The compound of Example 63 was synthesized from the compound of Reference Example 21 and the compound of Reference Example 23 by a method similar to Step 3 in Example 56.

[0394]

The compound of Example 64 was synthesized under the scheme depicted in the figure below.

[0395]

[Chem 117]



[0396]

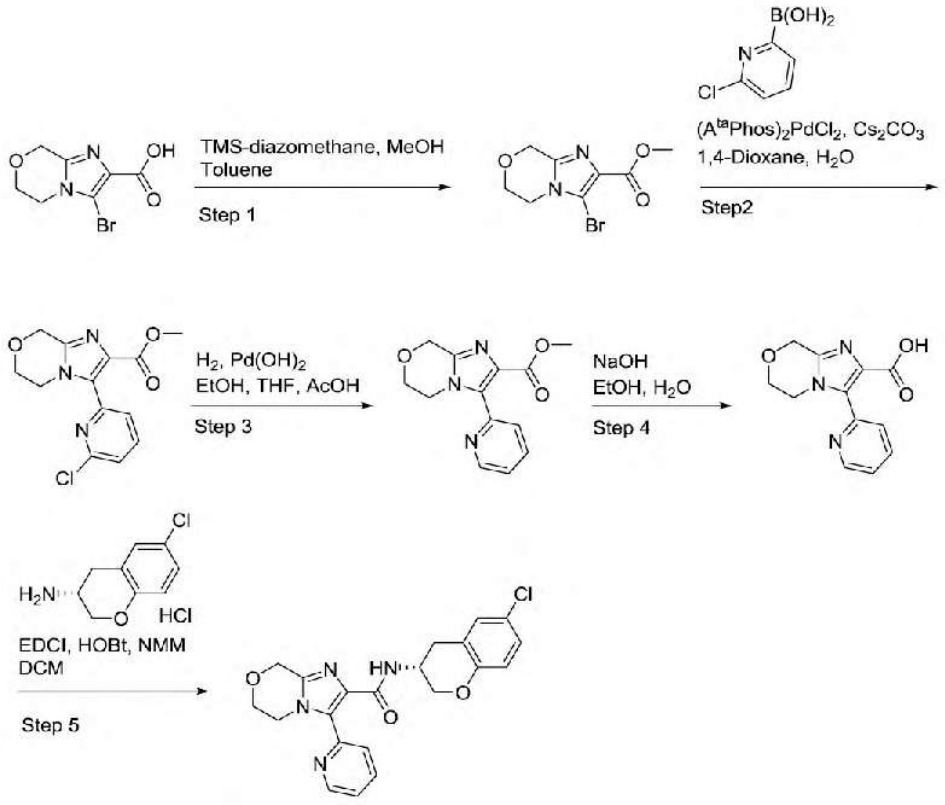
The compound of Example 65 was synthesized by methods similar to those described in Example 64 and Reference Example 1.

[0397]

The compound of Example 66 was synthesized under the scheme depicted in the figure below.

[0398]

[Chem 118]



[0399]

The compound of Example 67 was synthesized from the compound synthesized in Step 4 in Example 66 and the compound of Reference Example 43 by a method similar to Step 4 in Reference Example 18.

[0400]

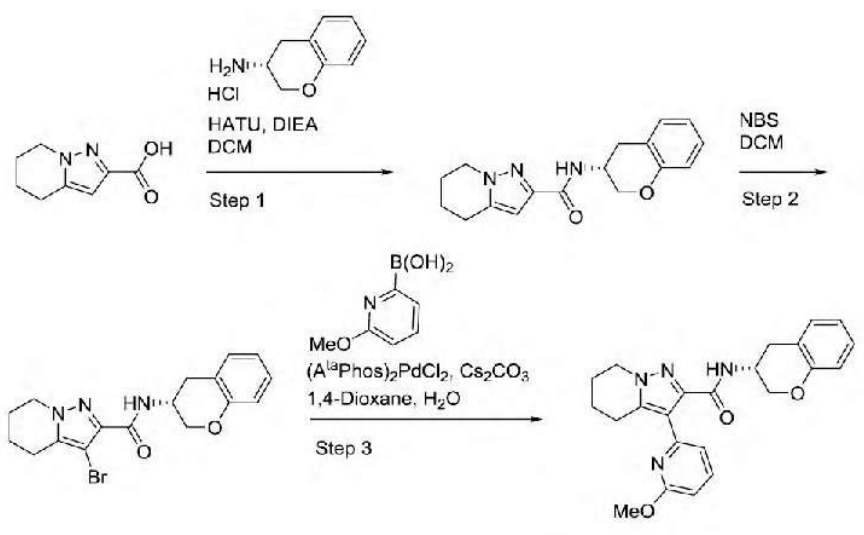
The compound of Example 68 was synthesized by a method similar to Example 32.

[0401]

The compound of Example 69 was synthesized under the scheme depicted in the figure below.

[0402]

[Chem 119]



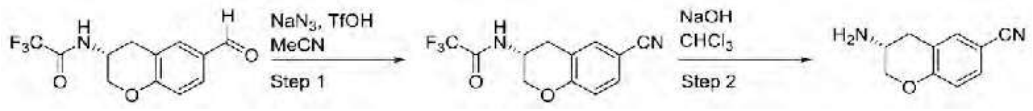
[0403]

Reference Example 24

Production of (R)-3-aminochroman-6-carbonitrile

[0404]

[Chem 120]



[0405]

Step 1

To a solution of (R)-2,2,2-trifluoro-N-(6-formylchroman-3-yl)acetamide (1.43 g, 5.23 mmol) synthesized by a method described in Step 2 in Reference Example 3 in acetonitrile (52.3 mL) were added sodium azide (524 mg, 8.06 mmol) and trifluoromethanesulfonic acid (1.61 mL, 18.3mmol), and the mixture was stirred for 2 hours at room temperature. Saturated aqueous solution of sodium hydrogen carbonate, water and ethyl acetate were added to the reaction solution, and the mixture was partitioned. The organic layer was washed with saturated brine, and then dried over anhydrous sodium sulfate. The solvent was evaporated off under reduced pressure. The residue was purified by silica gel column chromatography to give (R)-N-(6-cyanochroman-3-yl)-2,2,2-trifluoroacetamide (amount 1.40 g, yield 99%).

[0406]

Step 2

To a solution of (R)-N-(6-cyanochroman-3-yl)-2,2,2-trifluoroacetamide (1.40 g, 5.18 mmol) in chloroform (13 mL), 4 mol/L aqueous solution of sodium hydroxide (13.0 mL, 51.8 mmol) was added, and the mixture was stirred for 13 hours at room temperature. Water and

chloroform were added to the reaction solution, and the mixture was partitioned. The organic layer was washed with saturated brine, and then dried over anhydrous sodium sulfate. The solvent was evaporated off under reduced pressure to give (R)-3-aminochroman-6-carbonitrile (amount 505 mg, yield 56%).

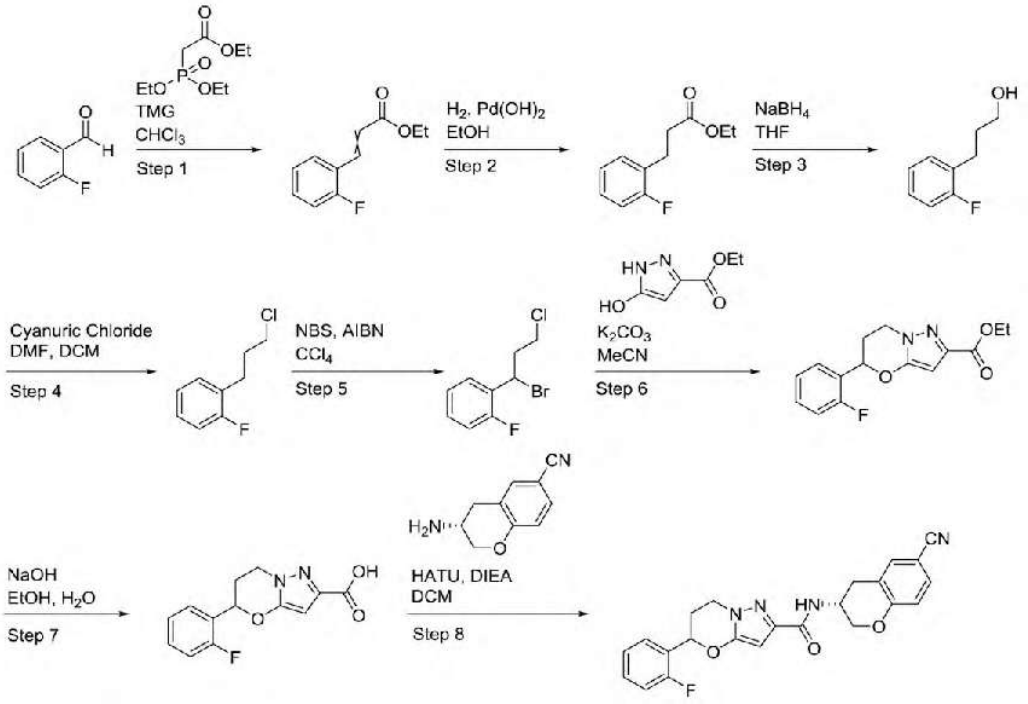
[0407]

Example 70

Production of N-((R)-6-cyanochroman-3-yl)-5-(2-fluorophenyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide

[0408]

[Chem 121]



[0409]

Step 1

To a solution of 2-fluorobenzaldehyde (2.00 g, 16.1 mmol) in chloroform (32.2 mL) were added 1,1,3,3-tetramethylguanzine (3.03 mL, 24.2 mmol) and diethylphosphonoethyl acetate (3.52 mL, 17.7 mmol), and the mixture was stirred for 4 hours at 50°C. After evaporating off the solvent under reduced pressure, the residue was purified by silica gel column chromatography to give ethyl 3-(2-fluorophenyl)acrylate (amount 2.98 g, yield 95%).

[0410]

Step 2

To a solution of ethyl 3-(2-fluorophenyl)acrylate (2.98 g, 15.3 mmol) in ethanol (76.7 mL), 20% palladium hydroxide on carbon (539 mg) was added, and the mixture was stirred under pressurized conditions (about 3 atm) in hydrogen atmosphere for 3 hours at 50°C. After the reaction solution was filtered through celite, the solvent was evaporated off under reduced pressure to give ethyl 3-(2-fluorophenyl)propanoate (amount 2.79 g, yield 93%).

[0411]

Step 3

To a solution of ethyl 3-(2-fluorophenyl)propanoate (2.79 g, 14.2 mmol) in tetrahydrofuran (71.1 mL), lithium borohydride (774 mg, 35.5 mmol) was added, and the mixture was stirred for 5 hours at room temperature. Water and ethyl acetate were added to the reaction solution, and the mixture was partitioned. The organic layer was washed with saturated brine, and then dried over anhydrous sodium sulfate. The solvent was evaporated off under reduced pressure. The residue was purified by silica gel column chromatography to give 3-(2-fluorophenyl)propan-1-ol (amount 2.17 g, yield 99%).

[0412]

Step 4

To a solution of cyanuric chloride (2.86 g, 15.5 mL) in N,N-dimethylformamide (3.3 mL) was added a solution of 3-(2-fluorophenyl)propan-1-ol (2.17 g, 14.1 mmol) in dichloromethane (70.4 mL), and the mixture was stirred for 13 hours at room temperature. Water and chloroform were added to the reaction solution, and the mixture was partitioned. After drying the organic layer with anhydrous sodium sulfate, the solvent was evaporated off under reduced pressure. The residue was purified by silica gel column chromatography to give 1-(3-chloropropyl)-2-fluorobenzene (amount 2.00 g, yield 82%).

[0413]

Step 5

To a solution of 1-(3-chloropropyl)-2-fluorobenzene (2.00 g, 11.6 mmol) in carbon tetrachloride (39 mL) were added N-bromosuccineimide (2.27 g, 12.7 mmol) and 2,2'-azobis(isobutyropionitrile) (168 μL, 1.16 mmol), and the mixture was stirred for 2 hours at 90°C. Water and chloroform were added to the reaction solution, and the mixture was partitioned. After drying the organic layer with anhydrous sodium sulfate, the solvent was evaporated off under reduced pressure. The residue was purified by silica gel column chromatography to give 1-(1-bromo-3-chloropropyl)-2-fluorobenzene (amount 2.36 g, yield 81%).

[0414]

Step 6

To a solution of 1-(1-bromo-3-chloropropyl)-2-fluorobenzene (2.36 g, 9.38 mmol) in acetonitrile (31.3 mL) were added ethyl 5-hydroxy-1H-pyrazole-3-carboxylate (1.47 g, 9.38 mmol) and potassium carbonate (3.89 g, 28.1 mmol), and the mixture was stirred for 15 hours at 100°C. After concentrating the reaction solution under reduced pressure, the residue was purified by silica gel column chromatography to give ethyl 5-(2-fluorophenyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylate (amount 2.30 g, yield 84%).

[0415]

Step 7

To a solution of ethyl 5-(2-fluorophenyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylate (2.30 g, 7.92 mmol) in ethanol (15.8 mL) was added 4 mol/L aqueous solution of sodium hydroxide (7.92 mL, 31.7 mmol), and the mixture was stirred for 24 hours at room temperature. To the reaction solution, 2 mol/L hydrochloric acid was added, and then the solvent was evaporated off under reduced pressure. Water and ethyl acetate were added to the residue, and the mixture was partitioned. The organic layer was washed with saturated brine, and then dried over anhydrous sodium sulfate, and the solvent was evaporated off under reduced pressure to give 5-(2-fluorophenyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylic acid (amount 1.80 g, yield 87%) as a mixture with 4 equivalents of sodium chloride.

[0416]

Step 8

To a suspension of 5-(2-fluorophenyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylic acid (a mixture with 4 equivalents of sodium chloride) (36.1 mg, 0.138 mmol) in dichloromethane (1.2 mL) were added HATU (48.0 mg, 0.126 mmol), N,N-diisopropylethylamine (99 μL, 0.57 mmol) and (R)-3-aminochroman-6-carbonitrile (20.0 mg, 0.115 mmol), and the mixture was stirred for 2 hours at room temperature. The reaction solution was purified by silica gel column chromatography to give N-((R)-6-cyanochroman-3-yl)-5-(2-fluorophenyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide (amount 47.9 mg, yield 100%).

[0417]

The compound of Example 71 was synthesized by methods similar to those described in Example 70 and Reference Example 2.

[0418]

The compound of Example 72 was synthesized by a method similar to Example 70.

[0419]

The compound of Example 73 was synthesized by a method similar to Example 70.

[0420]

The compounds of Example 74 were obtained by separating the compound of Example 73.

[0421]

The compound of Example 75 was synthesized by a method similar to Example 70.

[0422]

The compound of Example 76 was synthesized by methods similar to those described in Example 70 and Reference Example 5.

[0423]

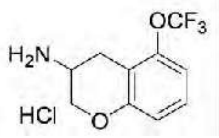
The compound of Example 77 was synthesized by a method similar to those described in Step 6 to Step 8 in Example 70 and Reference Example 4.

[0424]

The compound of Reference Example 25 (shown in the figure below.) was synthesized by a method similar to Reference Example 4.

[0425]

[Chem 122]



[0426]

The compound of Example 78 was synthesized by methods similar to those described in Example 77 and Reference Example 25.

[0427]

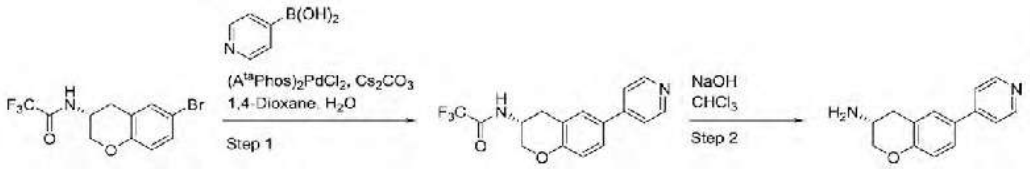
The compound of Example 79 was synthesized by a method similar to Example 77.

[0428]

The compound of Reference Example 27 was synthesized under the scheme depicted in the figure below.

[0429]

[Chem 123]



[0430]

The compound of Example 80 was synthesized by methods similar to those described in Example 70 and Reference Example 27.

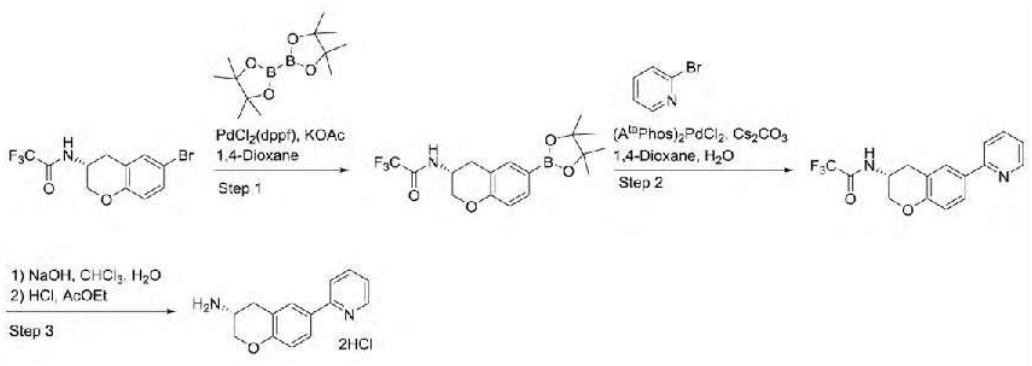
[0431]

Reference Example 28

Production of (R)-6-(pyridin-2-yl)chroman-3-amine dihydrochloride

[0432]

[Chem 124]



[0433]

Step 1

To a solution of (R)-N-(6-bromochroman-3-yl)-2,2,2,-trifluoroacetamide (500 mg, 1.54 mmol) synthesized by a method described in Step 1 in Reference Example 2 in 1,4-dioxane (10 mL) were added bis(pinacolato)diboron (800 mg, 3.15 mmol), potassium acetate (300 mg, 7.87 mmol) and [1,1'-bis(diphenylphosphino)ferrocene]dichloropalladium (II) (100 mg, 0.14 mmol). The mixture was stirred for 15 hours at 90°C. Water and ethyl acetate were added to the reaction solution, and the mixture was partitioned. After drying the organic layer with anhydrous sodium sulfate, the solvent was evaporated off under reduced pressure. The residue was purified by silica gel column chromatography to give (R)-2,2,2-trifluoro-N-(6-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)chroman-3-yl)acetamide (amount 570 mg, yield 100%).

[0434]

Step 2

A mixture suspension of (R)-2,2,2-trifluoro-N-(6-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)chroman-3-yl)acetamide (200 mg, 0.539 mmol), 2-bromopyridine (130 mg, 0.823 mmol), cesium carbonate (350 mg, 1.07 mmol) and bis(di-tert-butyl (4-dimethylaminophenyl)phosphine)dichloropalladium (II) (38.0 mg, 0.0537 mmol) in 1,4-dioxane (2.5 mL) and water (0.5 mL) was stirred for 5 hours at 100°C. To the reaction solution, an aqueous solution of saturated ammonium chloride and ethyl acetate were added, and the mixture was partitioned. The organic layer was washed with saturated brine, and then dried over

anhydrous sodium sulfate. The solvent was evaporated off under reduced pressure. The residue was purified by silica gel column chromatography to give (R)-2,2,2-trifluoro-N-(6-(pyridin-2-yl)chroman-3-yl)acetamide (amount 82.0 mg, yield 47%).

[0435]

Step 3

(R)-6-(Pyridin-2-yl)chroman-3-amine dihydrochloride was obtained by a method similar to Step 3 in Reference Example 1, using (R)-2,2,2-trifluoro-N-(6-(pyridin-2-yl)chroman-3-yl)acetamide instead of (R)-N-(6-chlorochroman-3-yl)-2,2,2,-trifluoroacetamide.

[0436]

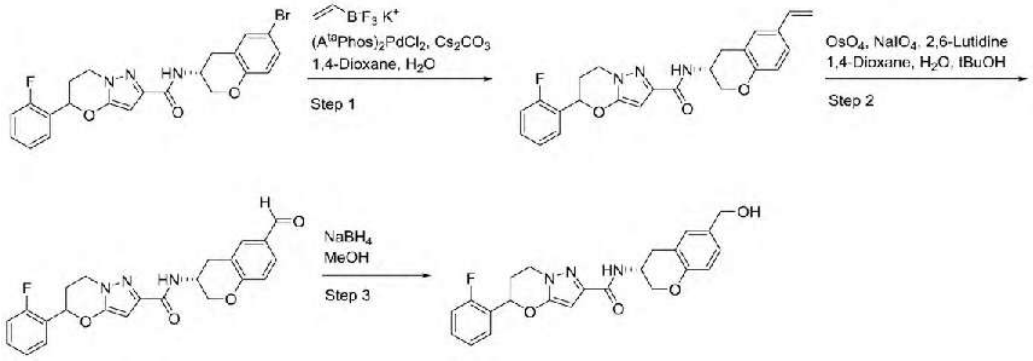
The compound of Example 81 was synthesized by methods similar to those described in Example 70 and Reference Example 28.

[0437]

The compound of e Example 82 was synthesized under the scheme depicted in the figure below.

[0438]

[Chem 125]

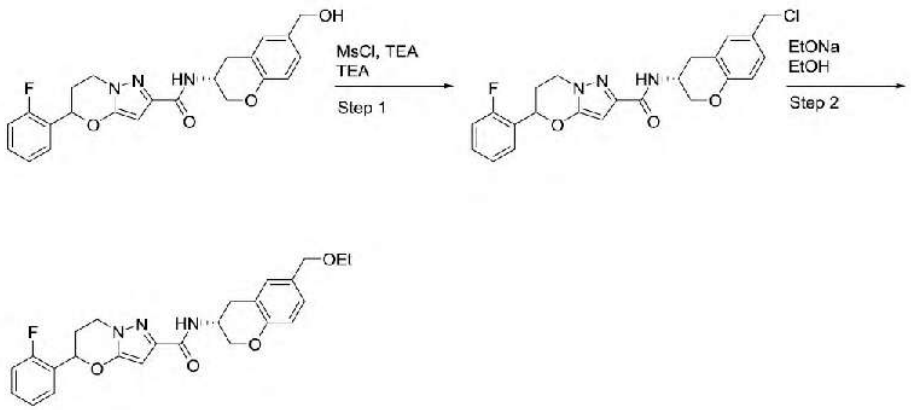


[0439]

The compound of Example 83 was synthesized under the scheme depicted in the figure below.

[0440]

[Chem 126]

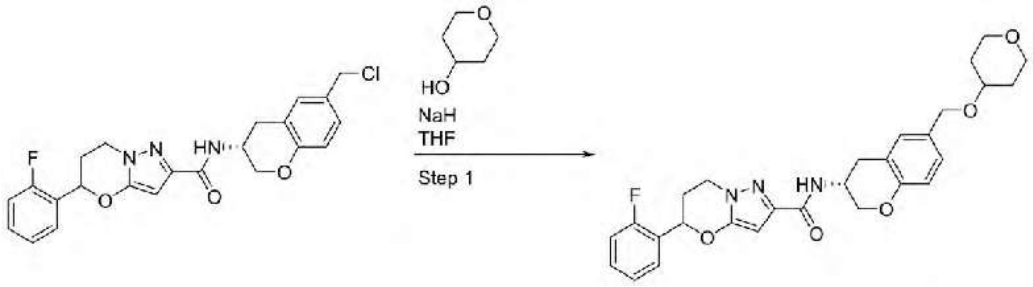


[0441]

The compound of Example 84 was synthesized under the scheme depicted in the figure below.

[0442]

[Chem 127]

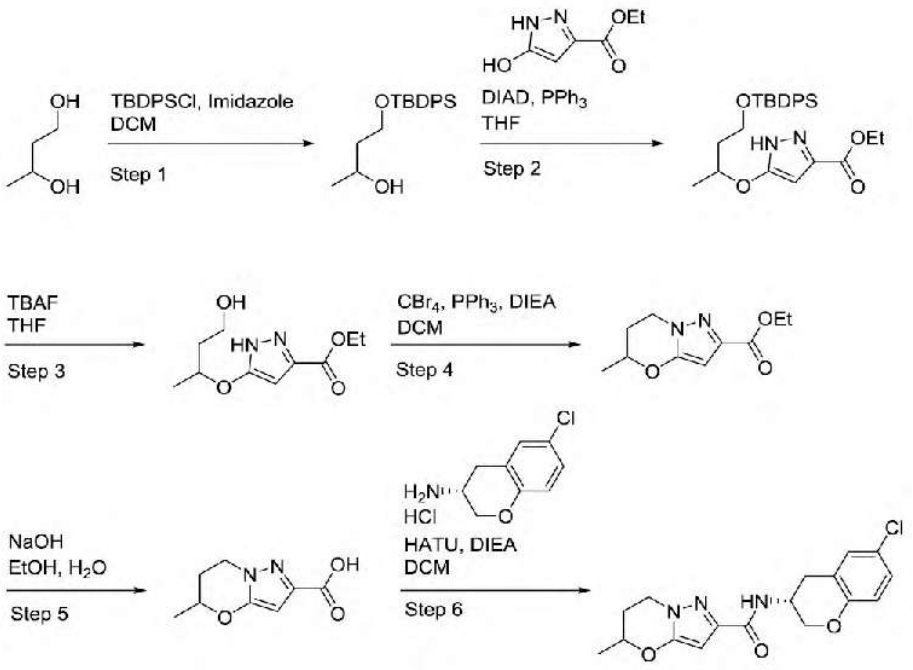


[0443]

The compound of Example 85 was synthesized under the scheme depicted in the figure below.

[0444]

[Chem 128]



[0445]

The compound of Example 86 was synthesized by a method similar to Example 85.

[0446]

The compound of Example 87 was synthesized by a method similar to Example 85.

[0447]

The compound of Example 88 was synthesized by methods similar to those described in Example 85 and Reference Example 2.

[0448]

The compound of Example 89 was synthesized by methods similar to those described in Example 85 and Reference Example 2.

[0449]

The compound of Example 90 was synthesized by a method similar to Example 85.

[0450]

The compound of Example 91 was synthesized by methods similar to those described in Example 85 and Reference Example 24.

[0451]

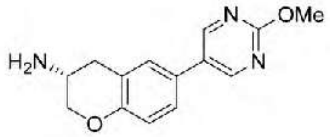
The compounds of Example 92 were obtained by separating the compound of Example 91.

[0452]

The compound of Reference Example 29 (shown in the figure below.) was synthesized by a method similar to Reference Example 27.

[0453]

[Chem 129]



[0454]

The compound of Example 93 was synthesized by methods similar to those described in Example 85 and Reference Example 29.

[0455]

The compound of Example 94 was synthesized by methods similar to those described in Example 85 and Reference Example 24.

[0456]

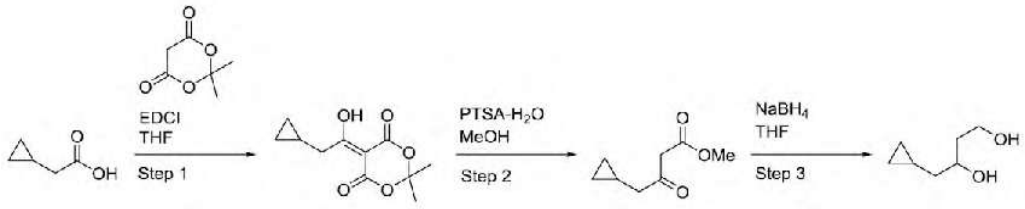
The compounds of Example 95 were obtained by separating the compound of Example 94.

[0457]

The compound of Reference Example 30 (4-cyclopropylbutan-1,3-diol) was synthesized under the scheme depicted in the figure below.

[0458]

[Chem 130]



[0459]

The compound of Example 96 was synthesized by methods similar to those described in Reference Example 30, Example 85 and Reference Example 24.

[0460]

The compounds of Example 97 were obtained by separating the compound of Example 96.

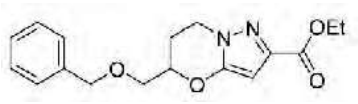
[0461]

Reference Example 31

Production of ethyl 5-((bezyloxy)methyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylate

[0462]

[Chem 131]



[0463]

Ethyl 5-((bezyloxy)methyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylate was obtained by a method similar to Step 1 to Step 4 in Example 85, using 4-(bezyloxy)butan-1,3-diol instead of butan-1,3-diol in Step 1.

[0464]

The compound of Example 98 was synthesized from the compound of Reference Example 31 by methods similar to Step 5 and Step 6 in Example 85.

[0465]

The compound of Example 99 was synthesized by methods similar to Reference Example 31, Step 5 and Step 6 in Example 85 and Example 24.

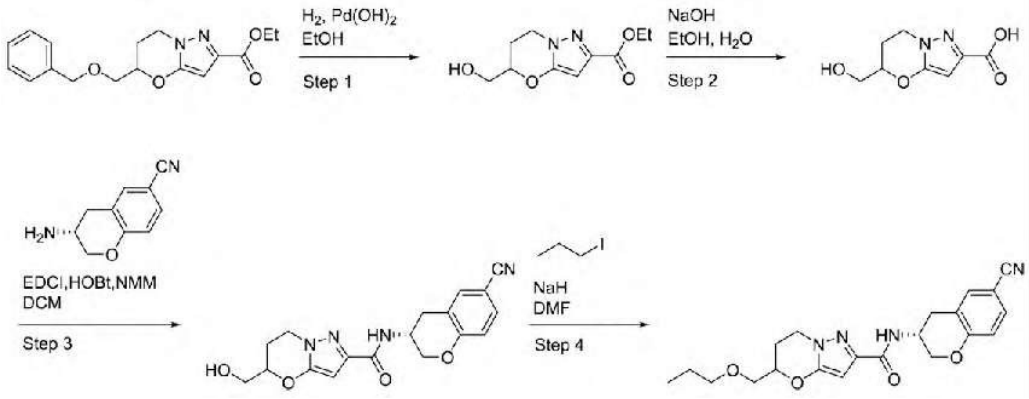
[0466]

Example 100

Production of N-((R)-6-cyanochroman-3-yl)-5-(propoxymethyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide

[0467]

[Chem 132]



[0468]

Step 1

To a solution of ethyl 5-((bezyloxy)methyl-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylate (12.4 g, 18.4 mmol) synthesized by a method described in Reference Example 31 in ethanol (61 mL), 20% palladium hydroxide on carbon (2.59 mg) was added. The mixture was stirred for 23 hours at 40°C under pressurized conditions (about 3 atm)

in hydrogen atmosphere. After the reaction solution was filtered through celite, the solvent was evaporated off under reduced pressure. The residue was purified by silica gel column chromatography to give ethyl 5-(hydroxymethyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylate (amount 2.47 g, yield 59%).

[0469]

Step 2

To a solution of ethyl 5-(hydroxymethyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylate (1.97 g, 8.71 mmol) in ethanol (44 mL), 4 mol/L aqueous solution of sodium hydroxide (8.7 mL, 35 mmol) was added, and the mixture was stirred for 15 hours at room temperature. To the reaction solution, 2 mol/L hydrochloric acid was added, and then the solvent was evaporated off under reduced pressure to give 5-(hydroxymethyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylic acid (amount 3.68 g, yield 98%) as a mixture with 4 equivalents of sodium chloride.

[0470]

Step 3

To a suspension of 5-(hydroxymethyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylic acid (a mixture with 4 equivalents of sodium chloride) (450 mg, 1.04 mmol), (R)-3-aminochroman-6-carbonitrile (200 mg, 1.15 mmol) synthesized by a method described in Reference Example 24, 1-hydroxybenzotriazole (169 mg, 1.25 mmol) and 1-ethyl-3-(3-dimethylaminopropyl)carbodiimide hydrochloride (240 mg, 1.25 mmol) in dichloromethane (10 mL), 4-methylmorpholine (573 μL, 5.21 mmol) was added, and the mixture was stirred for 24 hours at room temperature. To the reaction solution, 1 mol/L hydrochloric acid and chloroform was added, and the mixture was partitioned. After drying the organic layer with anhydrous sodium sulfate, the solvent was evaporated off under reduced pressure. The residue was purified by silica gel column chromatography to give N-((R)-6-cyanochroman-3-yl)-5-(hydroxymethyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide (amount 300 mg, yield 81%).

[0471]

Step 4

To a solution of N-((R)-6-cyanochroman-3-yl)-5-(hydroxymethyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide (330 mg, 0.931 mmol) in N,N-dimethylformamide (8.8 mL) was added sodium hydride (60% in oil) and 1-iodopropane (136 μL, 1.39 mmol). The mixture was stirred for 13 hours at 90°C. Water and ethyl acetate were added to the reaction solution, and the mixture was partitioned. After drying the organic layer with anhydrous sodium sulfate, the solvent was evaporated off under reduced pressure. The residue was purified by silica

gel column chromatography to give N-((R)-6-cyanochroman-3-yl)-5-(propoxymethyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide (amount 73.3 mg, yield 20%).

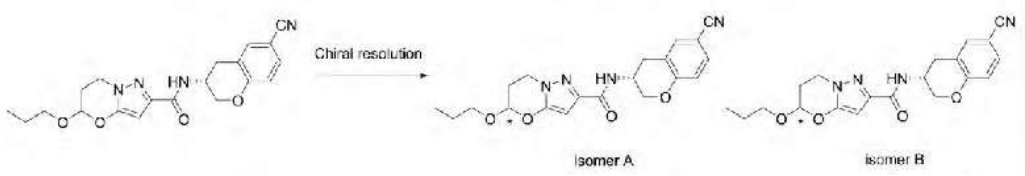
[0472]

Example 101

Isomeric separation of N-((R)-6-cyanochroman-3-yl)-5-(propoxymethyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide

[0473]

[Chem 133]



[0474]

N-((R)-6-Cyanochroman-3-yl)-5-(propoxymethyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide (150 mg, 0.378 mmol) synthesized by a method described in Example 100 was dissolved in ethanol (15 mL), and the solution was subjected to HPLC fractionation (column: CHIRALPAK IB, developing solvent: ethanol, flow rate: 8.0 mL/min, room temperature) to give isomer A (amount 59.9 mg, yield 40%) and isomer B (amount 61.4 mg, yield 41%).

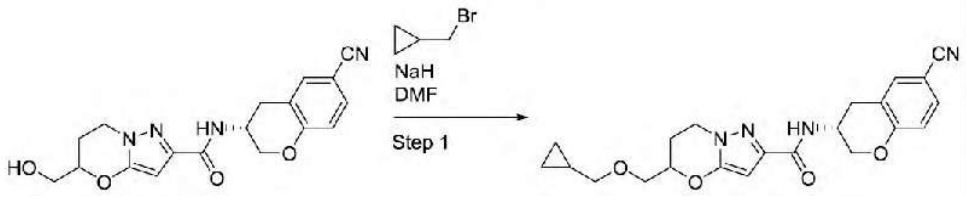
[0475]

Example 102

Production of N-((R)-6-cyanochroman-3-yl)-5-((cyclopropylmethoxy)methyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide

[0476]

[Chem 134]



[0477]

To a solution of N-((R)-6-cyanochroman-3-yl)-5-(hydroxymethyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide (397 mg, 1.12 mmol) synthesized by a method described in Step 3 in Example 100 in N,N-dimethylformamide (11.2 mL), sodium hydride (60% in oil) (179 mg, 4.48 mmol) was added. The mixture was stirred for 10 minutes at room

temperature. In addition, (bromomethyl)cyclopropane (215 μL, 2.24 mmol) was added, and the mixture was stirred for 16 hours at 90°C. Water and ethyl acetate were added to the reaction solution, and the mixture was partitioned. After drying the organic layer with anhydrous sodium sulfate, the solvent was evaporated off under reduced pressure. The residue was purified by silica gel column chromatography to give N-((R)-6-cyanochroman-3-yl)-5-((cyclopropylmethoxy)methyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide (amount 136 mg, yield 30%).

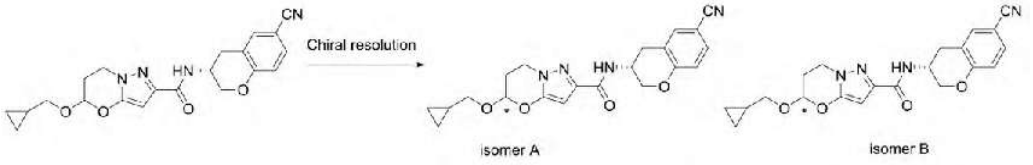
[0478]

Example 103

Isomeric separation of N-((R)-6-cyanochroman-3-yl)-5-((cyclopropylmethoxy)methyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide

[0479]

[Chem 135]



[0480]

N-((R)-6-Cyanochroman-3-yl)-5-((cyclopropylmethoxy)methyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide (134 mg, 0.328 mmol) synthesized by a method described in Example 102 was dissolved in ethanol (13 mL), and the solution was subjected to HPLC fractionation (column: CHIRALPAK IB, developing solvent: ethanol, flow rate: 8.0 mL/min, room temperature) to give isomer A (amount 49.3 mg, yield 37%) and isomer B (amount 48.9 mg, yield 37%).

[0481]

The compound of Example 104 was synthesized by a method similar to Example 100.

[0482]

The compound of Example 105 was synthesized by methods similar to those described in Example 100 and Reference Example 1.

[0483]

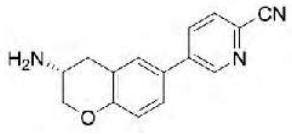
The compound of Example 106 was synthesized by methods similar to those described in Example 100 and Reference Example 1.

[0484]

The compound of Reference Example 32 (shown in the figure below.) was synthesized by a method similar to Reference Example 27.

[0485]

[Chem 136]



[0486]

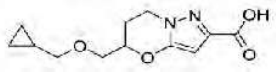
The compound of Example 107 was synthesized by methods similar to those described in Example 100 and Reference Example 32.

[0487]

The compound of Reference Example 33 (shown in the figure below.) was synthesized by a method similar to Example 100.

[0488]

[Chem 137]



[0489]

The compound of Example 108 was synthesized from the compound of Reference Example 33 and the compound of Reference Example 48 by a method similar to Step 3 in Example 100.

[0490]

The compounds of Example 109 were obtained by separating the compound of Example 108.

[0491]

The compound of Example 110 was synthesized from the compound of Reference Example 33 and the compound of Reference Example 28 by a method similar to Step 3 in Example 100.

[0492]

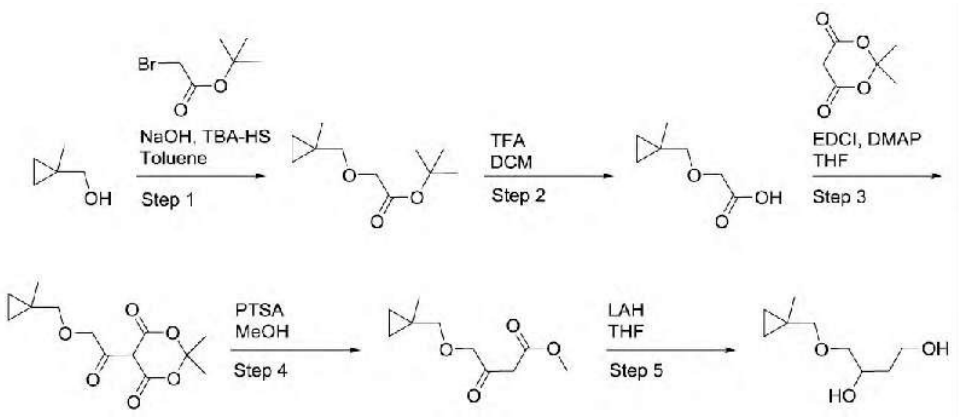
The compounds of Example 111 were obtained by separating the compound of Example 110.

[0493]

The compound of Reference Example 34 (4-((1-methylcyclopropyl)methoxy)butan-1,3-diol) was synthesized under the scheme depicted in the figure below.

[0494]

[Chem 138]



[0495]

The compound of Example 112 was synthesized by methods similar to those described in Reference Example 34, Example 85 and Reference Example 24.

[0496]

The compounds of Example 113 were obtained by separating the compound of Example 112.

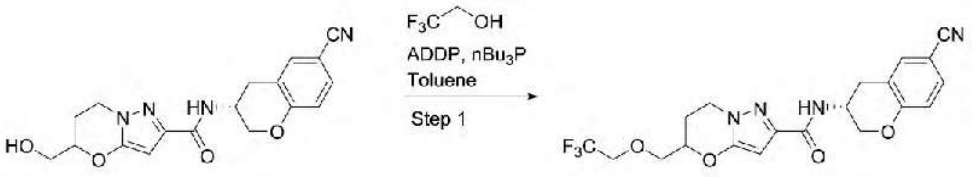
[0497]

Example 114

Production of N-((R)-6-cyanochroman-3-yl)-5-((2,2,2-trifluoroethoxy)methyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide

[0498]

[Chem 139]



[0499]

To a solution of N-((R)-6-cyanochroman-3-yl)-5-(hydroxymethyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide (20.0 mg, 0.0564 mmol) synthesized by a method described in Step 3 in Example 100 in toluene (1.1 mL) were added tributylphosphine (28.2 μL, 0.113 mmol), 2,2,2-trifluoroethanol (40.6 μL, 0.564 mmol) and 1,1'-(azodicarbonyl)dipiperizine (28.5 mg, 0.113 mmol). The mixture was stirred for 15 hours at 80°C. The reaction solution was purified by silica gel column chromatography to give N-((R)-6-cyanochroman-3-yl)-5-((2,2,2-trifluoroethoxy)methyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide.

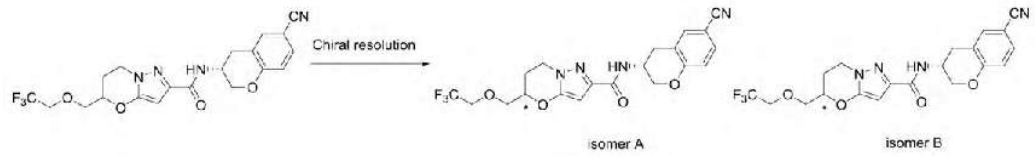
[0500]

Example 115

Isomeric separation of N-((R)-6-cyanochroman-3-yl)-5-((2,2,2-trifluoroethoxy)methyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide

[0501]

[Chem 140]



[0502]

N-((R)-6-Cyanochroman-3-yl)-5-((2,2,2-trifluoroethoxy)methyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide (178 mg, 0.408 mmol) synthesized by a method described in Example 114 was dissolved in ethanol (18 mL), and the solution was subjected to HPLC fractionation (column: CHIRALPAK IB, developing solvent: ethanol, flow rate: 8.0 mL/min, room temperature) to give isomer A (amount 74.7 mg, yield 42%) and isomer B (amount 70.5 mg, yield 40%).

[0503]

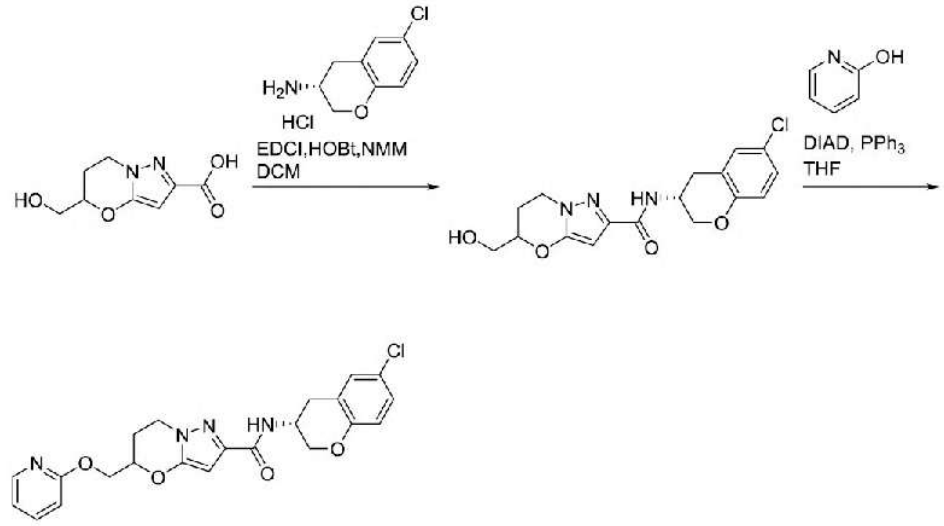
The compound of Example 116 was synthesized by a method similar to Example 114.

[0504]

The compound of Example 117 was synthesized under the scheme depicted in the figure below.

[0505]

[Chem 141]



[0506]

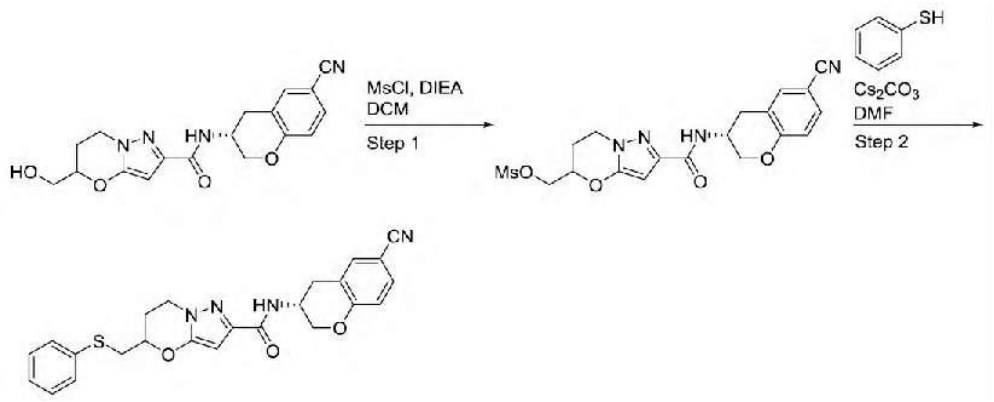
The compound of Example 118 was synthesized from the compound synthesized in Step 3 in Example 100 by a method similar to Step 2 in Example 117.

[0507]

The compound of Example 119 was synthesized under the scheme depicted in the figure below.

[0508]

[Chem 142]



[0509]

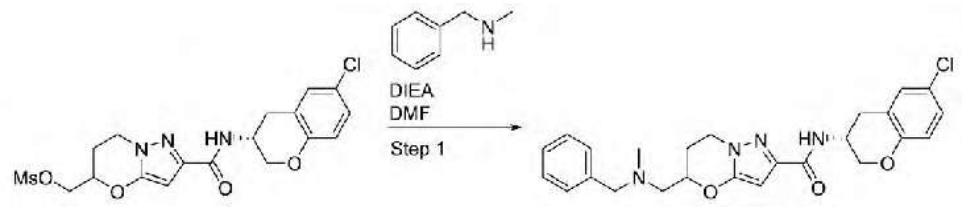
The compound of Example 120 was synthesized from the compound synthesized in Step 1 in Example 117 by a method similar to Example 119.

[0510]

The compound of Example 121 was synthesized under the scheme depicted in the figure below.

[0511]

[Chem 143]

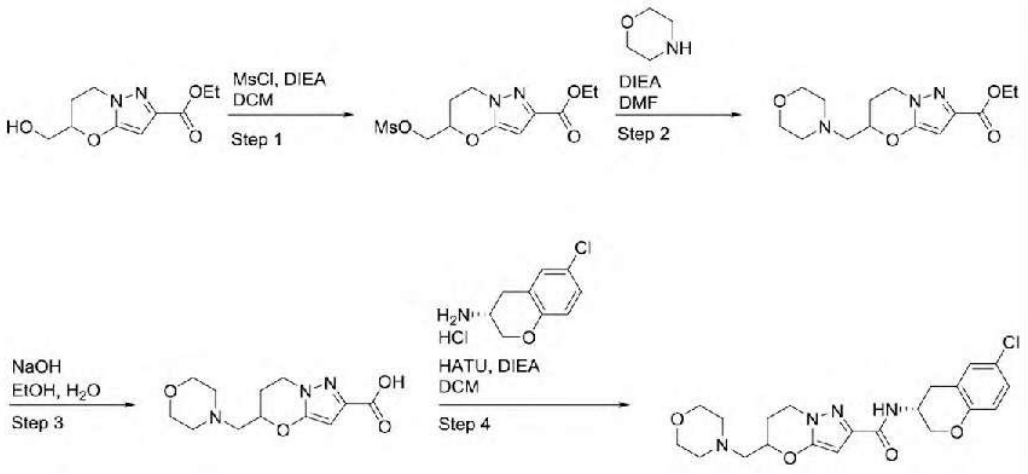


[0512]

The compound of Example 122 was synthesized under the scheme depicted in the figure below.

[0513]

[Chem 144]

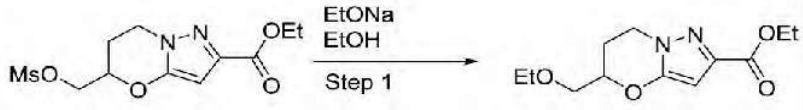


[0514]

The compound of Reference Example 35 was synthesized from the compound of synthesized in Step 1 in Example 122 under the scheme depicted in the figure below.

[0515]

[Chem 145]



[0516]

The compound of Example 123 was synthesized from the compound of Reference Example 35 and the compound of Reference Example 28 by methods similar to Step 3 and Step 4 in Example 122.

[0517]

The compounds of Example 124 were obtained by separating the compound of Example 123.

[0518]

The compound of Example 125 was synthesized from the compound of Reference Example 35 and the compound of Reference Example 32 by methods similar to Step 3 and Step 4 in Example 122.

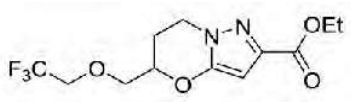
[0519]

Reference Example 36

Ethyl 5-((2,2,2-trifluoroethoxy)methyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylate

[0520]

[Chem 146]



[0521]

Ethyl 5-((2,2,2-trifluoroethoxy)methyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylate was obtained by a method similar to Example 114, using ethyl 5-(hydroxymethyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylate synthesized by a method described in Step 1 in Example 100 instead of N-((R)-6-cyanochroman-3-yl)-5-(hydroxymethyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide.

[0522]

The compound of Example 126 was synthesized from the compound of Reference Example 36 and Reference Example 48 by methods similar to Step 2 and Step 3 in Example 100.

[0523]

The compounds of Example 127 were obtained by separating the compound of Example 126.

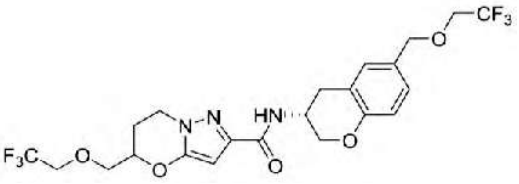
[0524]

Example 128

Production of 5-((2,2,2-trifluoroethoxy)methyl)-N-((R)-6-((2,2,2-trifluoroethoxy)methyl)chroman-3-yl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide

[0525]

[Chem 147]



[0526]

5-((2,2,2-Trifluoroethoxy)methyl)-N-((R)-6-((2,2,2-trifluoroethoxy)methyl)chroman-3-yl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide was obtained by a method similar to Step 3 and Step 4 in Example 1, using ethyl 5-((2,2,2-trifluoroethoxy)methyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylate synthesized by a method described in Reference Example 36 instead of ethyl 6-(trifluoromethyl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxylate in Step 3, and using (R)-6-((2,2,2-trifluoroethoxy)methyl)chroman-3-amine hydrochloride synthesized by a method described in Reference Example 44 instead of 6-fluorochroman-3-amine hydrochloride in Step 4.

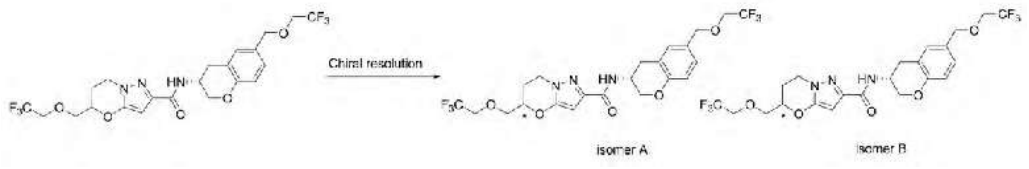
[0527]

Example 129

Isomeric separation of 5-((2,2,2-trifluoroethoxy)methyl)-N-((R)-6-((2,2,2-trifluoroethoxy)methyl)chroman-3-yl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide

[0528]

[Chem 148]



[0529]

5-((2,2,2-Trifluoroethoxy)methyl)-N-((R)-6-((2,2,2-trifluoroethoxy)methyl)chroman-3-yl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide synthesized by a method described in Example 128 was dissolved in ethanol, and the solution was subjected to HPLC fractionation (column: CHIRALPAK IC, developing solvent: ethanol/n-hexane=50/50, flow rate: 8.0 mL/min, room temperature) to give isomer A (amount 3.7 mg) and isomer B (amount 3.6 mg).

[0530]

The compound of Example 130 was synthesized from the compound of Reference Example 36 and the compound of Reference Example 28 by methods similar to Step 2 and Step 3 in Example 100.

[0531]

The compounds of Example 131 were obtained by separating the compound of Example 130.

[0532]

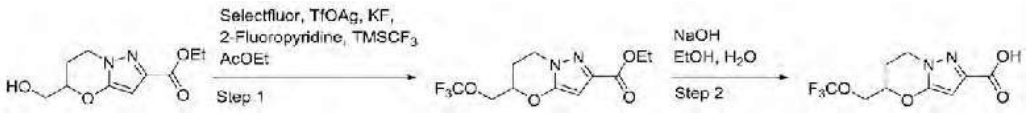
The compound of Example 132 was synthesized from the compound of Reference Example 36 and Reference Example 32 by methods similar to Step 3 and Step 4 in Example 122.

[0533]

The compound of Reference Example 37 (5-((trifluoromethoxy)methyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylic acid) was synthesized under the scheme depicted in the figure below.

[0534]

[Chem 149]



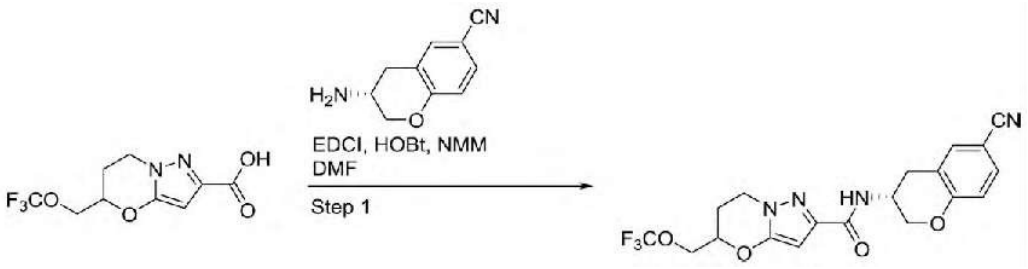
[0535]

Example 133

Production of N-((R)-6-cyanochroman-3-yl)-5-((trifluoromethoxy)methyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide

[0536]

[Chem 150]



[0537]

To a suspension of 5-((trifluoromethoxy)methyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylic acid (a mixture with 4 equivalents of sodium chloride) (267 mg, 0.534 mmol) synthesized by a method described in Reference Example 37, (R)-3-aminochroman-6-carbonitrile (140 mg, 0.804 mmol) synthesized by a method described in Reference Example 24, 1-hydroxybenzotriazole (123 mg, 0.804 mmol) and 1-ethyl-3-(3-dimethylaminopropyl)carbodiimide hydrochloride (154 mg, 0.804 mmol) in N,N-dimethylformamide (5 mL), 4-methylmorpholine (353 μL, 3.21 mmol) was added. The mixture was stirred for 15 hours at 40°C. Water and ethyl acetate were added to the reaction solution, and the mixture was partitioned. After drying the organic layer with anhydrous sodium sulfate, the solvent was evaporated off under reduced pressure. The residue was purified by silica gel column chromatography to give N-((R)-6-cyanochroman-3-yl)-5-((trifluoromethoxy)methyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide (amount 182 mg, yield 81%).

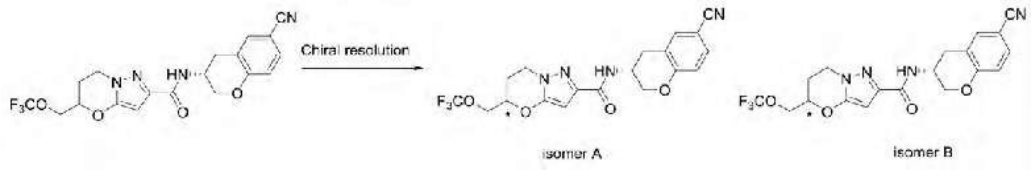
[0538]

Example 134

Isomeric separation of N-((R)-6-cyanochroman-3-yl)-5-((trifluoromethoxy)methyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide

[0539]

[Chem 151]



[0540]

N-((R)-6-Cyanochroman-3-yl)-5-((trifluoromethoxy)methyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide (20 mg) synthesized by a method described in Example 133 was dissolved in ethanol (2 mL), and the solution was subjected to HPLC fractionation (column: CHIRALPAK IB, developing solvent: ethanol, flow rate: 8.0 mL/min, room temperature) to give isomer A (amount 9.4 mg, yield 47%) and isomer B (amount 8.2 mg, yield 41%).

[0541]

The compound of Example 135 was synthesized from the compound of Reference Example 37 and the compound of Reference Example 48 by a method similar to Step 3 in Example 100.

[0542]

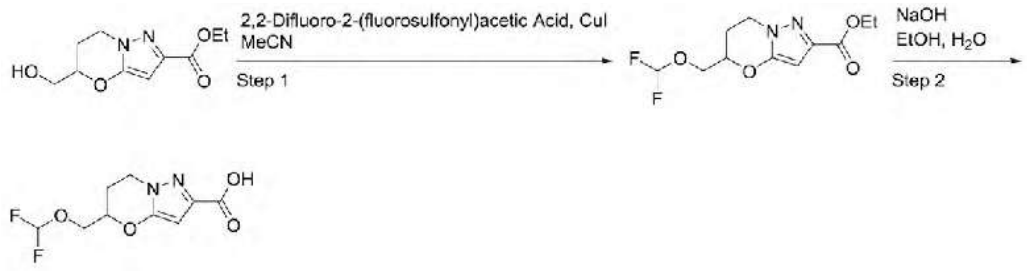
The compounds of Example 136 were obtained by separating the compound of Example 135.

[0543]

The compound of Reference Example 38 (5-((difluoromethoxy)methyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylic acid) was synthesized from the compound synthesized in Step 1 in Example 100 under the scheme depicted in the figure below.

[0544]

[Chem 152]



[0545]

The compound of Example 137 was synthesized from the compound of Reference Example 38 and the compound of Reference Example 48 by a method similar to Step 3 in Example 100.

[0546]

The compounds of Example 138 were obtained by separating the compound of Example 137.

[0547]

The compound of Example 139 was synthesized from the compound of Reference Example 38 and the compound of Reference Example 44 by a method similar to Step 3 in Example 100.

[0548]

The compounds of Example 140 were obtained by separating the compound of Example 139.

[0549]

The compound of Example 141 was synthesized from the compound of Reference Example 38 and the compound of Reference Example 45 by a method similar to Step 3 in Example 100.

[0550]

The compounds of Example 142 were obtained by separating the compound of Example 141.

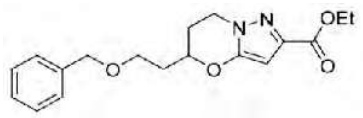
[0551]

Reference Example 39

Ethyl 5-(2-(bezyloxy)ethyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylate

[0552]

[Chem 153]



[0553]

Ethyl 5-(2-(bezyloxy)ethyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylate was obtained by a method similar to Step 1 to Step 4 in Example 85, using 5-(bezyloxy)pentane-1,3-diol instead of butan-1,3-diol in Step 1.

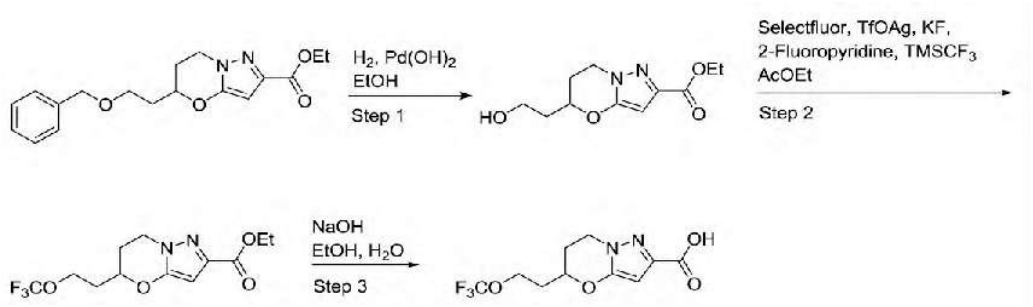
[0554]

Reference Example 40

5-(2-(Trifluoromethoxy)ethyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylic acid

[0555]

[Chem 154]



[0556]

Step 1

Ethyl 5-(2-hydroxyethyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylate was obtained by a method similar to Step 1 in Example 100, using ethyl 5-(2-(bezyloxy)ethyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylate synthesized by a method described in Reference Example 39 instead of ethyl 5-((bezyloxy)methyl-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylate..

[0557]

Step 2, Step 3

5-(2-(Trifluoromethoxy)ethyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylic acid was obtained as a mixture with 2 equivalents of sodium chloride by a method similar to Step 1 and Step 2 in Reference Example 37, using ethyl5-(2-hydroxyethyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylate instead of ethyl5-(hydroxymethyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylate in Step 1.

[0558]

The compound of Example 143 was synthesized, from the compound of Reference Example 40 and the compound of Reference Example 24 by a method similar to Step 4 in Example 1.

[0559]

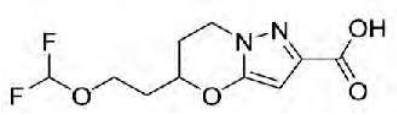
The compounds of Example 144 were obtained by separating the compound of Example 143.

[0560]

The compound of Reference Example 41 (shown in the figure below.) was synthesized from the compound synthesized in Step 1 in Reference Example 40 by a method similar to Step 1 to Step 2 in Reference Example 38.

[0561]

[Chem 155]



[0562]

The compound of Example 145 was synthesized from the compound of Reference Example 41 and the compound of Reference Example 24 by a method similar to Step 4 in Example 1.

[0563]

The compounds of Example 146 were obtained by separating the compound of Example 145.

[0564]

The compound of Example 147 was synthesized from the compound of Reference Example 41 and the compound of Reference Example 48 by a method similar to Step 4 in Example 1.

[0565]

The compounds of Example 148 were obtained by separating the compound of Example 147.

[0566]

The compound of Example 149 was synthesized from the compound of Reference Example 41 and the compound of Reference Example 44 by a method similar to Step 4 in Example 1.

[0567]

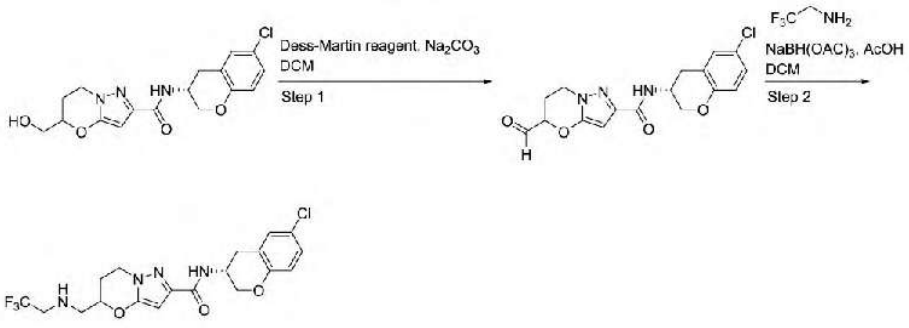
The compounds of Example 150 were obtained by separating the compound of Example 149.

[0568]

The compound of Reference Example 151 was synthesized from the compound synthesized in Step 1 in Example 117 under the scheme depicted in the figure below.

[0569]

[Chem 156]



[0570]

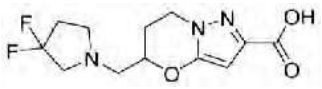
The compounds of Example 152 were obtained by separating the compound of Example 151.

[0571]

The compound of Reference Example 42 (shown in the figure below.) was synthesized by a method similar to Step 2 to Step 3 in Example 122.

[0572]

[Chem 157]

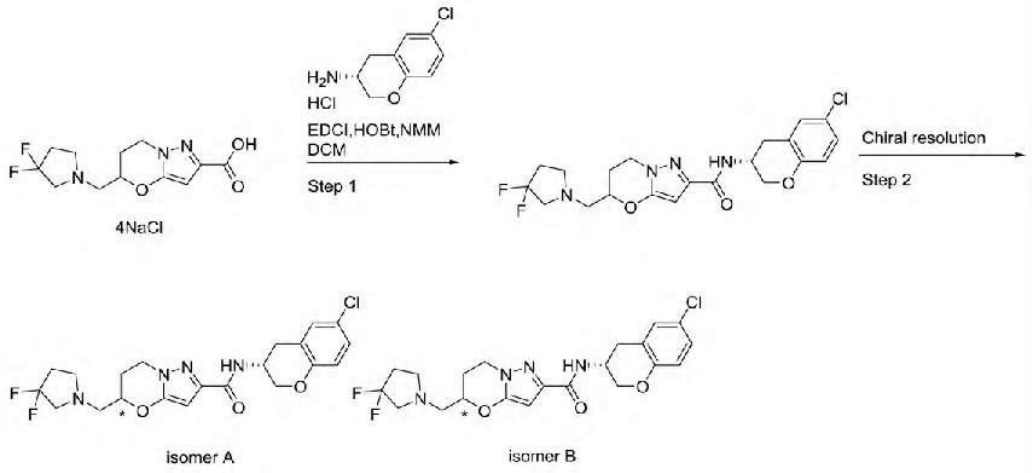


[0573]

The compound of Example 153 was synthesized from the compound of Reference Example 42 under the scheme depicted in the figure below.

[0574]

[Chem 158]

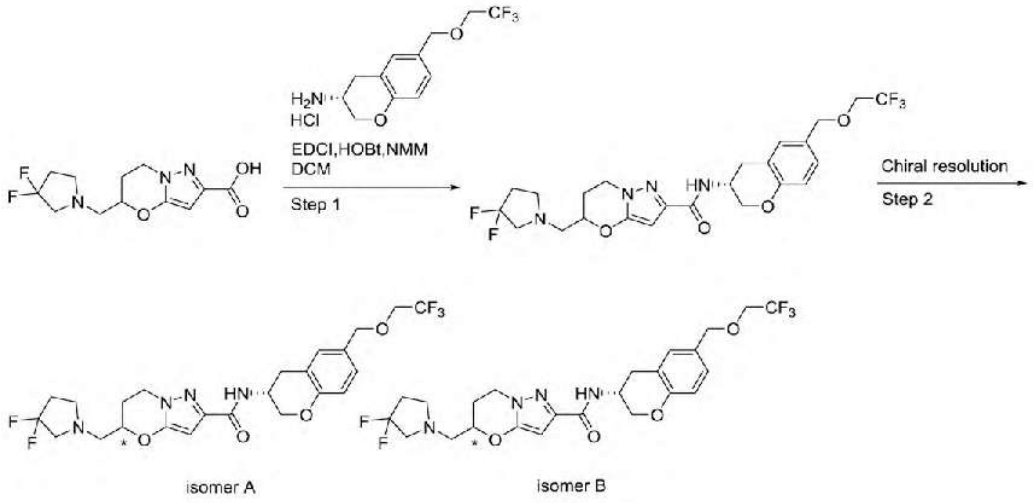


[0575]

The compound of Example 154 was synthesized from the compound of Reference Example 42 under the scheme depicted in the figure below.

[0576]

[Chem 159]

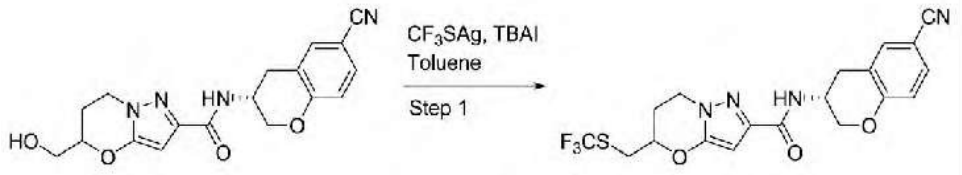


[0577]

The compound of Example 155 was synthesized under the scheme depicted in the figure below.

[0578]

[Chem 160]



[0579]

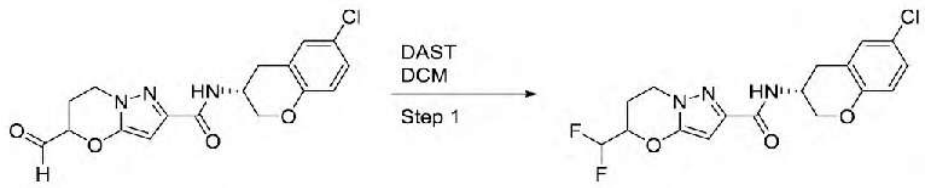
The compounds of Example 156 were obtained by separating the compound of Example 155.

[0580]

The compound of Reference Example 157 was synthesized from the compound synthesized in Step 1 in Example 151 under the scheme depicted in the figure below.

[0581]

[Chem 161]



[0582]

The compounds of Example 158 were obtained by separating the compound of Example 157.

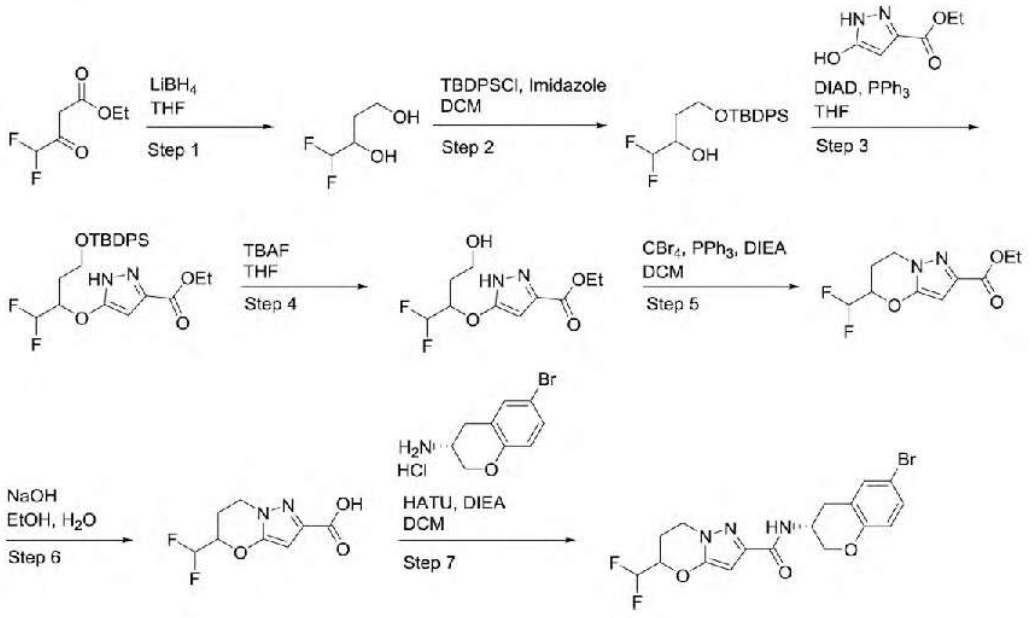
[0583]

Example 159

Production of N-((R)-6-bromochroman-3-yl)-5-(difluoromethyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide

[0584]

[Chem 162]



[0585]

Step 1

To a solution of ethyl 4,4-difluoro3-oxo-butanoate (10.0 g, 60.2 mmol) in tetrahydrofuran (300 mL), lithium borohydride (4.34 g, 199 mmol) was added, and the mixture was stirred for 15 hours at room temperature. Water and ethyl acetate were added to the reaction solution, and the mixture was partitioned. The organic layer was washed with saturated brine and dried over anhydrous sodium sulfate. After the solvent was evaporated off under reduced pressure, the residue was purified by silica gel column chromatography to give 4,4-difluorobutan-1,3-diol (amount 3.37 g, yield 44%).

[0586]

Step 2

To a solution of 4,4-difluorobutan-1,3-diol (128 mg, 1.02 mmol) in dichloromethane (3.4 mL) were added imidazole (346 mg, 5.08 mmol) and tert-butylchlorodiphenylsilane (263

μL, 1.01 mmol), and the mixture was stirred for 6 hours at room temperature. After the solvent was evaporated off under reduced pressure, the residue was purified by silica gel column chromatography to give 4-(tert-butyl (diphenyl)silyl)oxy-1,1-difluorobutan-2-ol (amount 299 mg, yield 81%).

[0587]

Step 3

To a solution of 4-(tert-butyl (diphenyl)silyl)oxy-1,1-difluorobutan-2-ol (100 mg, 0.274 mmol) in tetrahydrofuran (1.0 mL) were added ethyl 5-hydroxy-1H-pyrazole-3-carboxylate (42.8 mg, 0.274 mmol), triphenylphosphine (93.6 mg, 0.357 mmol) and 1.9 mol/L azodicarboxylic acid diisopropyl-toluene solution (190 μL, 0.36 mmol). The mixture was stirred for 13 hours at room temperature. The reaction solution was purified by silica gel column chromatography to give ethyl 5-(3-(tert-butyl(diphenylsilyl)oxy)-1-(difluoromethyl)propoxy)-1H-pyrazole-3-carboxylate (amount 33.3 mg, yield 24%).

Step 4

To a solution of ethyl 5-(3-(tert-butyl (diphenylsilyl)oxy)-1-(difluoromethyl)propoxy)-1H-pyrazole-3-carboxylate (9.16 g, 18.2 mmol) in tetrahydrofuran (180 mL), 1 mol/L tetrahydroammoniumfluoride-tetrahydrofuran solution (37 mL, 37 mmol) was added, and the mixture was stirred for 1 hour at room temperature. After concentrating the reaction solution under reduced pressure, the residue was purified by silica gel column chromatography to give ethyl 5-(1-(difluoromethyl)-3-hydroxypropoxy)-1H-pyrazole-3-carboxylate (amount 4.75 g, yield 99%).

Step 5

To a solution of ethyl 5-(1-(difluoromethyl)-3-hydroxypropoxy)-1H-pyrazole-3-carboxylate (93.0 mg, 5.91 mmol) in dichloromethane (3.5 mL) were added N,N-diisopropylethylamine (363 mL, 2.11 mmol), carbon tetrabromide (233 mg, 0.703 mmol) and triphenylphosphine (120 mg, 0.703 mmol). The mixture was stirred for 22 hours at room temperature. 1 mol/L Hydrochloric acid and chloroform were added, and the mixture was partitioned. The organic layer was dried over anhydrous sodium sulfate, and then the solvent was evaporated off under reduced pressure, the residue was purified by silica gel column chromatography to give ethyl 5-(difluoromethyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylate (219 mg) as a mixture with triphenylphosphine oxide .

Step 6

To a solution of mixture of ethyl 5-(difluoromethyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylate and triphenylphosphine oxide (213 mg) in ethanol (1.7 mL), 4

mol/L aqueous solution of sodium hydroxide (346 μL, 1.38 mmol) was added, and the mixture was stirred for 1 hours at room temperature. 2 mol/L Hydrochloric acid and toluene were added. After the solvent being evaporated off under reduced pressure, the residue was purified by silica gel column chromatography to give 5-(difluoromethyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylic acid (20.1 mg).

[0588]

Step 7

N-((R)-6-bromochroman-3-yl)-5-(difluoromethyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide was obtained by a method similar to Step 3 in Example 100, using 5-(difluoromethyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylic acid instead of 5-(hydroxymethyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylic acid, and using (R)-6-bromochroman-3-amine hydrochloride synthesized by a method described in Reference Example 2 instead of (R)-3-aminochroman-6-carbonitrile.

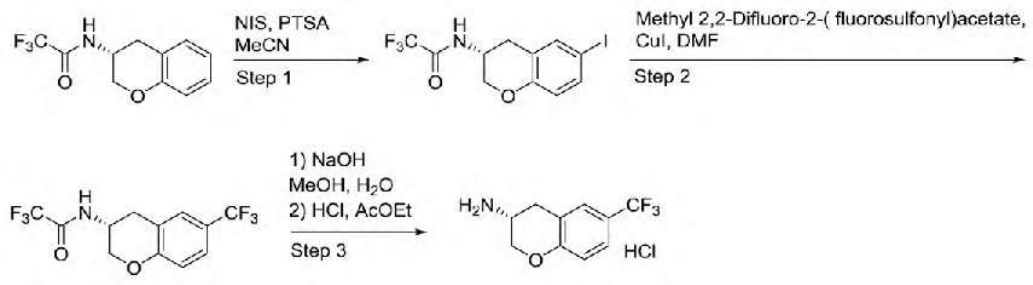
[0589]

Reference Example 43

Production of (R)-6-(trifluoromethyl)chroman-3-amine hydrochloride

[0590]

[Chem 163]



[0591]

Step 1

To a solution of (R)-N-(chroman-3-yl)-2,2,2-trifluoroacetamide (2.50 g, 16.3 mmol) synthesized by a method described in Step 1 in Reference Example 1 in acetonitrile (26 mL), para-toluene sulfonic acid monohydrate (2.13 g, 11.2 mmol) was added. The mixture was stirred for 10 minutes at room temperature. In addition, a solution of N-iodosuccineimide (2.52 g, 11.2 mmol) in acetonitrile (40 mL) was added, and the mixture was stirred for 16 hours at room temperature. Thereafter, saturated aqueous solution of sodium hydrogen carbonate, an aqueous solution of saturated sodium thiosulfate and ethyl acetate were added to the reaction solution, and the mixture was partitioned. The organic layer was washed with saturated brine and

dried over anhydrous magnesium sulfate. n-Hexane and ethyl acetate were added to the residue,and the residue was dissolved by heating, and then the solution was allowed to cool to room temperature. The precipitated solid was collected by filtration to give (R)-2,2,2-trifluoro-N-(6-iodochroman-3-yl)acetamide (amount 1.19 g, yield 32%).

[0592]

Step 2

To a solution of (R)-2,2,2-trifluoro-N-(6-iodochroman-3-yl)acetamide (1.19 g, 3.21 mmol) in N,N-dimethylformamide (100 mL) were added copper iodide (I) (0.73 g, 3.8 mmol), methyl 2,2-difluoro2-(fluorosulfonyl)acetate (2.04 mL, 16 mmol). The mixture was stirred for 16 hours at 120°C. The reaction solution was allowed to cooled to room temperature thereafter filtered through celite. Thereafter, ethyl acetate, n-hexane and saturated aqueous solution of sodium hydrogen carbonate were added, and the mixture was partitioned. The organic layer was washed with saturated brine, and dried over anhydrous magnesium sulfate. After the solvent was evaporated off under reduced pressure, the residue was purified by silica gel column chromatography to give (R)-2,2,2-trifluoro-N-(6-(trifluoromethyl)chroman-3-yl)acetamide (amount 949 mg, yield 95%).

[0593]

Step 3

To a solution of (R)-2,2,2-trifluoro-N-(6-(trifluoromethyl)chroman-3-yl)acetamide (133 mg, 0.425 mmol) in methanol (1.1 mL), 2 mol/L aqueous solution of sodium hydroxide (1.1 mL, 2.2 mmol) was added, and the mixture was stirred for 3 hours at room temperature. Water and chloroform was added to the reaction solution, and the mixture was partitioned. Thereafter, the organic layer was dried over anhydrous sodium sulfate. The solvent was evaporated off under reduced pressure, the residue was dissolved in ethyl acetate, 4 mol/L hydrogen chloride-ethyl acetate solution was added, and the mixture was stirred for 1 hour. Under reduced pressure, the solvent was evaporated off to give ((R)-6-(trifluoromethyl)chroman-3-amine hydrochloride (amount 93.8 mg, yield 87%).

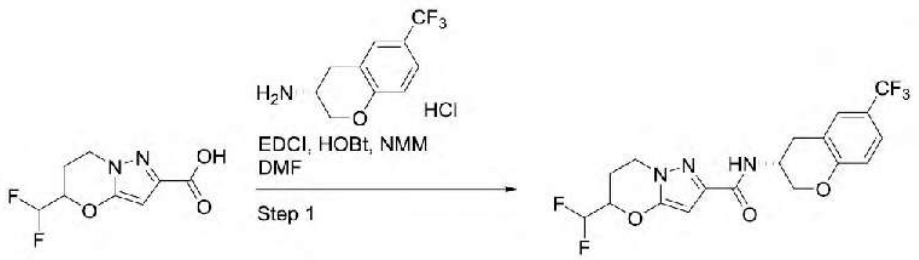
[0594]

Example 160

Production of 5-(difluoromethyl)-N-((R)-6-(trifluoromethyl)chroman-3-yl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide

[0595]

[Chem 164]



[0596]

To a solution of 5-(difluoromethyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylic acid (51.5 mg, 0.236 mmol) synthesized by a method described in Step 6 in Example 159, (R)-6-(trifluoromethyl)chroman-3-amine hydrochloride (72.0 mg, 0.284 mmol) synthesized by a method described in Reference Example 43, 1-hydroxybenzotriazole (43.4 mg, 0.283 mmol) and 1-ethyl-3-(3-dimethylaminopropyl)carbodiimide hydrochloride (54.5 mg, 0.284 mmol) in N,N-dimethylformamide (787 μL), 4-methylmorpholine (158 μL, 1.44 mmol) was added. The mixture was stirred for 4 hours at room temperature. Water and ethyl acetate was added to the reaction solution, and the mixture was partitioned. After drying the organic layer with anhydrous sodium sulfate, the solvent was evaporated off under reduced pressure. The residue was purified by silica gel column chromatography to give 5-(difluoromethyl)-N-((R)-6-(trifluoromethyl)chroman-3-yl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide (amount 91.1 mg, yield 93%).

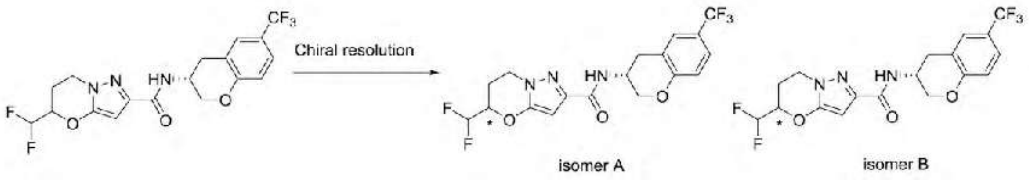
[0597]

Example 161

Isomeric separation of 5-(difluoromethyl)-N-((R)-6-(trifluoromethyl)chroman-3-yl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide

[0598]

[Chem 165]



[0599]

5-(Difluoromethyl)-N-((R)-6-(trifluoromethyl)chroman-3-yl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide (14.7 mg, 0.035 mmol) synthesized by a method described in Example 160 was dissolved in ethanol (7 mL), and the solution was subjected to HPLC fractionation (column: CHIRALPAK IC, developing solvent: ethanol/n-hexane=50/50,

flow rate: 20.0 mL/min) to give isomer A (amount 6.2 mg, yield 42%) and isomer B (amount 5.2 mg, yield 35%).

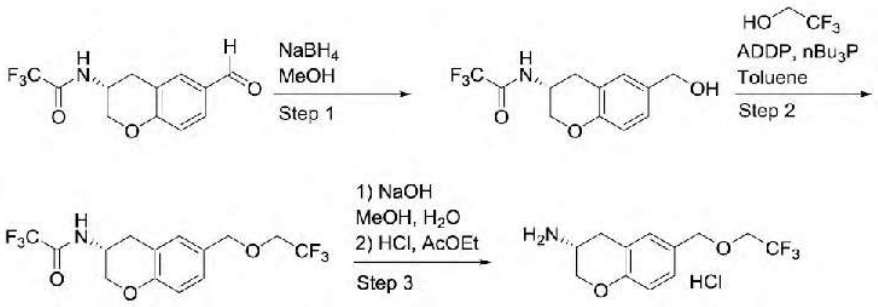
[0600]

Reference Example 44

Production of (R)-6-((2,2,2-trifluoroethoxy)methyl)chroman-3-amine hydrochloride

[0601]

[Chem 166]



[0602]

Step 1

To ice cold (R)-2,2,2-trifluoro-N-(6-formylchroman-3-yl)acetamide (3.89 g, 14.2 mmol) synthesized by a method described in Step 2 in Reference Example 3 in methanol (70 mL), sodium borohydride (1.08 g, 28.5 mmol) was added, and the mixture was stirred for 15 minutes under ice cooling. To the reaction solution, 1 mol/L hydrochloric acid and chloroform were added, and the mixture was partitioned. After drying the organic layer with anhydrous sodium sulfate, the solvent was evaporated off under reduced pressure. The residue was purified by silica gel column chromatography to give (R)-2,2,2-trifluoro-N-(6-(hydroxymethyl)chroman-3-yl)acetamide (amount 2.34 g, yield 60%).

[0603]

Step 2

To a solution of (R)-2,2,2-trifluoro-N-(6-(hydroxymethyl)chroman-3-yl)acetamide (500 mg, 1.82 mmol) in toluene (18 mL) were added tributylphosphine (908 μL, 3.64 mmol), 2,2,2-trifluoroethanol (1.3 mL, 18 mmol) and 1,1'-(azodicarbonyl)dipiperidine (919 mg, 3.64 mmol). The mixture was stirred for 1 hours at 80°C. The reaction solution was allowed to cool to room temperature, water and ethyl acetate were added, and the mixture was partitioned. The organic layer was washed with saturated brine, and then dried over anhydrous magnesium sulfate, and the solvent was evaporated off under reduced pressure. The residue was purified by silica gel column chromatography to give (R)-2,2,2-trifluoro-N-(6-((2,2,2-trifluoroethoxy)methyl)chroman-3-yl)acetamide (amount 409 mg, yield 63%).

[0604]

Step 3

(R)-6-((2,2,2-Trifluoroethoxy)methyl)chroman-3-amine hydrochloride was obtained by a method similar to Step 3 in Reference Example 1, using (R)-2,2,2-trifluoro-N-(6-((2,2,2-trifluoroethoxy)methyl)chroman-3-yl)acetamide instead of (R)-N-(6-chlorochroman-3-yl)-2,2,2-trifluoroacetamide.

[0605]

The compound of Example 162 was synthesized by methods similar to those described in Example 159 and Reference Example 44.

[0606]

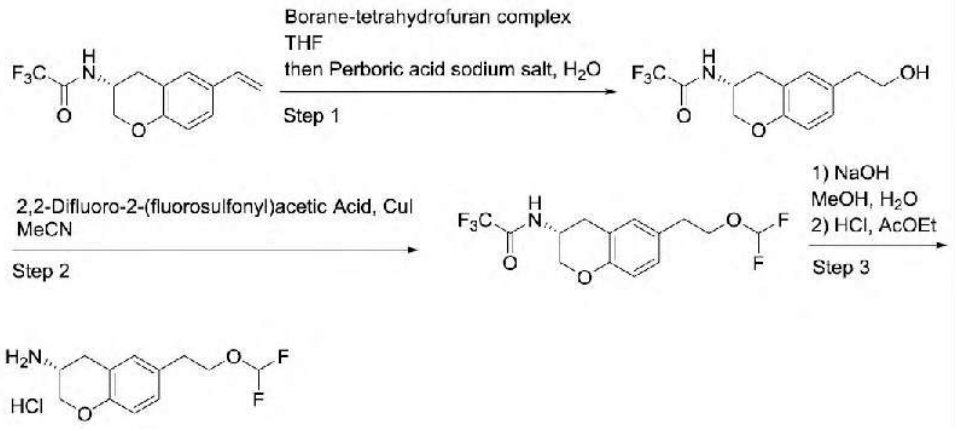
The compounds of Example 163 were obtained by separating the compound of Example 162.

[0607]

The compound of Reference Example 45 ((R)-6-(2-(difluoromethoxy)ethyl)chroman-3-amine hydrochloride) was synthesized from the compound synthesized in Step 1 in Reference Example 3 under the scheme depicted in the figure below.

[0608]

[Chem 167]



[0609]

The compound of Example 164 was synthesized by methods similar to those described in Example 159 and Reference Example 45.

[0610]

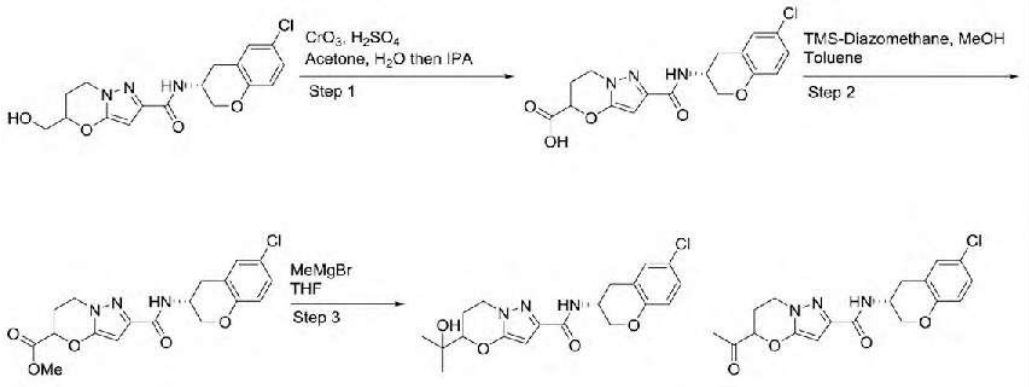
The compounds of Example 165 were obtained by separating the compound of Example 164.

[0611]

The compounds of Reference Example 46 (N-((R)-6-chlorochroman-3-yl)-5-(2-hydroxypropan-2-yl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide, and 5-acetyl-N-((R)-6-chlorochroman-3-yl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide) were synthesized from the compound synthesized in Step 1 in Example 117 under the scheme depicted in the figure below.

[0612]

[Chem 168]



[0613]

The compound of Example 166 was synthesized from the compound of Reference Example 46 (N-((R)-6-chlorochroman-3-yl)-5-(2-hydroxypropan-2-yl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide) by a method similar to Example 157.

[0614]

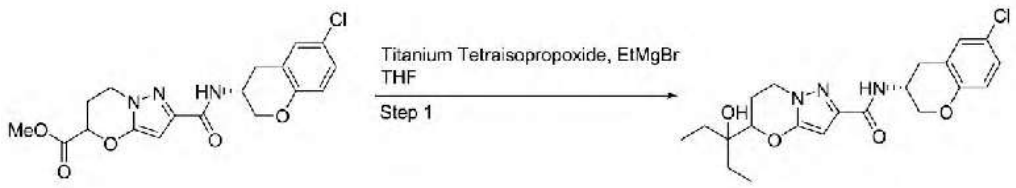
The compound of Example 167 was synthesized from the compound of Reference Example 46 (5-acetyl-N-((R)-6-chlorochroman-3-yl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide) by a method similar to Example 157.

[0615]

The compound of Example 168 was synthesized from the compound synthesized in Step 2 in Reference Example 46 under the scheme depicted in the figure below.

[0616]

[Chem 169]



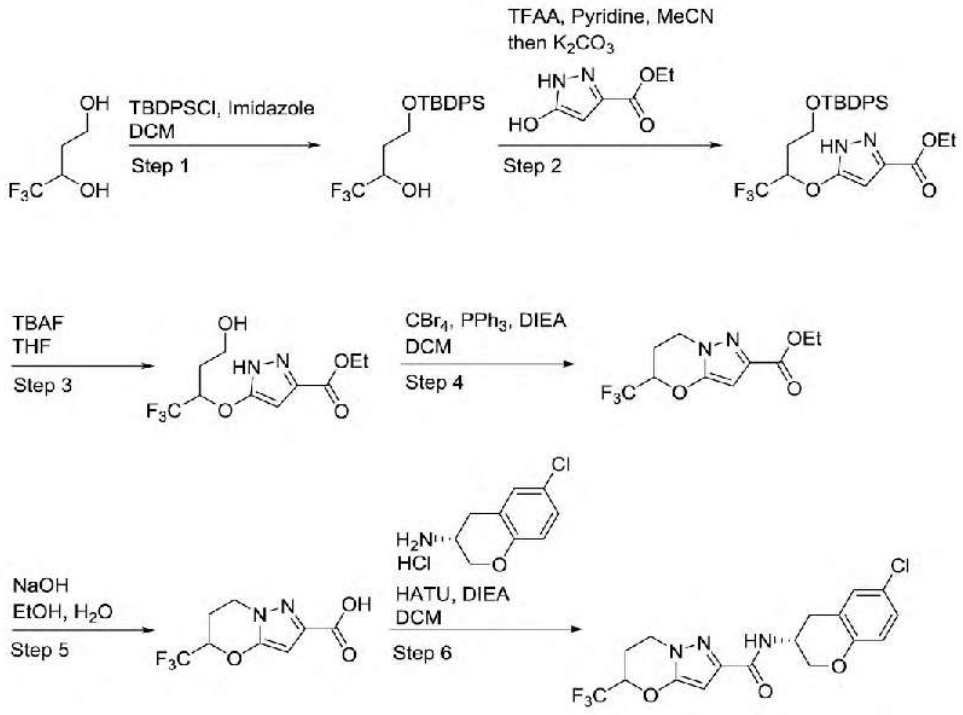
[0617]

The compound of Example 169 was synthesized under the scheme depicted in the figure

below.

[0618]

[Chem 170]



[0619]

The compounds of Example 170 were obtained by separating the compound of Example 169.

[0620]

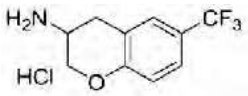
The compound of Example 171 was synthesized by methods similar to those described in Example 169 and Reference Example 2.

[0621]

The compound of Reference Example 47 (shown in the figure below.) was synthesized by a method similar to Reference Example 4.

[0622]

[Chem 171]

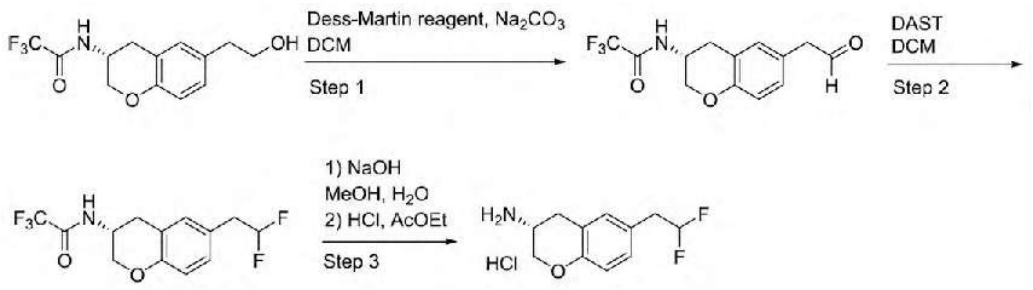


[0623]

The compound of Reference Example 48 ((R)-6-(2,2-difluoroethyl)chroman-3-amine hydrochloride) was synthesized from the compound synthesized in Step 1 in Reference Example 45 under the scheme depicted in the figure below.

[0624]

[Chem 172]



[0625]

The compound of Example 172 was synthesized by methods similar to those described in Example 169 and Reference Example 48.

[0626]

The compounds of Example 173 were obtained by separating the compound of Example 172.

[0627]

The compound of Example 174 was synthesized from the compound of Example 171 by a method similar to Step 1 in Reference Example 27.

[0628]

The compound of Example 175 was synthesized by a method similar to Example 174.

[0629]

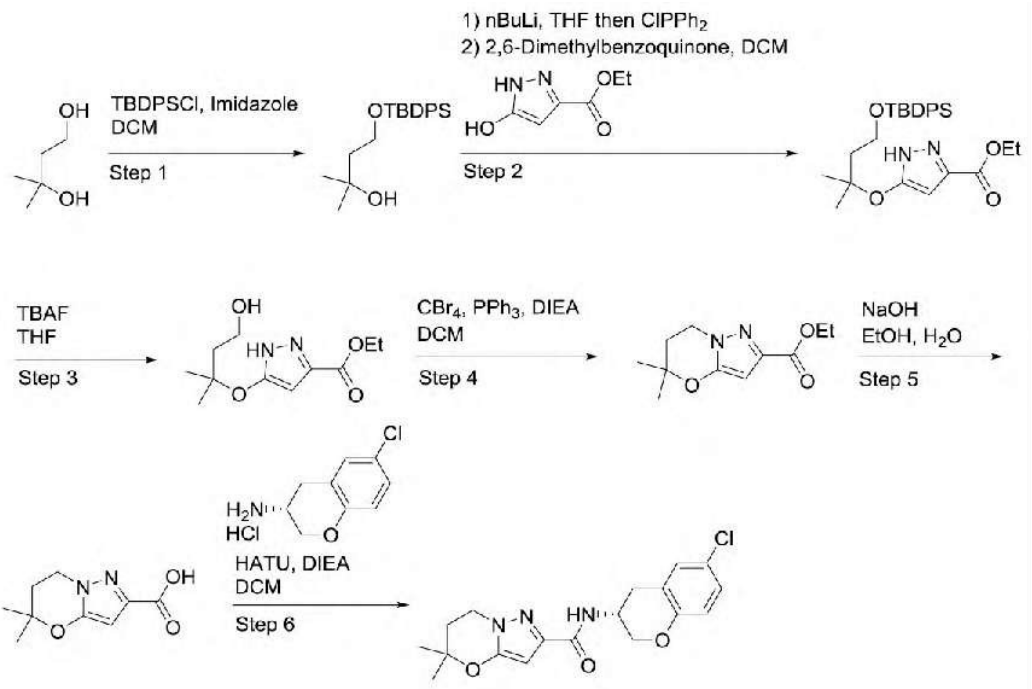
The compound of Example 176 was synthesized by a method similar to Example 174.

[0630]

The compound of Example 177 was synthesized under the scheme depicted in the figure below.

[0631]

[Chem 173]



[0632]

The compound of Example 178 was synthesized by methods similar to those described in Example 177 and Reference Example 24.

[0633]

The compound of Example 179 was synthesized by methods similar to those described in Example 177 and Reference Example 32.

[0634]

The compound of Example 180 was synthesized by methods similar to those described in Example 177 and Reference Example 24.

[0635]

The compound of Example 181 was synthesized by a method similar to Step 6 to Step 8 in Example 70.

[0636]

The compound of Example 182 was synthesized by methods similar to those described in Example 181 and Reference Example 24.

[0637]

The compound of Example 183 was synthesized by methods similar to those described in Example 169 and Reference Example 44.

[0638]

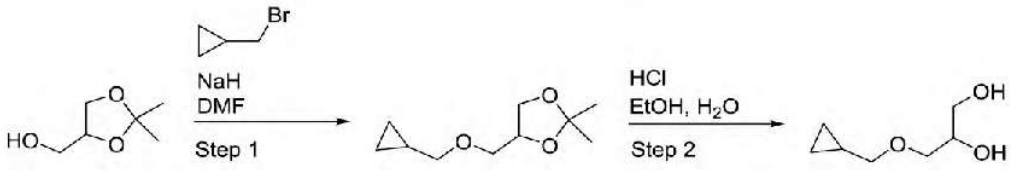
The compounds of Example 184 were obtained by separating the compound of Example 183.

[0639]

The Reference Example 49 (3-(cyclopropylmethoxy)propane-1,2-diol) was synthesized under the scheme depicted in the figure below.

[0640]

[Chem 174]

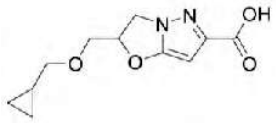


[0641]

The compound of Reference Example 50 (shown in the figure below.) was synthesized from the compound of Reference Example 49 by a method similar to Step 1 to Step 5 in Example 85.

[0642]

[Chem 175]



[0643]

The compound of Example 185 was synthesized from the compound of Reference Example 50 and the compound of Reference Example 44 by a method similar to Step 3 in Example 100.

[0644]

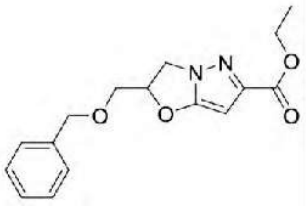
The compounds of Example 186 were obtained by separating the compound of Example 185.

[0645]

The compound of Reference Example 51 (shown in the figure below.) was synthesized by a method similar to Step 1 to Step 4 in Example 85.

[0646]

[Chem 176]



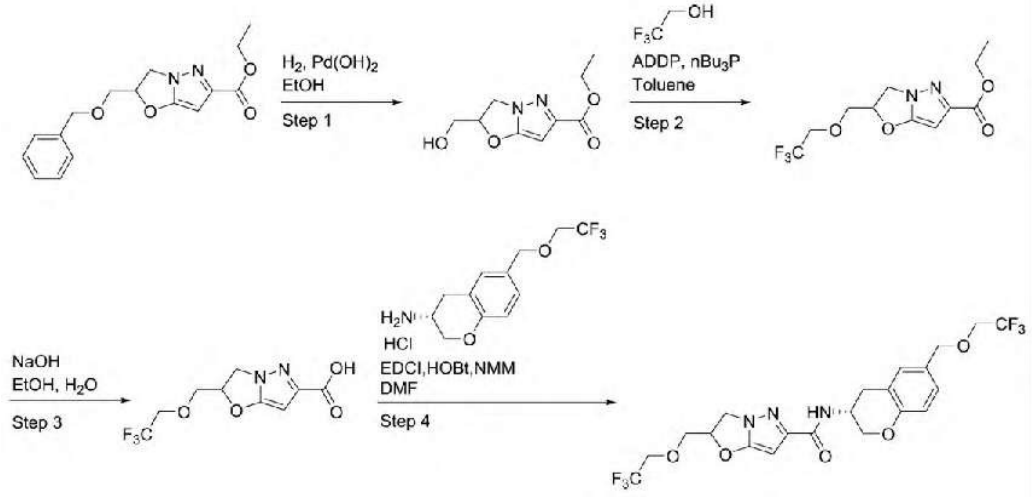
[0647]

Example 187

Production of 2-((2,2,2-trifluoroethoxy)methyl)-N-((R)-6-((2,2,2-trifluoroethoxy)methyl)chroman-3-yl)-2,3-dihydropyrazolo[5,1-b]oxazole-6-carboxamide

[0648]

[Chem 177]



[0649]

Step 1

Ethyl 2-(hydroxymethyl)-2,3-dihydropyrazolo[5,1-b]oxazole-6-carboxylate was obtained by a method similar to Step 1 in Example 100, using ethyl 2-((bezyloxy)methyl)-2,3-dihydropyrazolo[5,1-b]oxazole-6-carboxylate synthesized by a method described in Reference Example 51 instead of ethyl 5-((bezyloxy)methyl-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylate.

[0650]

Step 2

Ethyl 2-((2,2,2-trifluoroethoxy)methyl)-2,3-dihydropyrazolo[5,1-b]oxazole-6-carboxylate was obtained by a method similar to Example 114, using ethyl 2-(hydroxymethyl)-2,3-dihydropyrazolo[5,1-b]oxazole-6-carboxylate instead of N-((R)-6-cyanochroman-3-yl)-5-(hydroxymethyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide.

[0651]

Step 3

2-((2,2,2-Trifluoroethoxy)methyl)-2,3-dihydropyrazolo[5,1-b]oxazole-6-carboxylic acid was obtained as a mixture with 4 equivalents of sodium chloride by a method similar to Step 2 in Example 100, using ethyl 2-((2,2,2-trifluoroethoxy)methyl)-2,3-dihydropyrazolo[5,1-b]oxazole-6-carboxylate instead of ethyl 5-(hydroxymethyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylate.

[0652]

Step 4

2-((2,2,2-Trifluoroethoxy)methyl)-N-((R)-6-((2,2,2-trifluoroethoxy)methyl)chroman-3-yl)-2,3-dihydropyrazolo[5,1-b]oxazole-6-carboxamide was obtained by a method similar to Step 3 in Example 100, using 2-((2,2,2-trifluoroethoxy)methyl)-2,3-dihydropyrazolo[5,1-b]oxazole-6-carboxylic acid instead of 5-(hydroxymethyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylic acid, and using (R)-6-((2,2,2-trifluoroethoxy)methyl)chroman-3-amine hydrochloride synthesized by a method described in Reference Example 44 instead of (R)-3-aminochroman-6-carbonitrile.

[0653]

The compounds of Example 188 were obtained by separating the compound of Example 187.

[0654]

The compound of Example 189 was synthesized by methods similar to those described in Example 187 and Reference Example 45.

[0655]

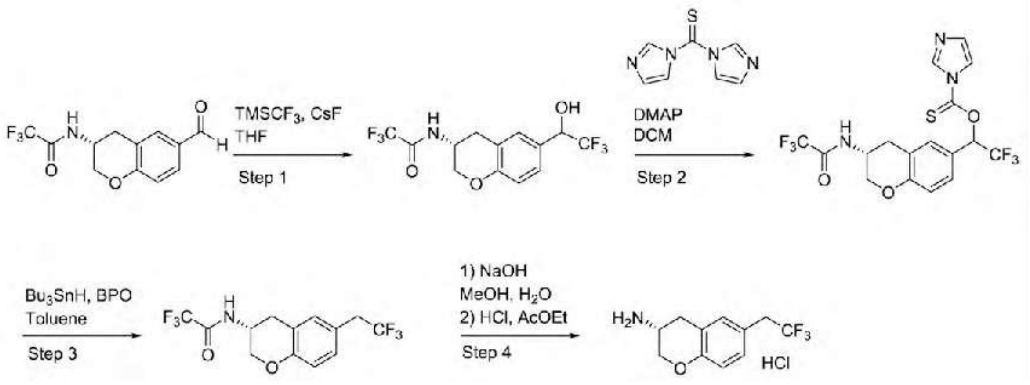
The compounds of Example 190 were obtained by separating the compound of Example 189.

[0656]

The compound of Reference Example 52 ((R)-6-(2,2,2-trifluoroethyl)chroman-3-amine hydrochloride) was synthesized from the compound synthesized in Step 2 in Reference Example 3 under the scheme depicted in the figure below.

[0657]

[Chem 178]



[0658]

The compound of Example 191 was synthesized by methods similar to those described in Example 187 and Reference Example 52.

[0659]

The compounds of Example 192 were obtained by separating the compound of Example 191.

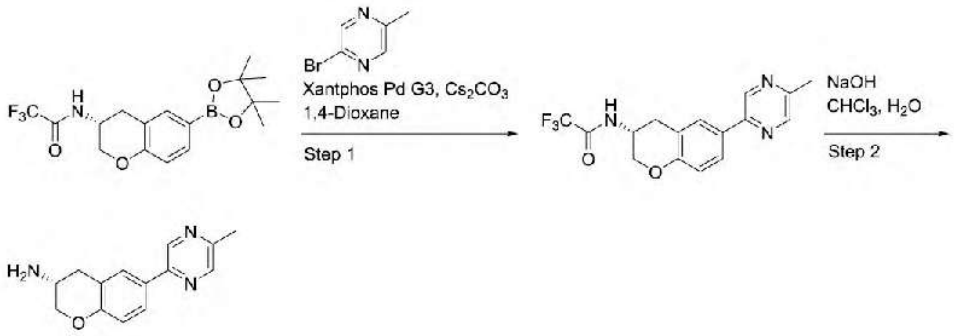
[0660]

Reference Example 53

Production of (R)-6-(5-methylpyrazine-2-yl)chroman-3-amine

[0661]

[Chem 179]



[0662]

Step 1

To a suspension of (R)-2,2,2-trifluoro-N-(6-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)chroman-3-yl)acetamide (600 mg, 1.62 mmol) synthesized by a method described in Step 1 in Reference Example 28, 2-bromo-5-methylpyrazine (336 mg, 1.94 mmol) cesium carbonate (1.00 g, 3.07 mmol) in 1,4-dioxane (20 mL), Xantphos Pd G3 (15.0 mg, 0.0158 mmol) was added. The mixture was stirred for 4 hours at 125°C. Water and ethyl acetate was added to the reaction solution, and the mixture was partitioned. Thereafter, the organic layer was dried over anhydrous

sodium sulfate and the solvent was evaporated off under reduced pressure. The residue was purified by silica gel column chromatography to give (R)-2,2,2-trifluoro-N-(6-(5-methylpyrazine-2-yl)chroman-3-yl)acetamide (amount 224 mg, yield 41%).

[0663]

Step 2

(R)-6-(5-Methylpyrazine-2-yl)chroman-3-amine was obtained by a method similar to Step 3 in Reference Example 1, using (R)-2,2,2-trifluoro-N-(6-(5-methylpyrazine-2-yl)chroman-3-yl)acetamide instead of (R)-N-(6-chlorochroman-3-yl)-2,2,2-trifluoroacetamide.

[0664]

The compound of Example 193 was synthesized by methods similar to those described in Example 187 and Reference Example 52.

[0665]

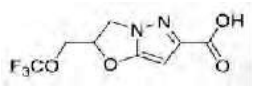
The compounds of Example 194 were obtained by separating the compound of Example 193.

[0666]

The compound of Reference Example 54 (shown in the figure below.) was synthesized from the compound synthesized in Step 1 in Example 187 by a method similar to Reference Example 37,.

[0667]

[Chem 180]



[0668]

The compound of Example 195 was synthesized from the compound of Reference Example54 and the compound of Reference Example 44 by a method similar to Step 3 in Example 100.

[0669]

The compounds of Example 196 were obtained by separating the compound of Example 195.

[0670]

The compound of Example 197 was synthesized from the compound of Reference Example54 and the compound of Reference Example 48 by a method similar to Step 3 in Example 100.

[0671]

The compounds of Example 198 were obtained by separating the compound of Example 197.

[0672]

The compound of Example 199 was synthesized by methods similar to those described in Example 187 and Reference Example 24.

[0673]

The compounds of Example 200 were obtained by separating the compound of Example 199.

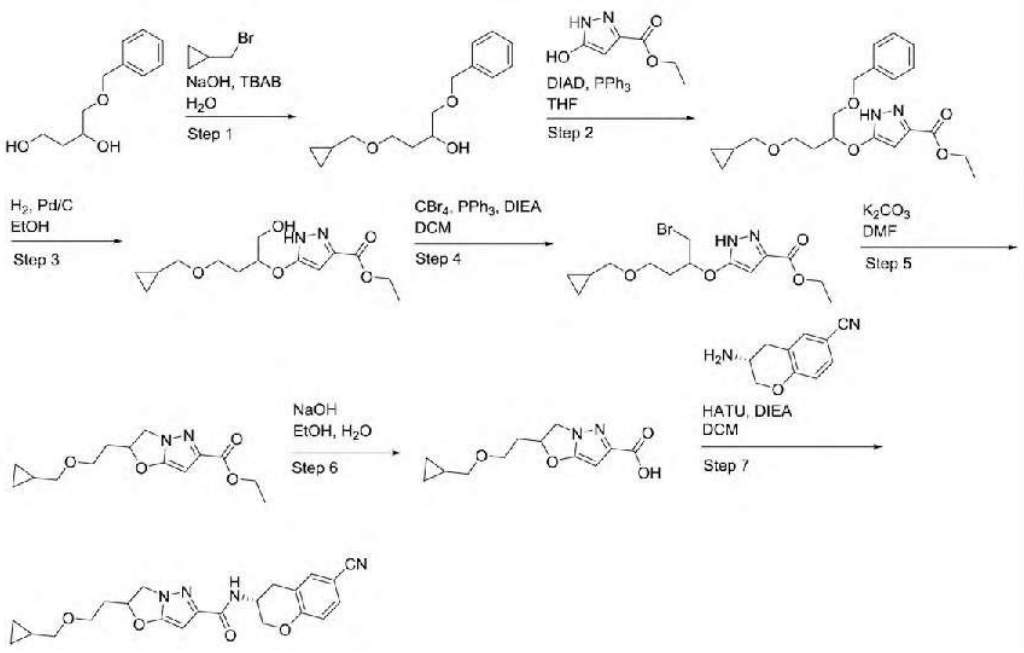
[0674]

Example 201

Production of N-((R)-6-cyanochroman-3-yl)-2-(2-(cyclopropylmethoxy)ethyl)-2,3-dihydropyrazolo[5,1-b]oxazole-6-carboxamide

[0675]

[Chem 181]



[0676]

Step 1

To 4 mol/L aqueous solution of sodium hydroxide (1 mL) were added tetrabutylammonium bromide (16.4 mg, 0.0509 mmol), 4-bezyloxybutan-1,3-diol (100 mg, 0.510 mmol) and (bromomethyl)cyclopropane (0.15 mL, 1.6 mmol). The mixture was stirred for 2 hours at 50°C. To the reaction solution, aqueous solution of saturated ammonium chloride and ethyl acetate were added, and the mixture was partitioned. After drying the organic layer

with anhydrous sodium sulfate, the solvent was evaporated off under reduced pressure. The residue was purified by silica gel column chromatography to give 1-bezyloxy-4-(cyclopropylmethoxy)butan-2-ol (amount 58 mg, yield 45%).

[0677]

Step 2

Ethyl 5-(1-bezyloxymethyl)-3-(cyclopropylmethoxy)propoxy)-1H-pyrazole-3-carboxylate was obtained by a method similar to Example 85, using 1-bezyloxy-4-(cyclopropylmethoxy)butan-2-ol instead of 4-((tert-butyldiphenylsilyl)oxy)butan-2-ol.

[0678]

Step 3

To a solution of ethyl 5-(1-bezyloxymethyl)-3-(cyclopropylmethoxy)propoxy)-1H-pyrazole-3-carboxylate (1.3 g, 3.3 mmol) in ethanol (50 mL), 5% palladium on carbon (0.71 g) was added, and the mixture was stirred under hydrogen atmosphere (balloon pressure) for 3 hours at room temperature. After the reaction solution was filtered through celite, the solvent was evaporated off under reduced pressure. The residue was purified by silica gel column chromatography to give ethyl 5-(3-(cyclopropylmethoxy)-1-(hydroxymethyl)propoxy)-1H-pyrazole-3-carboxylate (amount 0.91 g, yield 91%).

[0679]

Step 4

To a solution of ethyl 5-(3-(cyclopropylmethoxy)-1-(hydroxymethyl)propoxy)-1H-pyrazole-3-carboxylate (0.91 g, 3.1 mmol) in dichloromethane (20 mL) were added N,N-diisopropylethylamine (3.1 mL, 18 mmol), carbon tetrabromide (3.0 g, 9.0 mmol) and triphenylphosphine (1.6 g, 6.1 mmol). The mixture was stirred for 15 hours at room temperature. After concentrating the reaction solution under reduced pressure, the residue was purified by silica gel column chromatography to give ethyl 5-(1-(bromomethyl)-3-(cyclopropylmethoxy)propoxy)-1H-pyrazole-3-carboxylate (amount 0.42 g, yield 38%).

[0680]

Step 5

To a solution of ethyl 5-(1-(bromomethyl)-3-(cyclopropylmethoxy)propoxy)-1H-pyrazole-3-carboxylate (0.42 g, 1.2 mmol) in N,N-dimethylformamide (12 mL), potassium carbonate (0.40 g, 2.9 mmol) was added, and the mixture was stirred for 3 hours at room temperature. Water and chloroform was added to the reaction solution, and the mixture was partitioned. After the organic layer was dried over anhydrous magnesium sulfate, the solvent was evaporated off under reduced pressure. Ethyl 2-(2-(cyclopropylmethoxy)ethyl)-2,3-

dihydropyrazolo[5,1-b]oxazole-6-carboxylate (amount 195 mg, yield 60%) was obtained..

[0681]

Step 6

2-(2-(Cyclopropylmethoxy)ethyl)-2,3-dihydropyrazolo[5,1-b]oxazole-6-carboxylic acid was obtained as a mixture with 4 equivalents of sodium chloride by a method similar to Step 5 in Example 85, using ethyl 2-(2-(cyclopropylmethoxy)ethyl)-2,3-dihydropyrazolo[5,1-b]oxazole-6-carboxylate instead of ethyl 5-(2-fluorophenyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylate.

[0682]

Step 7

N-((R)-6-Cyanochroman-3-yl)-2-(2-(cyclopropylmethoxy)ethyl)-2,3-dihydropyrazolo[5,1-b]oxazole-6-carboxamide was obtained by a method similar to Step 4 in Example 1, using 2-(2-(cyclopropylmethoxy)ethyl)-2,3-dihydropyrazolo[5,1-b]oxazole-6-carboxylic acid instead of 6-(trifluoromethyl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxylic acid, and using (R)-3-aminochroman-6-carbonitrile synthesized by a method described in Reference Example 24 instead of 6-fluorochroman-3-amine hydrochloride.

[0683]

The compounds of Example 202 were obtained by separating the compound of Example 201.

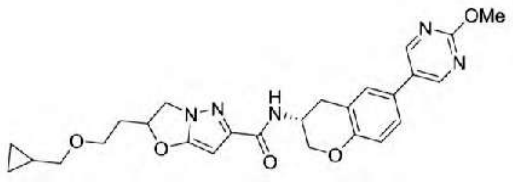
[0684]

Example 203

Production of 2-(2-(cyclopropylmethoxy)ethyl)-N-((R)-6-(2-methoxypyrimidin-5-yl)chroman-3-yl)-2,3-dihydropyrazolo[5,1-b]oxazole-6-carboxamide

[0685]

[Chem 182]



[0686]

2,2-(2-(Cyclopropylmethoxy)ethyl)-N-((R)-6-(2-methoxypyrimidin-5-yl)chroman-3-yl)-2,3-dihydropyrazolo[5,1-b]oxazole-6-carboxamide was obtained by a method similar to Example 201, using (R)-6-(2-methoxypyrimidin-5-yl)chroman-3-amine synthesized by a method described in Reference Example 29 instead of (R)-3-aminochroman-6-carbonitrile.

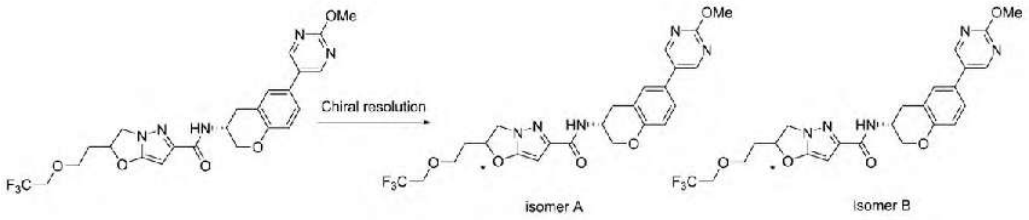
[0687]

Example 204

Isomeric separation of 2-(2-(cyclopropylmethoxy)ethyl)-N-((R)-6-(2-methoxypyrimidin-5-yl)chroman-3-yl)-2,3-dihydropyrazolo[5,1-b]oxazole-6-carboxamide

[0688]

[Chem 183]



[0689]

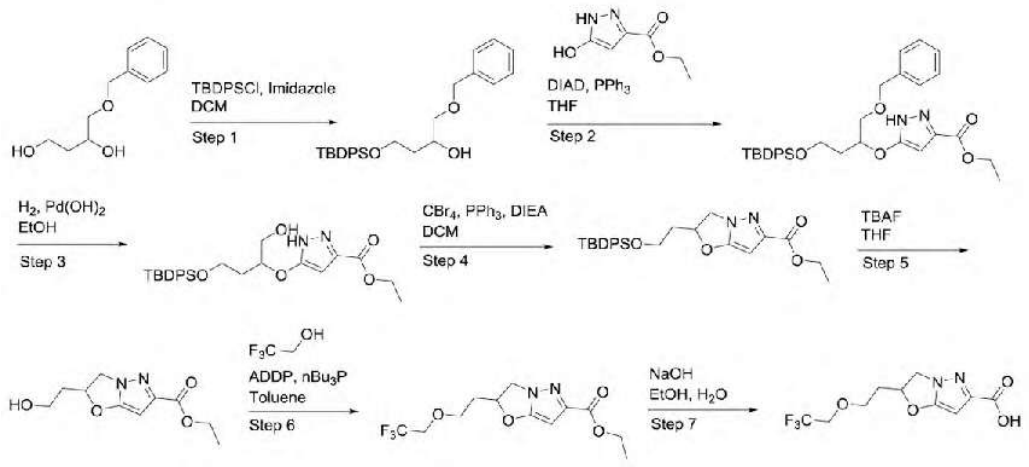
2-(2-(Cyclopropylmethoxy)ethyl)-N-((R)-6-(2-methoxypyrimidin-5-yl)chroman-3-yl)-2,3-dihydropyrazolo[5,1-b]oxazole-6-carboxamide (22.0 mg, 0.045 mmol) synthesized by a method described in Example 203 was dissolved in ethanol (7 mL), the solution was subjected to HPLC fractionation (column: CHIRALPAK IB, developing solvent: ethanol, flow rate: 8.0 mL/min, room temperature) to give isomer A (amount 6.4 mg, yield 29%) and isomer B (amount 8.5 mg, yield 39%).

[0690]

The compound of Reference Example 55 (2-(2-(2,2,2-trifluoroethoxy)ethyl)-2,3-dihydropyrazolo[5,1-b]oxazole-6-carboxylic acid) was synthesized under the scheme depicted in the figure below.

[0691]

[Chem 184]

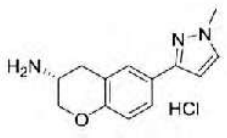


[0692]

The compound of Reference Example 56 (shown in the figure below.) was synthesized by a method similar to Reference Example 53.

[0693]

[Chem 185]



[0694]

The compound of Example 205 was synthesized from the compound of Reference Example 55 and the compound of Reference Example 56 by a method similar to Step 3 in Example 100.

[0695]

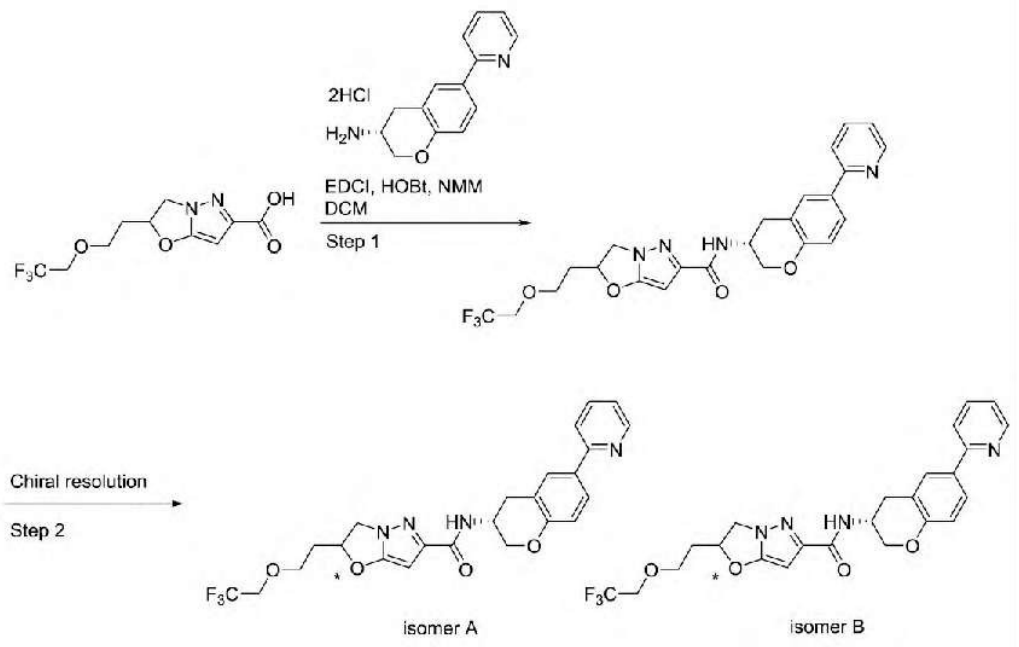
The compounds of Example 206 were obtained by separating the compound of Example 205.

[0696]

The compound of Example 207 was synthesized from the compound of Reference Example 55 and the compound of Reference Example 28 under the scheme depicted in the figure below.

[0697]

[Chem 186]

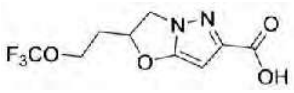


[0698]

The compound of Reference Example 57 (shown in the figure below.) was synthesized from the compound synthesized in Step 5 in Reference Example 55 by a method similar to Reference Example 37.

[0699]

[Chem 187]



[0700]

The compound of Example 208 was synthesized from the compound of Reference Example 57 and the compound of Reference Example 24 by a method similar to Step 4 in Example 1.

[0701]

The compounds of Example 209 were obtained by separating the compound of Example 208.

[0702]

The compound of Example 210 was synthesized from the compound of Reference Example 57 and the compound of Reference Example 48 by a method similar to Step 4 in Example 1.

[0703]

The compounds of Example 211 were obtained by separating the compound of Example 210.

[0704]

The compound of Example 212 was synthesized from the compound of Reference Example 57 and the compound of Reference Example 56 by a method similar to Step 4 in Example 1.

[0705]

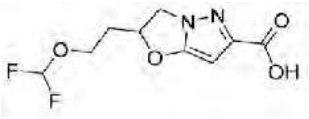
The compounds of Example 213 were obtained by separating the compound of Example 212.

[0706]

The compound of Reference Example 58 (shown in the figure below.) was synthesized from the compound synthesized in Step 5 in Reference Example 55 by a method similar to Reference Example 38.

[0707]

[Chem 188]



[0708]

The compound of Example 214 was synthesized from the compound of Reference Example 58 and the compound of Reference Example 44 by a method similar to Step 4 in Example 1.

[0709]

The compounds of Example 215 were obtained by separating the compound of Example 214.

[0710]

The compound of Example 216 was synthesized from the compound of Reference Example 58 and the compound of Reference Example 45 by a method similar to Step 4 in Example 1.

[0711]

The compounds of Example 217 were obtained by separating the compound of Example 216.

[0712]

The compound of Example 218 was synthesized from the compound of Reference Example 58 and the compound of Reference Example 48 by a method similar to Step 4 in Example 1.

[0713]

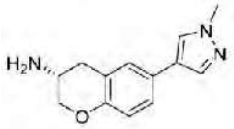
The compounds of Example 219 were obtained by separating the compound of Example 218.

[0714]

The compound of Reference Example 59 (shown in the figure below.) was synthesized by a method similar to Example 53.

[0715]

[Chem 189]



[0716]

The compound of Example 220 was synthesized from the compound of Reference Example 58 and the compound of Reference Example 59 by a method similar to Step 4 in Example 1.

[0717]

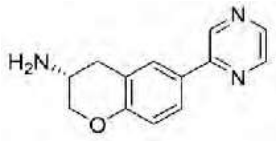
The compounds of Example 221 were obtained by separating the compound of Example 220.

[0718]

The compound of Reference Example 60 (shown in the figure below.) was synthesized by a method similar to Reference Example 53.

[0719]

[Chem 190]



[0720]

The compound of Example 222 was synthesized from the compound of Reference Example 58 and the compound of Reference Example 60 by a method similar to Step 4 in Example 1.

[0721]

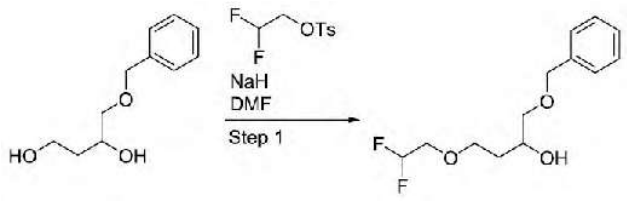
The compounds of Example 223 were obtained by separating the compound of Example 222.

[0722]

The compound of Reference Example 61 was synthesized under the scheme depicted in the figure below.

[0723]

[Chem 191]

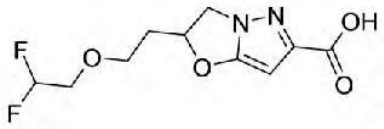


[0724]

The compound of Reference Example 62 (shown in the figure below.) was synthesized from the compound of Reference Example 61 by a method similar to Step 2 to Step 6 in Example 201.

[0725]

[Chem 192]

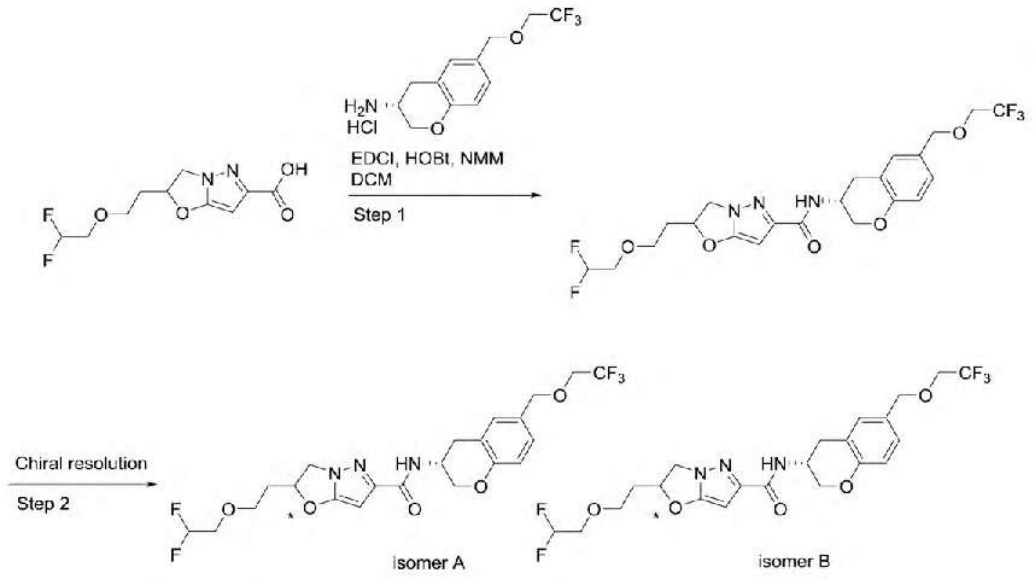


[0726]

The compound of Example 224 was synthesized from the compound of Reference Example 62 and the compound of Reference Example 44 under the scheme depicted in the figure below.

[0727]

[Chem 193]

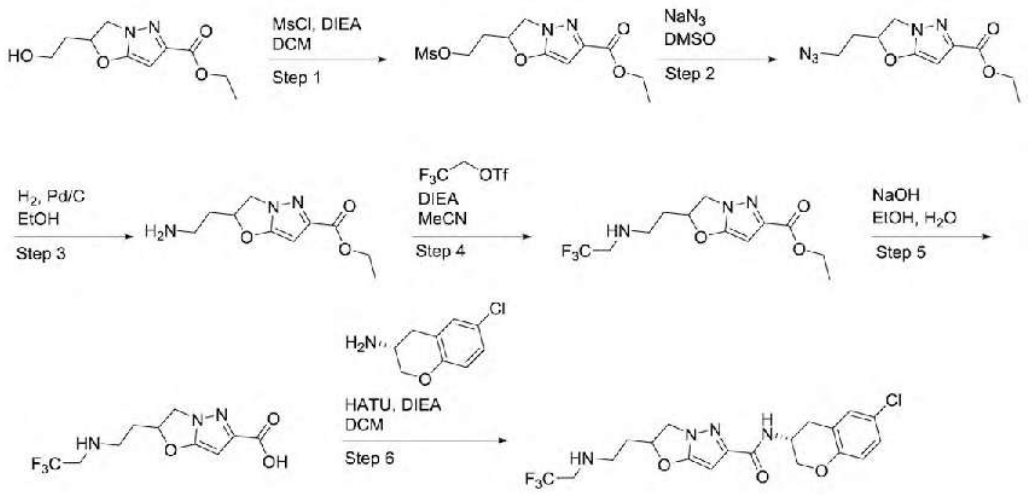


[0728]

The compound of Example 225 was synthesized from the compound synthesized in Step 5 in Reference Example 55 under the scheme depicted in the figure below.

[0729]

[Chem 194]



[0730]

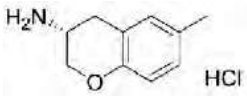
The compounds of Example 226 were obtained by separating the compound of Example 225

[0731]

The compound of Reference Example 63 (shown in the figure below.) was synthesized by a method similar to Reference Example 27.

[0732]

[Chem 195]



[0733]

The compound of Example 227 was synthesized by methods similar to those described in Example 225 and Reference Example 63.

[0734]

The compounds of Example 228 were obtained by separating the compound of Example 227.

[0735]

The compound of Example 229 was synthesized by methods similar to those described in Example 225 and Reference Example 43.

[0736]

The compounds of Example 230 were obtained by separating the compound of Example 229.

[0737]

The compound of Example 231 was synthesized by methods similar to those described in Example 225 and Reference Example 44.

[0738]

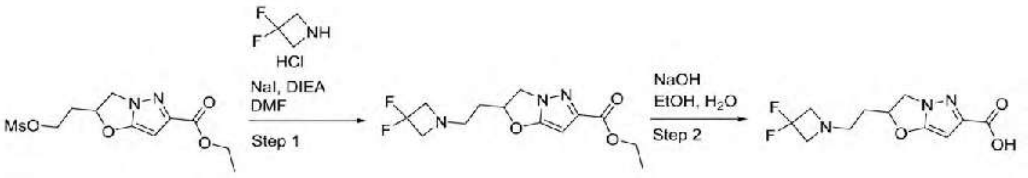
The compounds of Example 232 were obtained by separating the compound of Example 231.

[0739]

The compound of Reference Example 64 (2-(2-(3,3-difluoroazetidin-1-yl)ethyl)-2,3-dihydropyrazolo[5,1-b]oxazole-6-carboxylic acid) was synthesized from the compound synthesized in Step 1 in Example 225 under the scheme depicted in the figure below.

[0740]

[Chem 196]



[0741]

The compound of Example 233 was synthesized from the compound of Reference Example 64 and the compound of Reference Example 1 by a method similar to Step 3 in Example 100.

[0742]

The compounds of Example 234 were obtained by separating the compound of Example 233.

[0743]

The compound of Example 235 was synthesized from the compound of Reference Example 64 and the compound of Reference Example 43 by a method similar to Step 3 in Example 100.

[0744]

The compounds of Example 236 were obtained by separating the compound of Example 235.

[0745]

The compound of Example 237 was synthesized from the compound of Reference Example 64 and the compound of Reference Example 45 by a method similar to Step 3 in Example 100.

[0746]

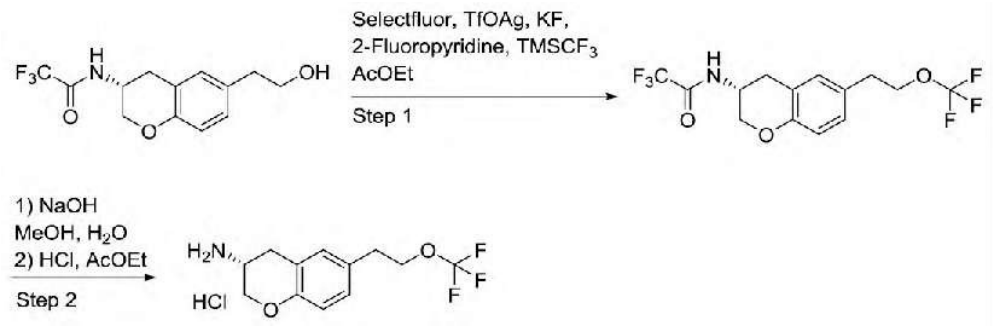
The compounds of Example 238 were obtained by separating the compound of Example 237.

[0747]

The compound of Reference Example 65 ((R)-6-(2-(trifluoromethoxy)ethyl)chroman-3-amine hydrochloride) was synthesized from the compound synthesized in Step 1 in Reference Example 45 under the scheme depicted in the figure below.

[0748]

[Chem 197]



[0749]

The compound of Example 239 was synthesized by methods similar to those described in Example 233 and Reference Example 65.

[0750]

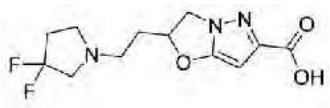
The compounds of Example 240 were obtained by separating the compound of Example 239.

[0751]

The compound of Reference Example 66 (shown in the figure below.) was synthesized by a method similar to Reference Example 64.

[0752]

[Chem 198]

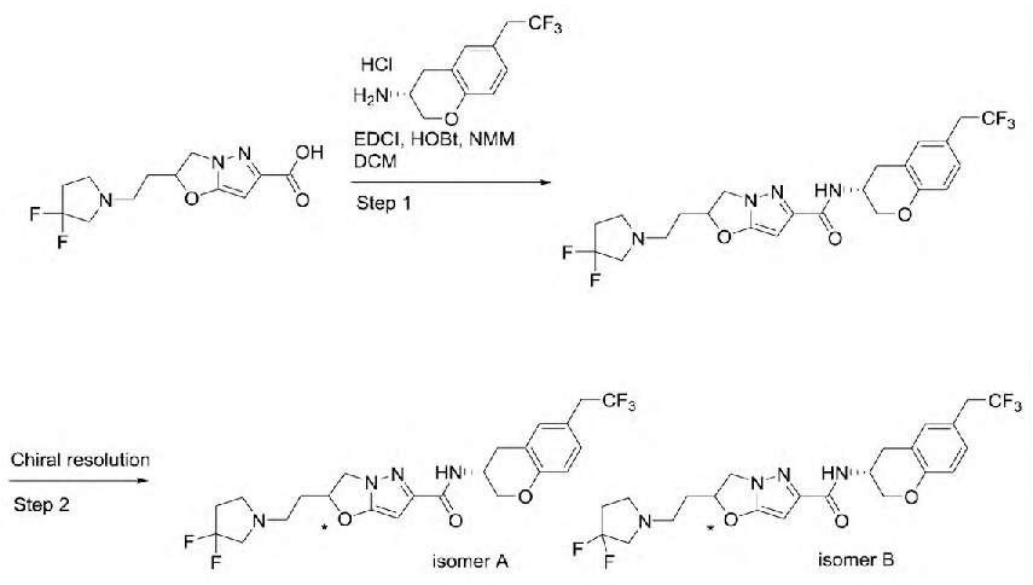


[0753]

The compound of Example 241 was synthesized from the compound of Reference Example 66 under the scheme depicted in the figure below.

[0754]

[Chem 199]

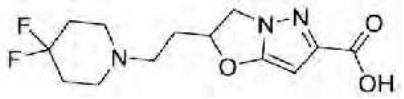


[0755]

The compound of Reference Example 67 (shown in the figure below.) was synthesized by a method similar to Reference Example 64.

[0756]

[Chem 200]

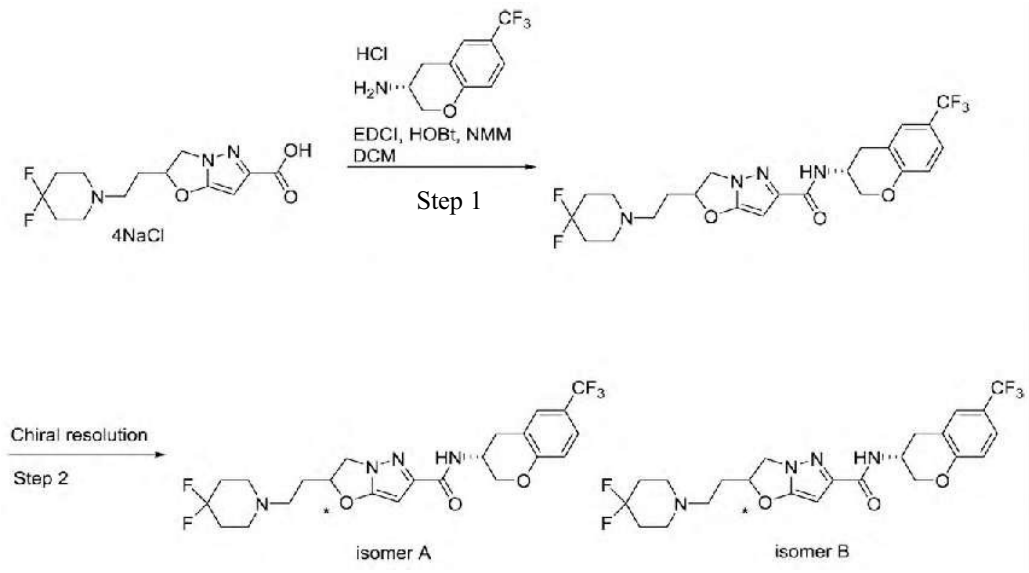


[0757]

The compound of Example 242 was synthesized from the compound of Reference Example 67 under the scheme depicted in the figure below.

[0758]

[Chem 201]



[0759]

The compound of Example 243 was synthesized from the compound synthesized in Step 5 in Reference Example 55 and the compound of Reference Example 24 by a method similar to Step 2 to Step 4 in Example 187.

[0760]

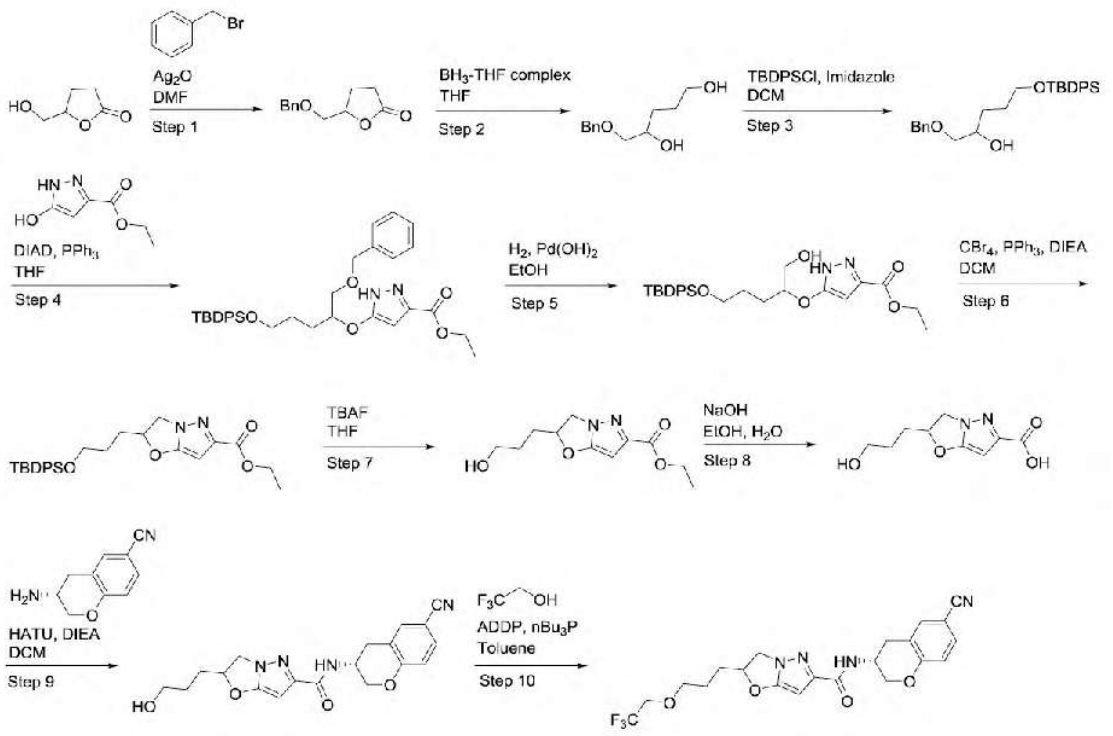
The compounds of Example 244 were obtained by separating the compound of Example 243.

[0761]

The compound of Example 245 was synthesized under the scheme depicted in the figure below.

[0762]

[Chem 202]



[0763]

The compounds of Example 246 were obtained by separating the compound of Example 245.

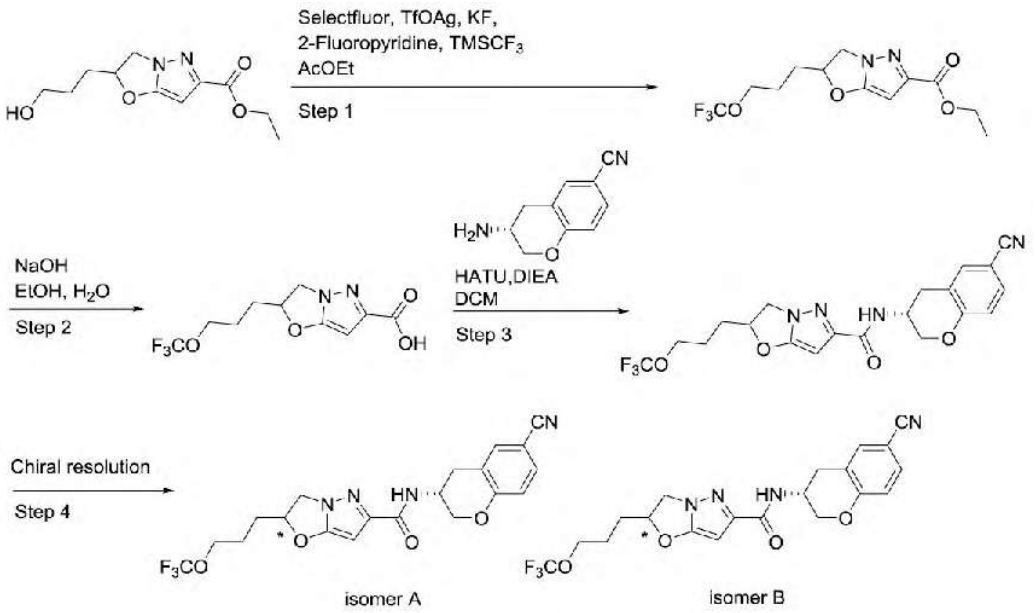
[0764]

Example 247

Production and isomeric separation of N-((R)-6-cyanochroman-3-yl)-2-(3-(trifluoromethoxy)propyl)-2,3-dihydropyrazolo[5,1-b]oxazole-6-carboxamide

[0765]

[Chem 203]



[0766]

Step 1 to Step 2

2-(3-(Trifluoromethoxy)propyl)-2,3-dihydropyrazolo[5,1-b]oxazole-6-carboxylic acid was obtained by a method similar to Step 1 to Step 2 in Reference Example 37, using ethyl 2-(3-hydroxypropyl)-2,3-dihydropyrazolo[5,1-b]oxazole-6-carboxylate synthesized by a method described in Step 7 in Example 245 instead of ethyl 5-(hydroxymethyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylate in Step 1.

[0767]

Step 3

N-((R)-6-Cyanochroman-3-yl)-2-(3-(trifluoromethoxy)propyl)-2,3-dihydropyrazolo[5,1-b]oxazole-6-carboxamide was obtained by a method similar to Step 4 in Example 1, using 2-(3-(trifluoromethoxy)propyl)-2,3-dihydropyrazolo[5,1-b]oxazole-6-carboxylic acid instead of 6-(trifluoromethyl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxylic acid, and using (R)-3-aminochroman-6-carbonitrile synthesized by a method described in Reference Example 24 instead of 6-fluorochroman-3-amine hydrochloride.

[0768]

Step 4

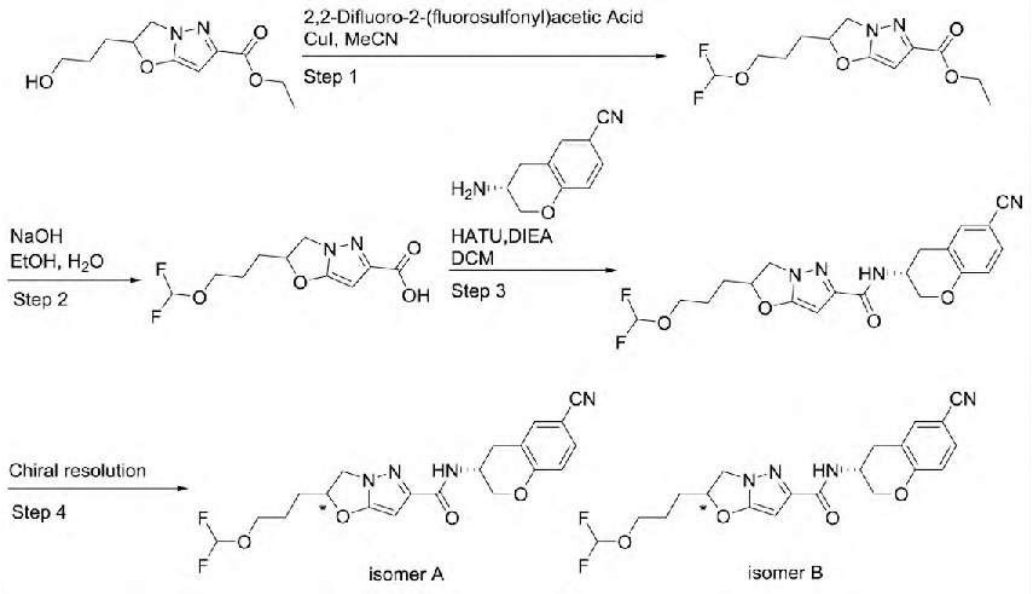
N-((R)-6-Cyanochroman-3-yl)-2-(3-(trifluoromethoxy)propyl)-2,3-dihydropyrazolo[5,1-b]oxazole-6-carboxamide (126 mg, 0.289 mmol) was dissolved in ethanol (12 mL), and the solution was subjected to HPLC fractionation (column: CHIRALPAK IB N-5, developing solvent: ethanol, flow rate: 8.0 mL/min, room temperature) to give isomer A (amount 57.7 mg, yield 46%) and isomer B (amount 52.5 mg, yield 42%).

[0769]

The compound of Reference Example 248 was synthesized from the compound synthesized in Step 7 in Example 245 under the scheme depicted in the figure below.

[0770]

[Chem 204]

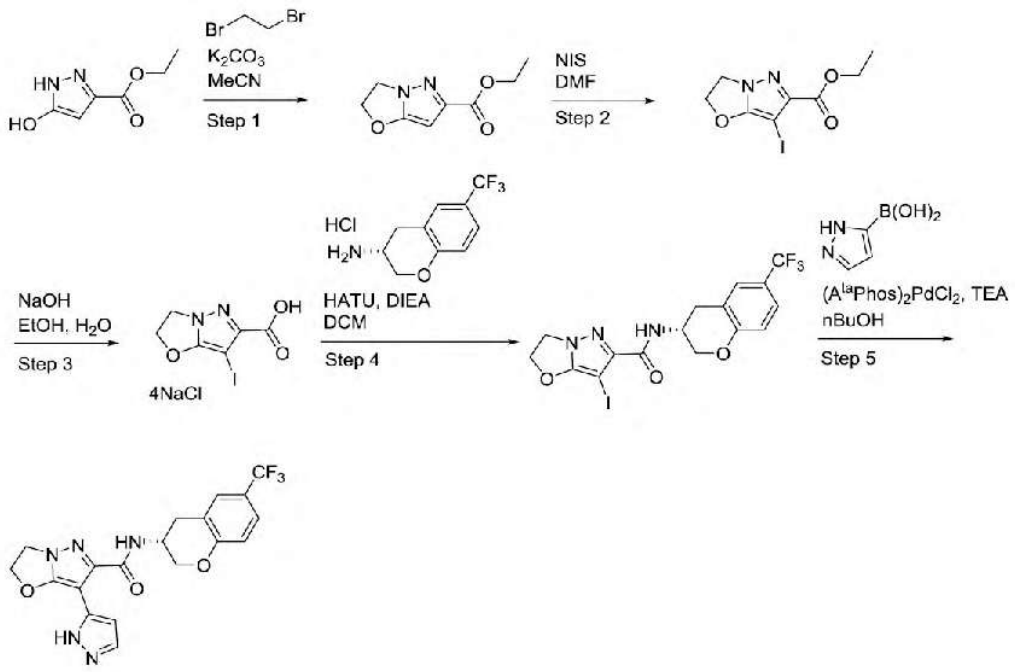


[0771]

The compound of Example 249 was synthesized under the scheme depicted in the figure below.

[0772]

[Chem 205]

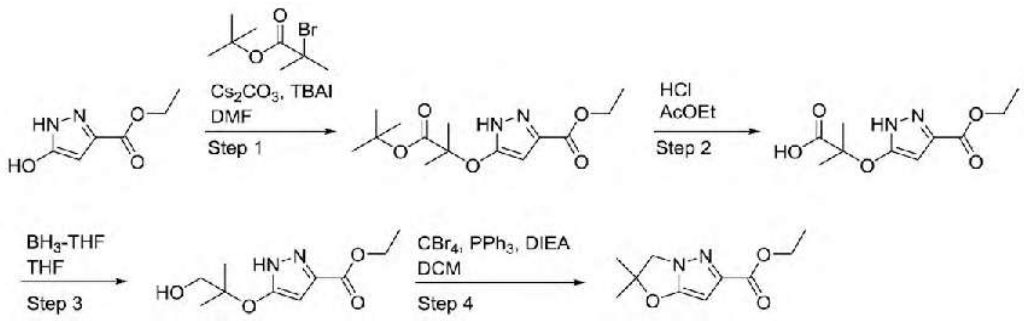


[0773]

The compound of Reference Example 68 (ethyl 2,2-dimethyl-2,3-dihydropyrazolo[5,1-b]oxazole-6-carboxylate) was synthesized under the scheme depicted in the figure below.

[0774]

[Chem 206]



[0775]

The compound of Example 250 was synthesized from the compound of Reference Example 68 by a method similar to Step 2 to Step 5 in Example 249.

[0776]

The compound of Example 251 was synthesized by a method similar to Step 5 to Step 8 in Example 70.

[0777]

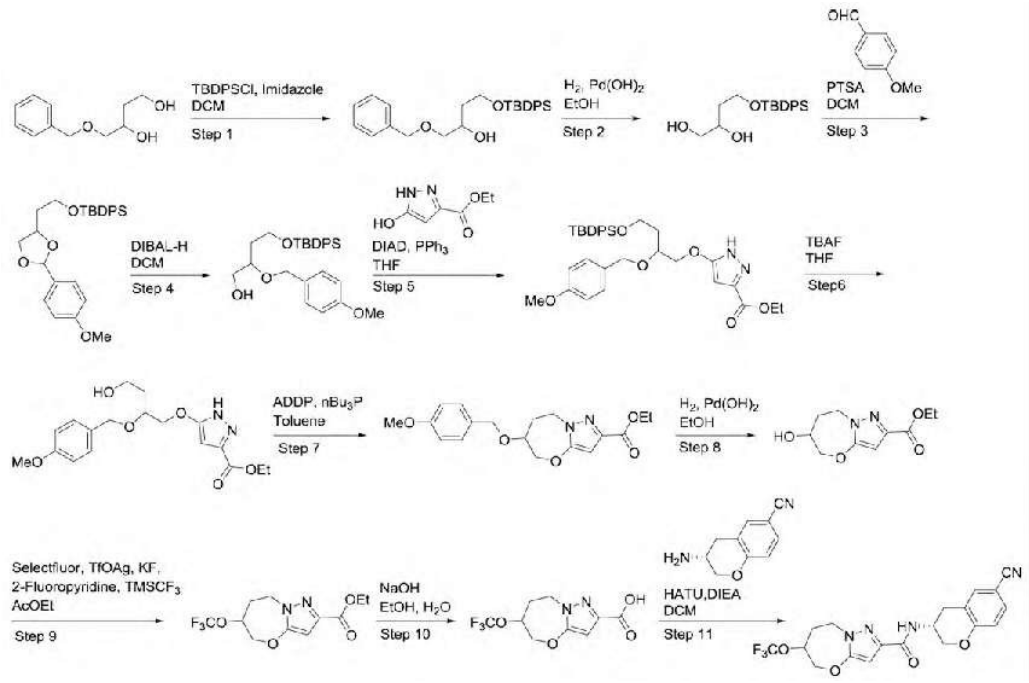
Example 252

Production of N-((R)-6-cyanochroman-3-yl)-6-(trifluoromethoxy)-5,6,7,8-

tetrahydropyrazolo[5,1-b][1,3]oxazepine-2-carboxamide

[0778]

[Chem 207]



[0779]

Step 1

1-(Bezyloxy)-4-((tert-butyldiphenylsilyl)oxy)butan-2-ol was obtained by a method similar to Step 1 in Example 85, using 4-(bezyloxy)butan-1,3-diol instead of butan-1,3-diol.

[0780]

Step 2

4-((tert-Butyldiphenylsilyl)oxy)butan-1,2-diol was obtained by a method similar to Step 1 in Example 100, using 1-(bezyloxy)-4-((tert-butyldiphenylsilyl)oxy)butan-2-ol instead of ethyl 5-((bezyloxy)methyl-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylate.

[0781]

Step 3

To a solution of 4-((tert-butyldiphenylsilyl)oxy)butan-1,2-diol (2.00 g, 5.81 mmol) in dichloromethane (24 mL) were was added p-toluene sulfonic acid (55 mg, 0.29 mmol) and 4-methoxybenzaldehyde (2.37 g, 17.4 mmol), and the mixture was stirred for 1 hour at room temperature. Saturated aqueous solution of sodium hydrogen carbonate and chloroform was added to the reaction solution, and the mixture was partitioned. After the organic layer was washed with saturated brine and the solvent was evaporated off under reduced pressure, the residue was purified by silica gel column chromatography to give tert-butyl (2-(2-(4-

methoxyphenyl)-1,3-dioxolan-4-yl)ethoxy)diphenylsilane (amount 1.76 mg, yield 66%).

[0782]

Step 4

A solution of tert-butyl (2-(2-(4-methoxyphenyl)-1,3-dioxolan-4-yl)ethoxy)diphenylsilane (1.76 g, 3.80 mmol) in dichloromethane (20 mL) was cooled to -78°C, and 1 mol/L diisobutylaluminum hydride/n-hexane solution (5.33 mL, 5.33 mmol) was added to the solution. After stirring for 15 minutes, the mixture was warmed to 0°C. To the reaction solution, an aqueous solution of potassium sodium tartarate and chloroform were added, and the mixture was partitioned. Thereafter, the organic layer was dried over anhydrous sodium sulfate and the solvent was evaporated off under reduced pressure. The residue was purified by silica gel column chromatography to give 4-(tert-butyl (diphenyl)silyl)oxy-2-((4-methoxyphenyl)methoxy)butan-1-ol (amount 427 mg, yield 24%).

[0783]

Step 5 to Step 6

Ethyl 5-(4-hydroxy-2-((4-methoxybenzyl)oxy)butoxy)-1H-pyrazole-3-carboxylate was obtained by a method similar to Step 2 to Step 3 in Example 85, using 4-(tert-butyl (diphenyl)silyl)oxy-2-((4-methoxyphenyl)methoxy)butan-1-ol instead of 4-((tert-butyldiphenylsilyl)oxy)butan-2-ol in Step 2.

[0784]

Step 7

To a solution of ethyl 5-(4-hydroxy-2-((4-methoxybenzyl)oxy)butoxy)-1H-pyrazole-3-carboxylate (274 mg, 0.752 mmol) in toluene (15 mL) were added tri-N-butylphosphine (376 μL, 1.51 mmol) and 1,1'-(azodicarbonyl)dipiperidine (379 mg, 1.50 mmol), and the mixture was stirred for 1.5 hours at 80°C. The reaction solution was allowed to cool to room temperature, and water and ethyl acetate was added, and the mixture was partitioned. The organic layer was washed with saturated brine and dried over anhydrous magnesium sulfate, and then the solvent was evaporated off under reduced pressure. The residue was purified by silica gel column chromatography to give ethyl 6-((4-methoxybenzyl)oxy)-5,6,7,8-tetrahydropyrazolo[5,1-b][1,3]oxazepine-2-carboxylate (amount 198 mg, yield 76%).

[0785]

Step 8

Ethyl 6-hydroxy-5,6,7,8-tetrahydropyrazolo[5,1-b][1,3]oxazepine-2-carboxylate was obtained by a method similar to Step 1 in Example 100, using 6-((4-methoxybenzyl)oxy)-

5,6,7,8-tetrahydropyrazolo[5,1-b][1,3]oxazepine-2-carboxylate instead of ethyl 5-((bezyloxy)methyl-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylate.

[0786]

Step 9 to Step 11

By a method similar to Example 247, N-((R)-6-cyanochroman-3-yl)-6-(trifluoromethoxy)-5,6,7,8-tetrahydropyrazolo[5,1-b][1,3]oxazepine-2-carboxamide was obtained, using ethyl 6-hydroxy-5,6,7,8-tetrahydropyrazolo[5,1-b][1,3]oxazepine-2-carboxylate instead of ethyl 2-(3-hydroxypropyl)-2,3-dihydropyrazolo[5,1-b]oxazole-6-carboxylate in Step 1.

[0787]

The compounds of Example 253 were obtained by separating the compound of Example 252.

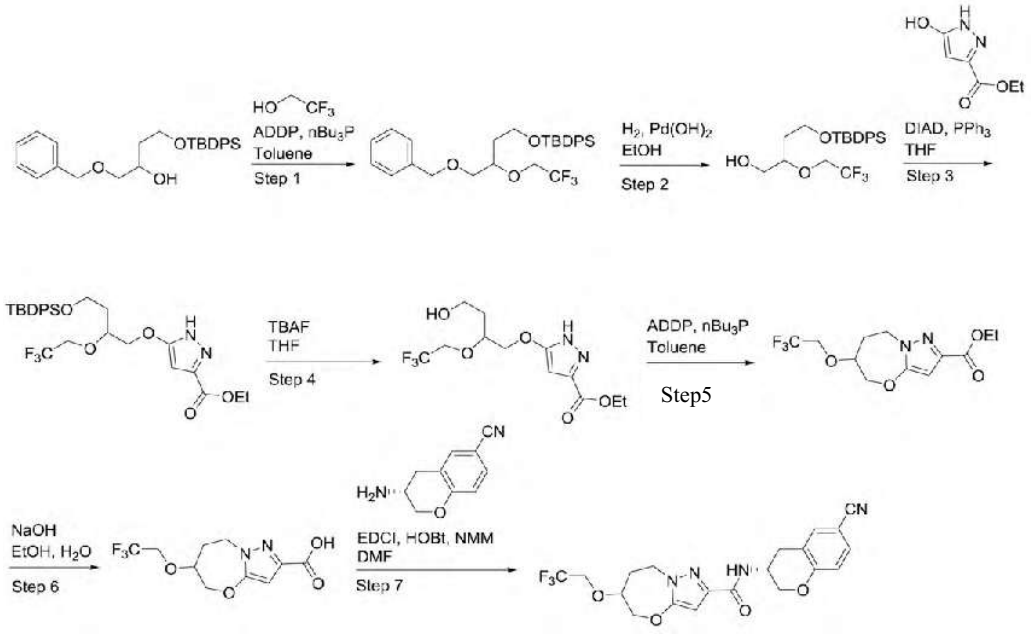
[0788]

Example 254

Production of N-((R)-6-cyanochroman-3-yl)-6-(2,2,2-trifluoroethoxy)-5,6,7,8-tetrahydropyrazolo[5,1-b][1,3]oxazepine-2-carboxamide

[0789]

[Chem 208]



[0790]

Step 1

By a method similar to Example 114, (4-(bezyloxy)-3-(2,2,2-trifluoroethoxy)butoxy)(tert-butyl)diphenylsilane was obtained, using 1-(bezyloxy)-4-((tert-

butyldiphenylsilyl)oxy)butan-2-ol synthesized by a method described in Step 1 in Example 252 instead of N-((R)-6-cyanochroman-3-yl)-5-(hydroxymethyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxamide.

[0791]

Step 2

By a method similar to Step 2 in Example 252, 4-(tert-butyldiphenylsilyl)oxy)-2-(2,2,2-trifluoroethoxy)butan-1-ol was obtained, using (4-(bezyloxy)-3-(2,2,2-trifluoroethoxy)butoxy) (tert-butyl)diphenylsilane instead of 1-(bezyloxy)-4-((tert-butyldiphenylsilyl)oxy)butan-2-ol.

[0792]

Step 3 to Step 5

By a method similar to Step 5 to Step 7 in Example 252, ethyl 6-(2,2,2-trifluoroethoxy)-5,6,7,8-tetrahydropyrazolo[5,1-b][1,3]oxazepine-2-carboxylate was obtained, using 4-(tert-butyldiphenylsilyl)oxy)-2-(2,2,2-trifluoroethoxy)butan-1-ol instead of 4-(tert-butyl (diphenyl)silyl)oxy-2-((4-methoxyphenyl)methoxy)butan-1-ol in Step 5.

[0793]

Step 6 to Step 7

By a method similar to Step 10 to Step 11 in Example 252, N-((R)-6-cyanochroman-3-yl)-6-(2,2,2-trifluoroethoxy)-5,6,7,8-tetrahydropyrazolo[5,1-b][1,3]oxazepine-2-carboxamide was obtained, using ethyl 6-(2,2,2-trifluoroethoxy)-5,6,7,8-tetrahydropyrazolo[5,1-b][1,3]oxazepine-2-carboxylate instead of ethyl 6-(trifluoromethoxy)-5,6,7,8-tetrahydropyrazolo[5,1-b][1,3]oxazepine-2-carboxylate in Step 10.

[0794]

The compounds of Example 255 were obtained by separating the compound of Example 254.

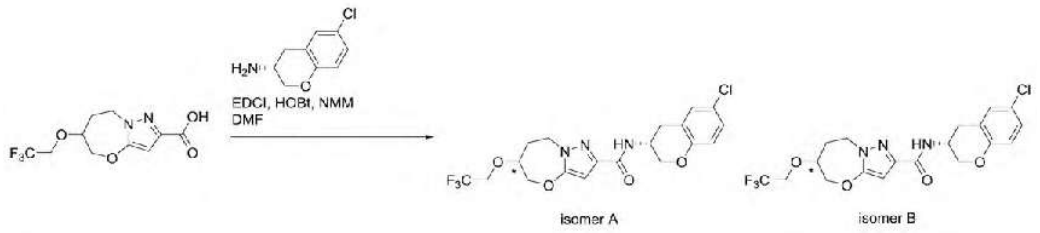
[0795]

Example 256

Production of N-((R)-6-chlorochroman-3-yl)-6-(2,2,2-trifluoroethoxy)-5,6,7,8-tetrahydropyrazolo[5,1-b][1,3]oxazepine-2-carboxamide (isomer A and isomer B)

[0796]

[Chem 209]



[0797]

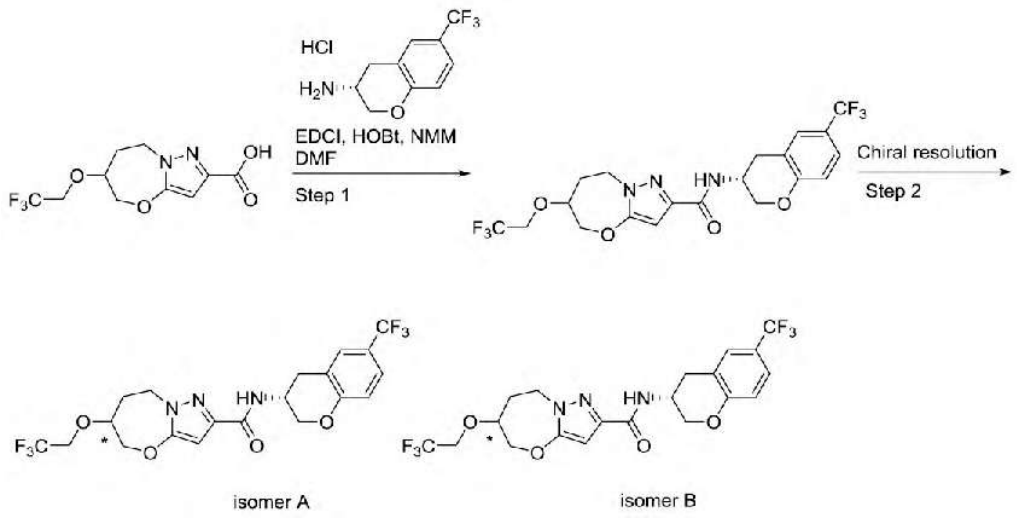
To a suspension of 6-(2,2,2-trifluoroethoxy)-5,6,7,8-tetrahydropyrazolo[5,1-b][1,3]oxazepine-2-carboxylic acid (a mixture with 4 equivalents of sodium chloride) (26.0 mg, 0.0591 mmol) synthesized by a method described in Step 6 in Example 254, (R)-6-chlorochroman-3-amine (14.1 mg, 0.0768 mmol), 1-hydroxybenzotriazole (14.2 mg, 0.0927 mmol) and 1-ethyl-3-(3-dimethylaminopropyl)carbodiimide hydrochloride (17.8 mg, 0.0929 mmol) in N,N-dimethylformamide (0.5 mL), 4-methylmorpholine (41 μL, 0.373 mmol) was added. The mixture was stirred for 2 hours at room temperature. Water and ethyl acetate was added to the reaction solution, and the mixture was partitioned. After drying the organic layer with anhydrous sodium sulfate, the solvent was evaporated off under reduced pressure. The residue was purified by silica gel column chromatography and the diastereomers were separated to give N-((R)-6-chlorochroman-3-yl)-6-(2,2,2-trifluoroethoxy)-5,6,7,8-tetrahydropyrazolo[5,1-b][1,3]oxazepine-2-carboxamide (isomer A) (amount 2.7 mg, yield 10%) and N-((R)-6-chlorochroman-3-yl)-6-(2,2,2-trifluoroethoxy)-5,6,7,8-tetrahydropyrazolo[5,1-b][1,3]oxazepine-2-carboxamide (isomer B) (amount 2.9 mg, yield 11%).

[0798]

The compound of Example 257 was synthesized from the compound synthesized in Step 6 in Example 254 under the scheme depicted in the figure below.

[0799]

[Chem 210]



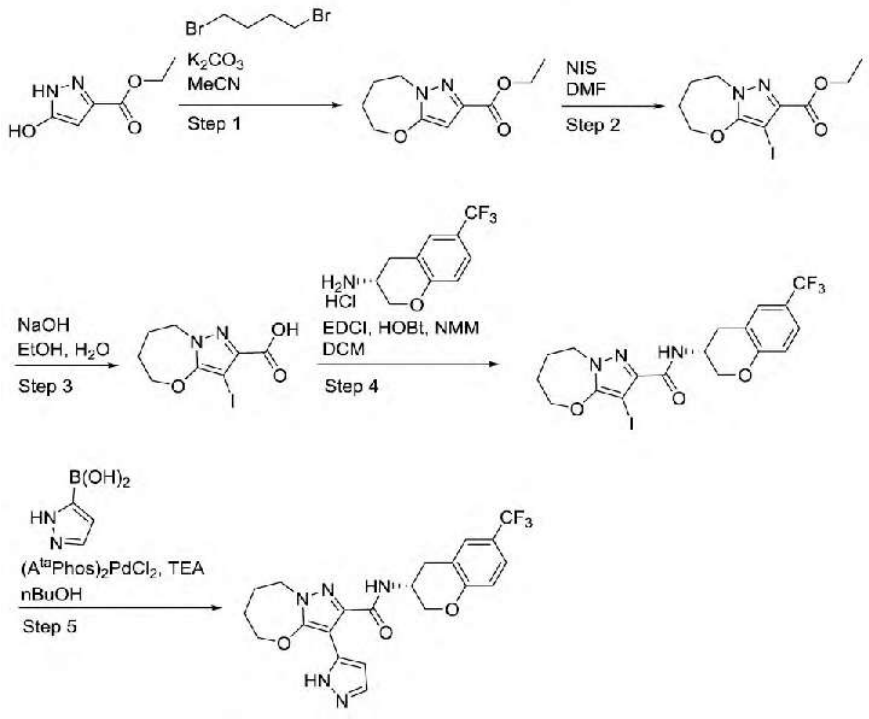
[0800]

Example 258

Production of (R)-3-(1H-pyrazol-5-yl)-N-(6-(trifluoromethyl)chroman-3-yl)-5,6,7,8-tetrahydropyrazolo[5,1-b][1,3]oxazepine-2-carboxamide

[0801]

[Chem 211]



[0802]

Step 1

To a solution of ethyl 5-hydroxy-1H-pyrazole-3-carboxylate (1.00 g, 6.40 mmol) in

acetonitrile (13 mL) was added potassium carbonate (2.66 g, 19.2mmol) and 1,4-dibromobutane (804 μL, 6.73 mmol). After sealing, the mixture was stirred for 15 hours at 100°C. The reaction solution was allowed to cool to room temperature, and after filtration, the filtrate was concentrated under reduced pressure. The residue was purified by silica gel column chromatography to give ethyl 5,6,7,8-tetrahydropyrazolo[5,1-b][1,3]oxazepine-2-carboxylate (amount 574 mg, yield 43%).

[0803]

Step 2

Ethyl 3-iodo-5,6,7,8-tetrahydropyrazolo[5,1-b][1,3]oxazepine-2-carboxylate was obtained by a method similar to Example 14, using ethyl 5,6,7,8-tetrahydropyrazolo[5,1-b][1,3]oxazepine-2-carboxylate instead of N-((R)-chroman-3-yl)-6-(trifluoromethyl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxamide.

[0804]

Step 3 to Step 4

(R)-3-Iodo-N-(6-(trifluoromethyl)chroman-3-yl)-5,6,7,8-tetrahydropyrazolo[5,1-b][1,3]oxazepine-2-carboxamide was obtained by a method similar to Step 3 to Step 4 in Example 18, using ethyl 3-iodo-5,6,7,8-tetrahydropyrazolo[5,1-b][1,3]oxazepine-2-carboxylate instead of ethyl 3-(pyridin-2-yl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxylate in Step 3, and using (R)-6-(trifluoromethyl)chroman-3-amine hydrochloride synthesized by a method described in Reference Example 43 instead of (R)-6-chlorochroman-3-amine hydrochloride in Step 4.

[0805]

Step 5

To a solution of (R)-3-iodo-N-(6-(trifluoromethyl)chroman-3-yl)-5,6,7,8-tetrahydropyrazolo[5,1-b][1,3]oxazepine-2-carboxamide (20 mg, 0.039 mmol) in n-butanol (800 μL)were added 1H-pyrazol-5-ylboronic acid (8.8 mg, 0.079 mmol), triethylamine (22 μL, 0.16 mmol) and bis(di-tert-butyl (4-dimethylaminophenyl)phosphine)dichloropalladium (II) (2.8 mg, 0.0040 mmol). The mixture was stirred for 1 hour at 120°C under microwave irradiation. The reaction solution was concentrated under reduced pressure, and the residue was purified by silica gel column chromatography to give (R)-3-(1H-pyrazol-5-yl)-N-(6-(trifluoromethyl)chroman-3-yl)-5,6,7,8-tetrahydropyrazolo[5,1-b][1,3]oxazepine-2-carboxamide (amount 13.6 mg, yield 77%).

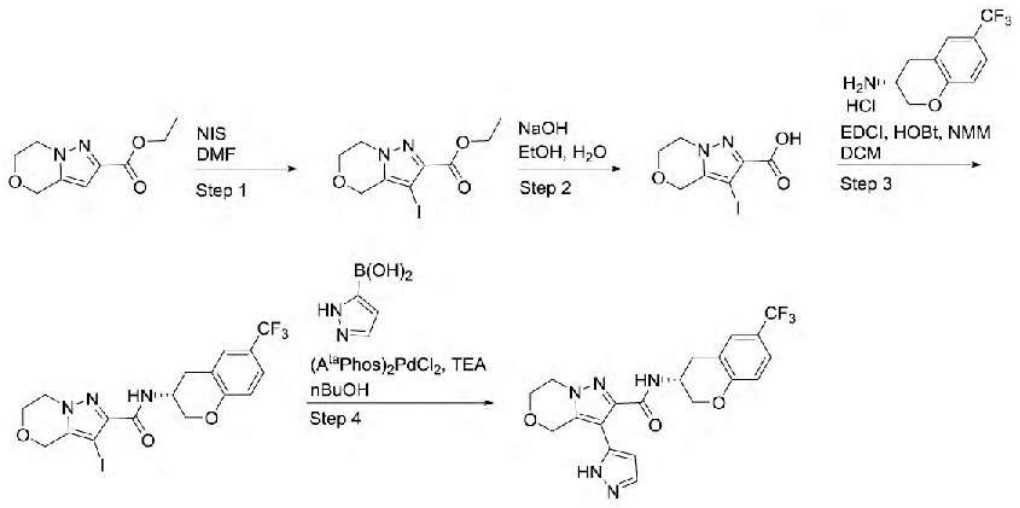
[0806]

Example 259

Production of (R)-3-(1H-pyrazol-5-yl)-N-(6-(trifluoromethyl)chroman-3-yl)-6,7-dihydro-4H-pyrazolo[5,1-c][1,4]oxazine-2-carboxamide

[0807]

[Chem 212]



[0808]

Step 1 to Step 4

(R)-3-(1H-Pyrazol-5-yl)-N-(6-(trifluoromethyl)chroman-3-yl)-6,7-dihydro-4H-pyrazolo[5,1-c][1,4]oxazine-2-carboxamide was obtained by a method similar to Step 2 to Step 5 in Example 258, using ethyl 6,7-dihydro-4H-pyrazolo[5,1-c][1,4]oxazine-2-carboxylate instead of ethyl 5,6,7,8-tetrahydropyrazolo[5,1-b][1,3]oxazepine-2-carboxylate in Step 2.

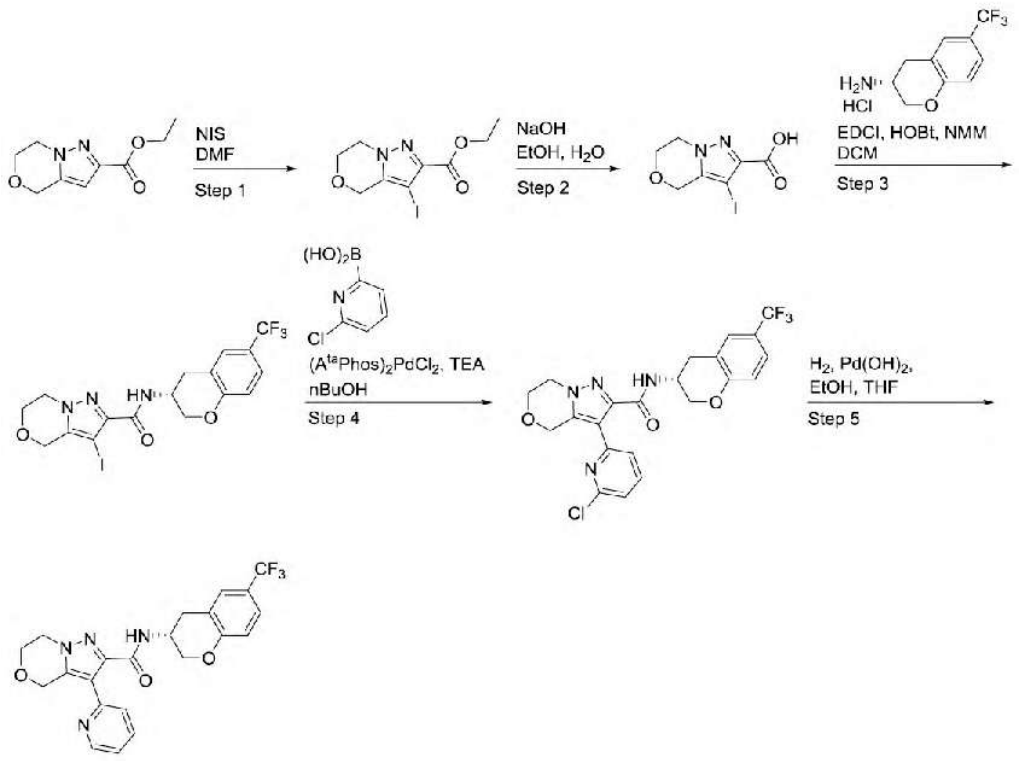
[0809]

Example 260

Production of (R)-3-(pyridin-2-yl)-N-(6-(trifluoromethyl)chroman-3-yl)-6,7-dihydro-4H-pyrazolo[5,1-c][1,4]oxazine-2-carboxamide

[0810]

[Chem 213]



[0811]

Step 1

To a solution of ethyl 6,7-dihydro-4H-pyrazolo[5,1-c][1,4]oxazine-2-carboxylate (400 mg, 2.04 mmol) in acetonitrile (6.8 mL), N-iodosuccineimide (1.38 g, 6.13 mmol) was added, and the mixture was stirred for 14 hours at 70°C. An aqueous solution of sodium thiosulfate and ethyl acetate were added to the reaction solution, and the mixture was partitioned. The organic layer was dried over anhydrous sodium sulfate and the solvent was evaporated off under reduced pressure. The residue was purified by silica gel column chromatography to give ethyl 3-iodo-6,7-dihydro-4H-pyrazolo[5,1-c][1,4]oxazine-2-carboxylate (amount 650 mg, yield 99%).

[0812]

Step 2

To a solution of ethyl 3-iodo-6,7-dihydro-4H-pyrazolo[5,1-c][1,4]oxazine-2-carboxylate (200 mg, 0.621 mmol) in ethanol (6.2 mL), 4 mol/L aqueous solution of sodium hydroxide (0.62 mL, 2.5 mmol) was added, and the mixture was stirred for 2 hours at room temperature. To the reaction solution, 2 mol/L hydrochloric acid was added, and then the solvent was evaporated off under reduced pressure. Toluene was added to the residue and the solvent was evaporated off under reduced pressure to give 3-iodo-6,7-dihydro-4H-pyrazolo[5,1-c][1,4]oxazine-2-carboxylic acid (amount 325 mg, yield 99%) as a mixture with 4 equivalents of sodium chloride.

[0813]

Step 3

To a suspension of 3-iodo-6,7-dihydro-4H-pyrazolo[5,1-c][1,4]oxazine-2-carboxylic acid (a mixture with 4 equivalents of sodium chloride) (325 mg, 0.616 mmol), (R)-6-(trifluoromethyl)chroman-3-amine hydrochloride (156 mg, 0.616 mmol) synthesized by a method described in Reference Example 43, 1-hydroxybenzotriazole (10.0 mg, 0.0739 mmol) and 1-ethyl-3-(3-dimethylaminopropyl)carbodiimide hydrochloride (142 mg, 0.0739 mmol) in dichloromethane (10 mL), 4-methylmorpholine (203 μL, 1.85 mmol) was added, and the mixture was stirred for 12 hours at room temperature. Water and ethyl acetate were added to the reaction solution, and the mixture was partitioned. After drying the organic layer with anhydrous sodium sulfate, the solvent was evaporated off under reduced pressure. The residue was purified by silica gel column chromatography to give (R)-3-iodo-N-(6-(trifluoromethyl)chroman-3-yl)-6,7-dihydro-4H-pyrazolo[5,1-c][1,4]oxazine-2-carboxamide (amount 267 mg, yield 88%).

[0814]

Step 4

To a mixed solution of (R)-3-iodo-N-(6-(trifluoromethyl)chroman-3-yl)-6,7-dihydro-4H-pyrazolo[5,1-c][1,4]oxazine-2-carboxamide (60.0 mg, 0.122 mmol) and (6-chloropyridin-2-yl)boronic acid (28.7 mg, 0.182 mmol) in 1,4-dioxane (1 mL) and water (1 mL) were added cesium carbonate (119 mg, 0.365 mmol), bis(di-tert-butyl(4-dimethylaminophenyl)phosphine)dichloropalladium (II) (8.6 mg, 0.012 mmol). The mixture was stirred for 1 hour at 140°C under microwave irradiation. Water and ethyl acetate was added to the reaction solution, and the mixture was partitioned. The organic layer was dried over anhydrous magnesium sulfate and the solvent was evaporated off under reduced pressure. The residue was purified by silica gel column chromatography to give (R)-3-(6-chloropyridin-2-yl)-N-(6-(trifluoromethyl)chroman-3-yl)-6,7-dihydro-4H-pyrazolo[5,1-c][1,4]oxazine-2-carboxamide (amount 9.4 mg, yield 33%).

[0815]

Step 5

To a solution of (R)-3-(6-chloropyridin-2-yl)-N-(6-(trifluoromethyl)chroman-3-yl)-6,7-dihydro-4H-pyrazolo[5,1-c][1,4]oxazine-2-carboxamide (290 mg, 0.606 mmol) in tetrahydrofuran (6 mL) were added ethanol (6 mL) and 20% palladium hydroxide on carbon (128 mg). The mixture was stirred under pressurized conditions (balloon pressure) in hydrogen atmosphere for 2 hours at 50°C. After the reaction solution was filtered through celite, the solvent was evaporated off under reduced pressure. The residue was purified by silica gel

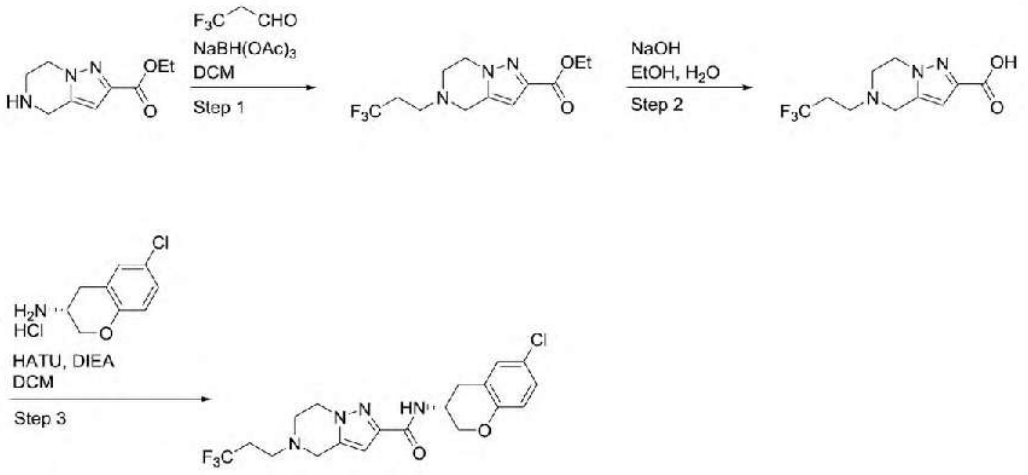
column chromatography to give (R)-3-(pyridin-2-yl)-N-(6-(trifluoromethyl)chroman-3-yl)-6,7-dihydro-4H-pyrazolo[5,1-c][1,4]oxazine-2-carboxamide (amount 204 mg, yield 76%).

[0816]

The compound of Example 261 was synthesized under the scheme depicted in the figure below.

[0817]

[Chem 214]



[0818]

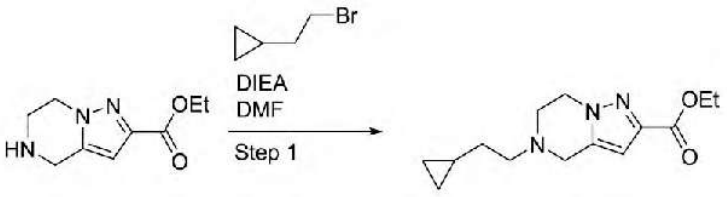
The compound of Example 262 was synthesized by a method similar to Example 261.

[0819]

The compound of Reference Example 69 was synthesized under the scheme depicted in the figure below.

[0820]

[Chem 215]



[0821]

The compound of Example 263 was synthesized using the compound of Reference Example 69 and the compound of Reference Example 1 by methods similar to Step 2 and Step 3 in Example 261.

[0822]

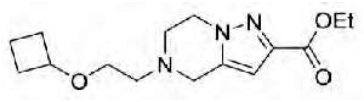
The compound of Example 264 was synthesized using the compound of Reference Example 69 and the compound of Reference Example 47 by methods similar to Step 2 and Step 3 in Example 261.

[0823]

The compound of Reference Example 70 (shown in the figure below.) was synthesized by a method similar to Reference Example 69.

[0824]

[Chem 216]



[0825]

The compound of Example 265 was synthesized using the compound of Reference Example 70 and the compound of Reference Example 43 by methods similar to Step 2 and Step 3 in Example 261.

[0826]

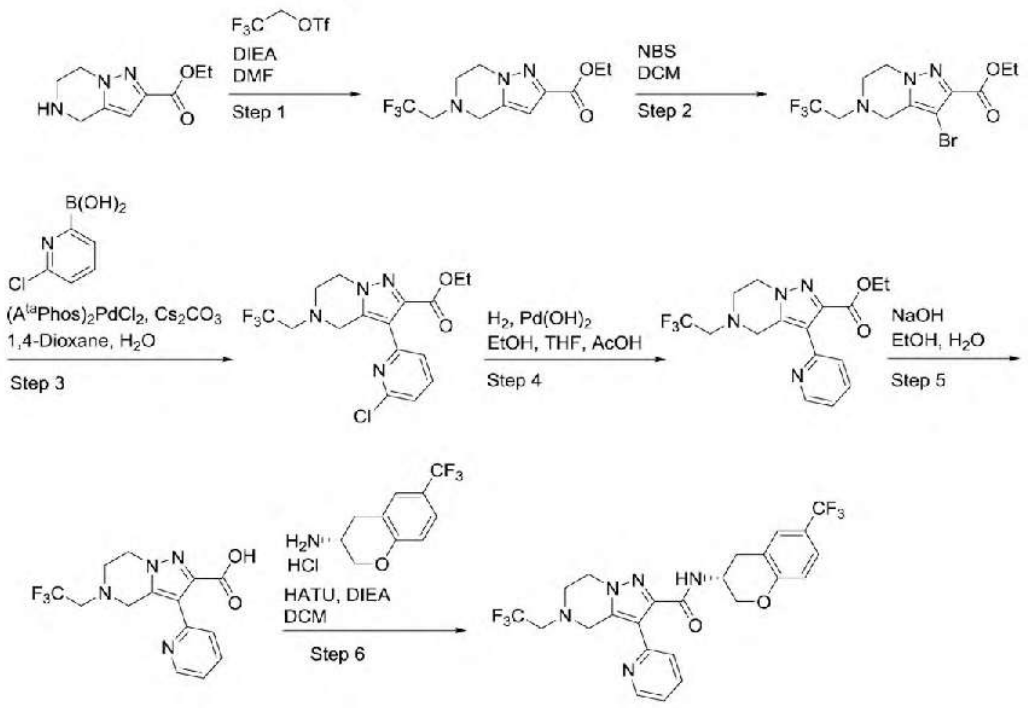
The compound of Example 266 was synthesized using the compound of Reference Example 70 and the compound of Reference Example 44 by methods similar to Step 2 and Step 3 in Example 261.

[0827]

The compound of Example 267 was synthesized under the scheme depicted in the figure below.

[0828]

[Chem 217]



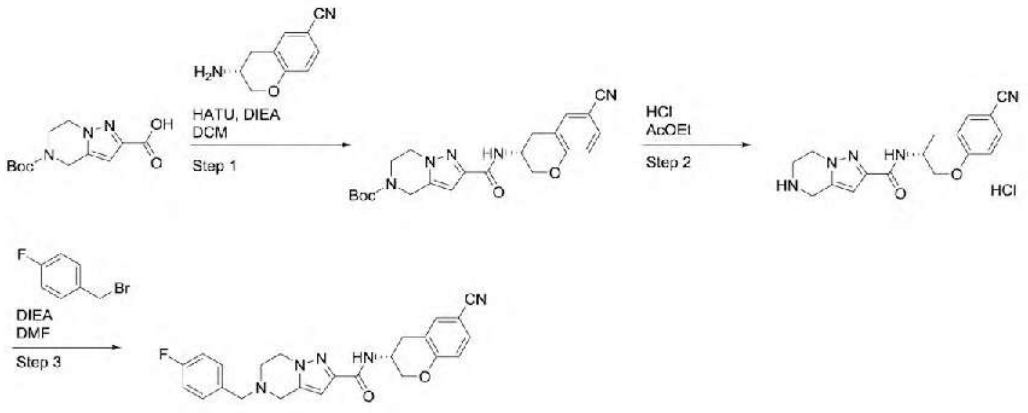
[0829]

Example 268

Production of (R)-N-(6-cyanochroman-3-yl)-5-(4-fluorobenzyl)-4,5,6,7-tetrahydropyrazolo[1, 5-a]pyrazine-2-carboxamide

[0830]

[Chem 218]



[0831]

Step 1

To a solution of 5-(tert-butoxycarbonyl)-4,5,6,7-tetrahydropyrazolo[1, 5-a]pyrazine-2-carboxylic acid (120 mg, 0.449 mmol) in dichloromethane (3 mL) were added HATU (188 mg, 0.494 mmol), N,N-diisopropylethylamine (386 μL, 2.24 mmol) and (R)-3-aminochroman-6-carbonitrile (104 mg, 0.494 mmol) synthesized by a method described in Reference Example 24.

The mixture was stirred for12 hours at room temperature. The reaction solution was purified by silica gel column chromatography to give (R)-tert-butyl 2-((6-cyanochroman-3-yl)carbamoyl)-6,7-dihydropyrazolo[1, 5-a]pyrazine-5 (4H)-carboxylate (amount 210 mg).

[0832]

Step 2

To a solution of (R)-tert-butyl 2-((6-cyanochroman-3-yl) carbamoyl)-6,7-dihydropyrazolo[1, 5-a]pyrazine-5 (4H)-carboxylate (210 mg, 0.496 mmol) in ethyl acetate (8 mL), 4 mol/L hydrogen chloride-ethyl acetate solution (8.0 mL, 32 mmol) was added, and the mixture was stirred for 2 hours at room temperature. The solvent was evaporated off under reduced pressure to give (R)-N-(6-cyanochroman-3-yl)-4,5,6,7-tetrahydropyrazolo[1,5-a]pyrazine-2-carboxamide hydrochloride (amount 178 mg, yield 100%).

[0833]

Step 3

To a solution of (R)-N-(6-cyanochroman-3-yl)-4,5,6,7-tetrahydropyrazolo[1, 5-a]pyrazine-2-carboxamide (15.0 mg, 0.0417 mmol) in N,N-dimethylformamide (208 μL) were added N,N-diisopropylethylamine (36 μL, 0.21 mmol) and 1-(bromomethyl)-4-fluorobenzene (15.8 mg, 0.0834 mmol). The mixture was stirred for 12 hours at 100°C. Water and chloroform was added to the reaction soltion, and the mixture was partitioned. After the organic layer was dried over sodium sulfate, the solvent was evaporated off under reduced pressure. The residue was purified by silica gel column chromatography to give (R)-N-(6-cyanochroman-3-yl)-5-(4-fluorobenzyl)- 4,5,6,7-tetrahydropyrazolo[1,5-a]pyrazine-2-carboxamide (amount 16.0 mg, yield 89%).

[0834]

The compound of Example 269 was synthesized by a method similar to Example 268.

[0835]

The compound of Example 270 was synthesized by a method similar to Example 268.

[0836]

The compound of Example 271 was synthesized by a method similar to Example 268.

[0837]

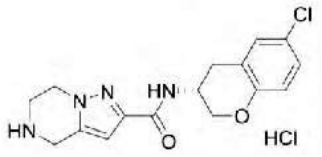
The compound of Example 272 was synthesized by methods similar to those described in Example 268 and Reference Example 3.

[0838]

The compound of Reference Example 71 (shown in the figure below.) was synthesized by methods similar to those described in Step 1 to Step 2 in Example 268 and in Reference Example 1.

[0839]

[Chem 219]



[0840]

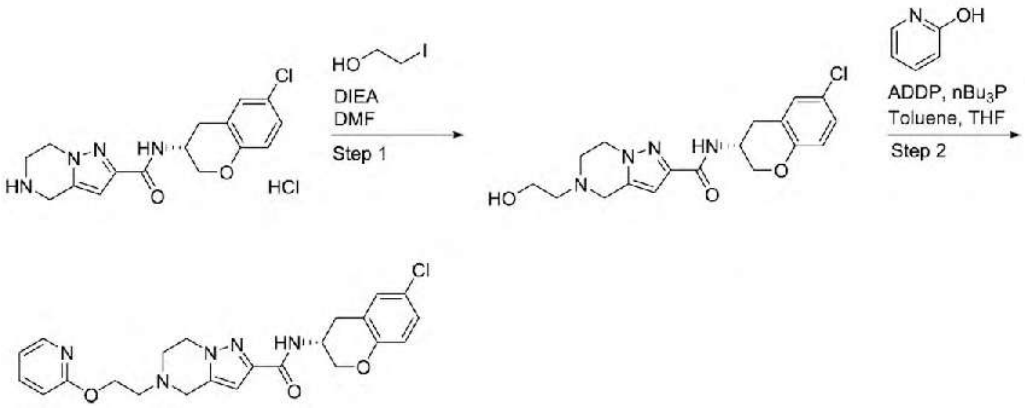
The compound of Example 273 was synthesized from the compound of Reference Example 71 by a method similar to Step 3 in Example 268.

[0841]

The compound of Example 274 was synthesized from the compound of Reference Example 71 under the scheme depicted in the figure below.

[0842]

[Chem 220]

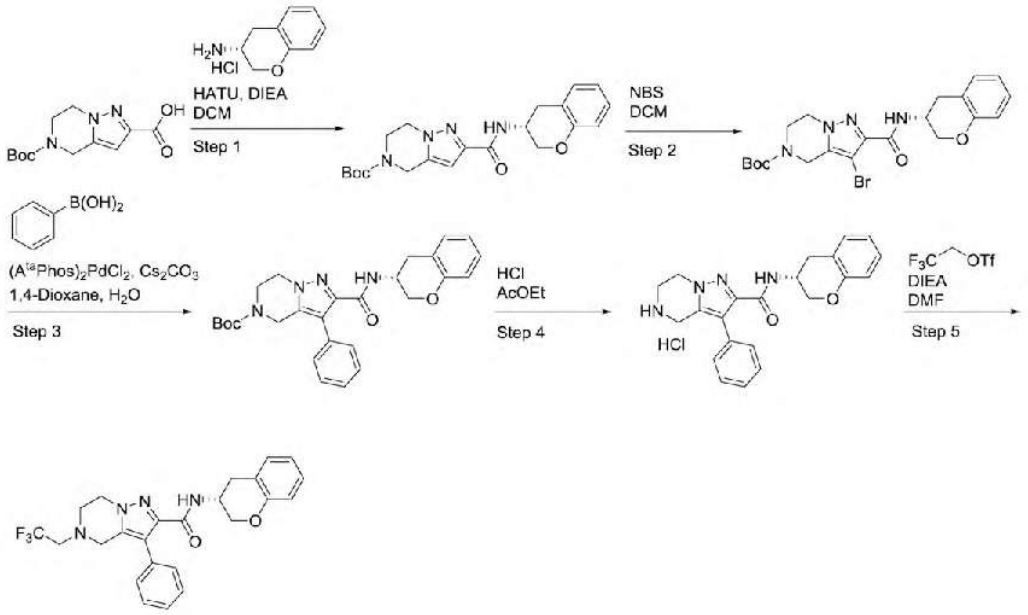


[0843]

The compound of Example 275 was synthesized under the scheme depicted in the figure below.

[0844]

[Chem 221]

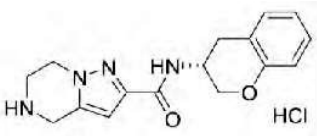


[0845]

The compound of Reference Example 72 (shown in the figure below.) was synthesized by a method similar to Step 1 to Step 2 in Example 268.

[0846]

[Chem 222]

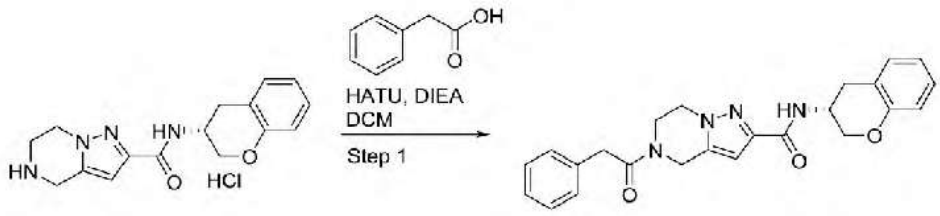


[0847]

The compound of Example 276 was synthesized from the compound of Reference Example 72 under the scheme depicted in the figure below.

[0848]

[Chem 223]

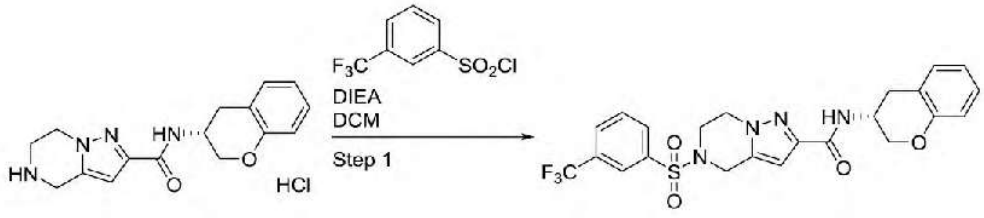


[0849]

The compound of Example 277 was synthesized from the compound of Reference Example 72 under the scheme depicted in the figure below.

[0850]

[Chem 224]

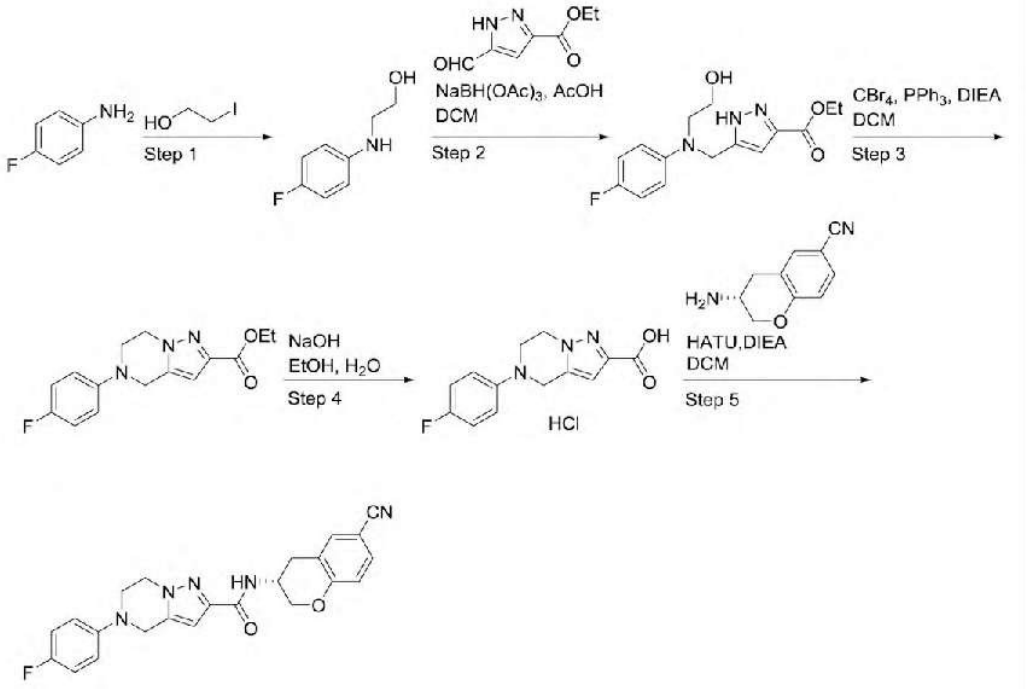


[0851]

Example 278 was synthesized under the scheme depicted in the figure below.

[0852]

[Chem 225]

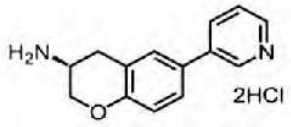


[0853]

The compound of Reference Example 73 (shown in the figure below.) was synthesized by a method similar to Reference Example 27.

[0854]

[Chem 226]



[0855]

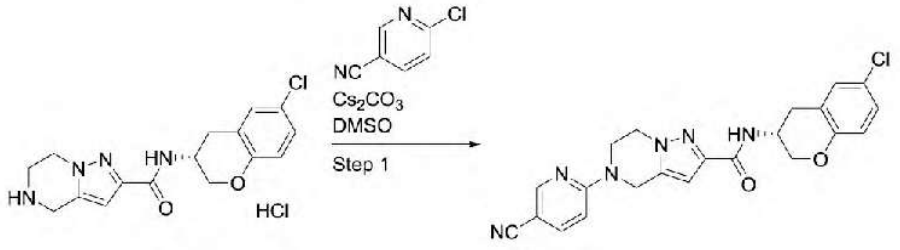
The compound of Example 279 was synthesized by methods similar to those described in Example 278 and Reference Example 73.

[0856]

The compound of Example 280 was synthesized from the compound of Reference Example 71 under the scheme depicted in the figure below.

[0857]

[Chem 227]

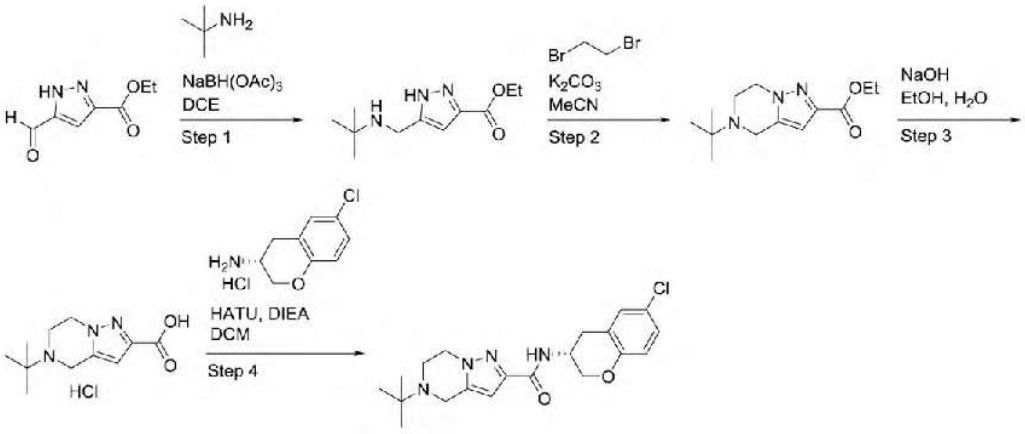


[0858]

The compound of Example 281 was synthesized under the scheme depicted in the figure below.

[0859]

[Chem 228]



[0860]

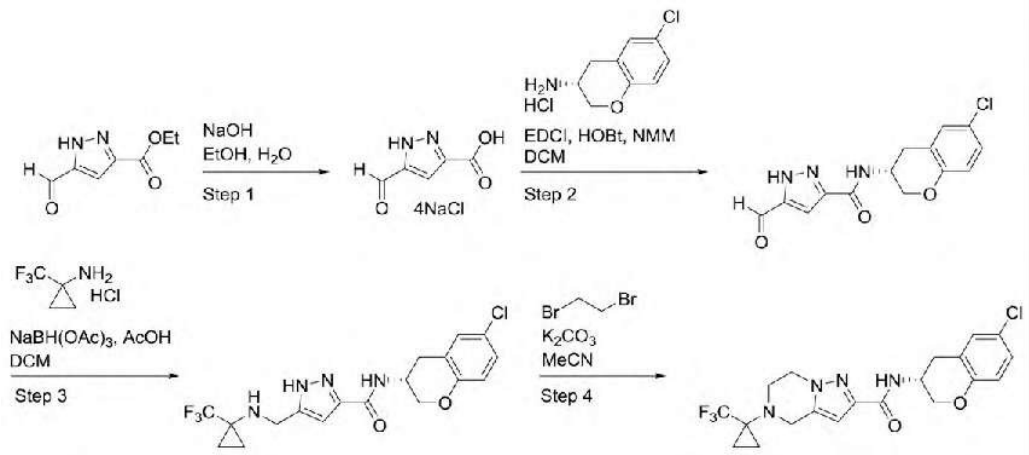
The compound of Example 282 was synthesized by methods similar to those described in Example 281 and Reference Example 24.

[0861]

The compound of Example 283 was synthesized under the scheme depicted in the figure below.

[0862]

[Chem 229]



[0863]

The compound of Example 284 was synthesized by a method similar to Example 283.

[0864]

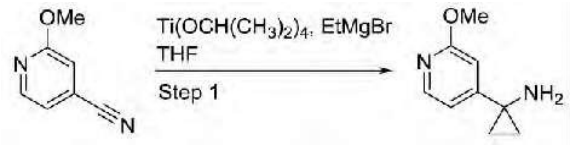
The compound of Example 285 was synthesized by a method similar to Example 283.

[0865]

The compound of Reference Example 74 was synthesized under the scheme depicted in the figure below.

[0866]

[Chem 230]



[0867]

The compound of Example 286 was synthesized by a method similar to Example 283, using the compound of Reference Example 74 and the compound of Reference Example 24.

[0868]

The compound of Example 287 was synthesized by a method similar to Step 6 to Step 8 in Example 70.

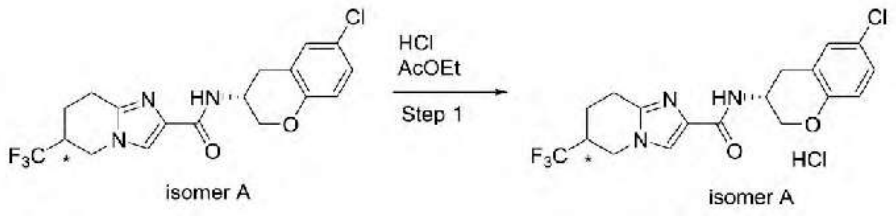
[0869]

Example 288

Production of N-((R)-6-chlorochroman-3-yl)-6-(trifluoromethyl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxamide (isomer A) hydrochloride

[0870]

[Chem 231]



[0871]

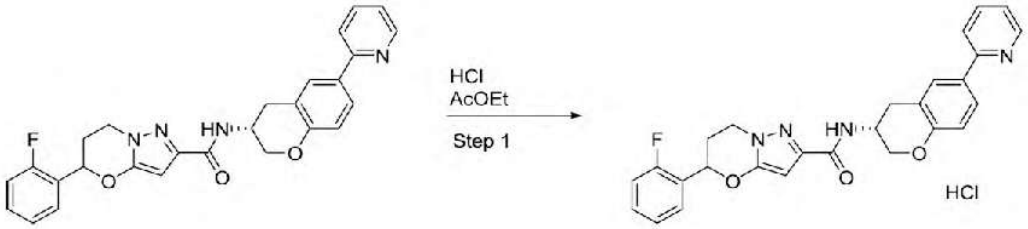
To a solution of N-((R)-6-chlorochroman-3-yl)-6-(trifluoromethyl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxamide (isomer A) (170 mg, 0.425 mmol) synthesized by a method described in Example 2 in ethyl acetate (1 mL), 4 mol/L hydrogen chloride-ethyl acetate solution (1 mL, 4 mmol) was added, and the mixture was stirred for 10 minutes. The solvent was evaporated off under reduced pressure to give N-((R)-6-chlorochroman-3-yl)-6-(trifluoromethyl)-5,6,7,8-tetrahydroimidazo[1,2-a]pyridine-2-carboxamide (isomer A) hydrochloride (amount 185 mg, yield 100%).

[0872]

The compound of Example 289 was synthesized from the compound of Example 81 under the scheme depicted in the figure below.

[0873]

[Chem 232]



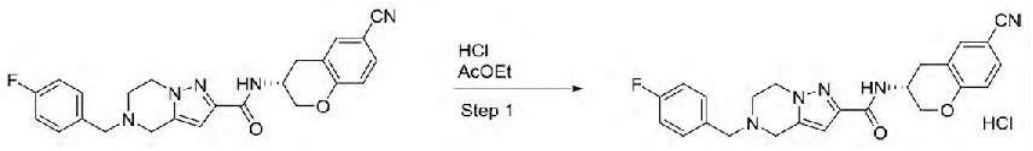
[0874]

Example 290

Production of (R)-N-(6-cyanochroman-3-yl)-5-(4-fluorobenzyl)-4,5,6,7-tetrahydropyrazolo[1, 5-a]pyrazine-2-carboxamide hydrochloride

[0875]

[Chem 233]



[0876]

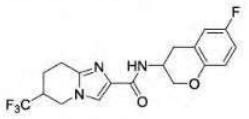
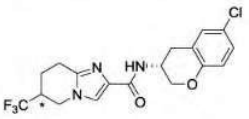
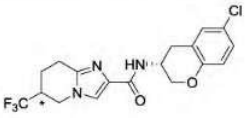
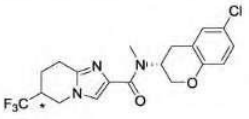
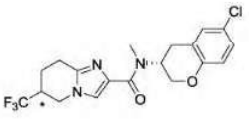
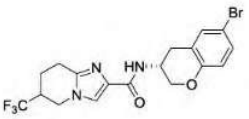
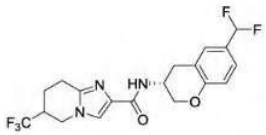
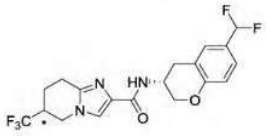
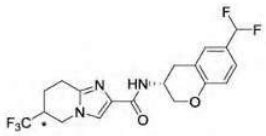
To a solution of (R)-N-(6-cyanochroman-3-yl)-5-(4-fluorobenzyl)-4,5,6,7-tetrahydropyrazolo[1, 5-a]pyrazine-2-carboxamide (122 mg, 0.283 mmol) synthesized by a method described in Example 268 in ethyl acetate (2 mL), 4 mol/L hydrogen chloride-ethyl acetate solution (141 μL, 0.563 mmol) was added, and the mixture was stirred. n-Hexane (2 mL) was added, the precipitated solid was filtered, and then the solid was dried under reduced pressure to give (R)-N-(6-cyanochroman-3-yl)-5-(4-fluorobenzyl)-4,5,6,7-tetrahydropyrazolo[1, 5-a]pyrazine-2-carboxamide hydrochloride (amount 96.4 mg, yield 73%).

[0877]

In the tables below, on the compounds synthesized in Example 1 to Example 287, the chemical structures and instrumentall analysis data are shown. Meanwhile, n the tables below, the asterisks (*) appearing in the structural formulae in the Examples denote that the corresponding asymmetric carbon has a single steric structure. Unless specifically stated otherwise, “Example“ in the tables refers to the compound intended for production in each Example; for example, the data given for Example 1 shows the data of the compound intended for production in Example 1.

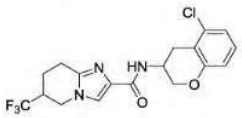
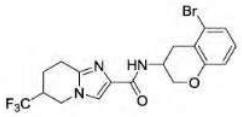
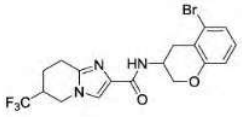
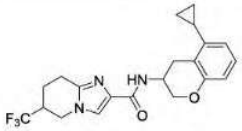
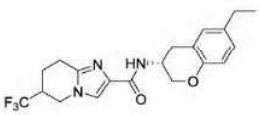
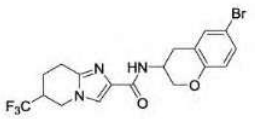
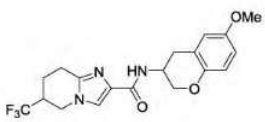
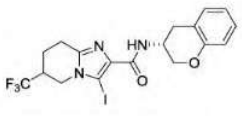
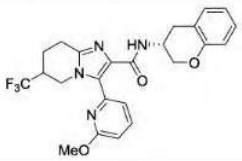
[0878]

[Table 1]

Example	Structural formula	NMR	MS
1		1H-NMR ($CDCl_3$) δ: 1.93-1.99 (1H, m), 2.32-2.36 (1H, m), 2.75-2.88 (3H, m), 3.03-3.08 (1H, m), 3.14-3.19 (1H, m), 3.96-4.03 (1H, m), 4.12-4.18 (2H, m), 4.26-4.30 (1H, m), 4.58-4.62 (1H, m), 6.74 (1H, d, J=9.0 Hz), 6.80-6.83 (2H, m), 7.18 (1H, d, J=7.6 Hz), 7.46 (1H, s).	
2 (isomer A)		1H-NMR ($CDCl_3$) δ: 1.94(1H, m), 2.34 (1H, m), 2.74-2.87 (3H, m), 3.02-3.19 (2H, m), 3.99 (1H, m), 4.13-4.22 (2H, m), 4.28 (1H, m), 4.60 (1H, m), 6.80 (1H, d, J=8.7 Hz), 7.03 (1H, m), 7.07 (1H, dd, J=8.9, 2.7 Hz), 7.17 (1H, d, J=7.8 Hz), 7.46 (1H, s).	ESI-MS m/z: 400 [M+H]+
2 (isomer B)		1H-NMR ($CDCl_3$) δ: 1.95 (1H, m), 2.34 (1H, m), 2.73-2.87 (3H, m), 3.06 (1H, m), 3.15 (1H, m), 4.00 (1H, m), 4.13-4.23 (2H, m), 4.28 (1H, m), 4.60 (1H, m), 6.80 (1H, d, J=8.7 Hz), 7.03 (1H, d, J=2.5 Hz), 7.07 (1H, dd, J=8.7, 2.6 Hz), 7.17 (1H, d, J=8.2 Hz), 7.46 (1H, s).	ESI-MS m/z: 400 [M+H]+
3		1H-NMR ($CDCl_3$) δ: 1.95 (1H, m), 2.34 (1H, m), 2.72-2.88 (2H, m), 2.96-3.35 (6H, m), 3.99 (1H, m), 4.15 (1H, m), 4.26-4.31 (2H, m), 5.27 (1H, m), 6.77 (1H, d, J=9.7 Hz), 7.05-7.07 (2H, m), 7.43 (1H, s).	ESI-MS m/z: 414 [M+H]+
4		1H-NMR ($CDCl_3$) δ: 1.97 (1H, m), 2.34 (1H, m), 2.73-2.87 (2H, m), 3.00-3.27 (6H, m), 3.99 (1H, m), 4.15 (1H, m), 4.26-4.32 (2H, m), 5.27 (1H, m), 6.77 (1H, d, J=9.4 Hz), 7.06-7.07 (2H, m),7.43 (1H, s).	ESI-MS m/z: 414 [M+H]+
5		1H-NMR ($CDCl_3$) δ: 1.95 (1H, m), 2.34 (1H, m), 2.76-2.88 (3H, m), 3.06 (1H, m), 3.15 (1H, m), 3.99 (1H, m), 4.13-4.22 (2H, m), 4.28 (1H, m), 4.60 (1H, m), 6.75 (1H, d, J=8.6 Hz), 7.15-7.18 (2H, m), 7.21 (1H, dd, J=8.6, 2.4 Hz), 7.46 (1H, s).	ESI-MS m/z: 444, 446 [M+H]+
6		1H-NMR ($CDCl_3$) δ: 1.94 (1H, m), 2.33 (1H, m), 2.75-2.84 (2H, m), 2.91 (1H, m), 3.05 (1H, m), 3.20 (1H, m), 3.99 (1H, m), 4.19 (1H, m), 4.25-4.30 (2H, m), 4.63 (1H, m), 6.56 (1H, t, J=56.7 Hz), 6.93 (1H, d, J=8.4 Hz), 7.16 (1H, d, J=7.9 Hz), 7.21 (1H, s), 7.27 (1H, m), 7.46 (1H, s).	
7 (isomer A)		1H-NMR ($CDCl_3$) δ: 1.94 (1H, m), 2.33 (1H, m), 2.76-2.84 (2H, m), 2.91 (1H, m), 3.05 (1H, m), 3.15 (1H, m), 3.99 (1H, m), 4.17-4.30 (3H, m), 4.63 (1H, m), 6.56 (1H, t, J=56.7 Hz), 6.93 (1H, d, J=8.4 Hz), 7.16 (1H, d, J=7.8 Hz), 7.21 (1H, s), 7.27 (1H, m), 7.46 (1H, s).	ESI-MS m/z: 416 [M+H]+
7 (isomer B)		1H-NMR ($CDCl_3$) δ: 1.95 (1H, m), 2.33 (1H, m), 2.75-2.83 (2H, m), 2.90 (1H, m), 3.06 (1H, m), 3.20 (1H, m), 4.00 (1H, m), 4.19 (1H, m), 4.25-4.30 (2H, m), 4.63 (1H, m), 6.56 (1H, t, J=56.7 Hz), 6.93 (1H, d, J=8.4 Hz), 7.16 (1H, d, J=7.8 Hz), 7.21 (1H, s), 7.27 (1H, m), 7.46 (1H, s).	ESI-MS m/z: 416 [M+H]+

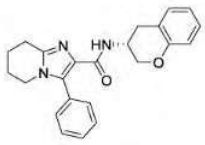
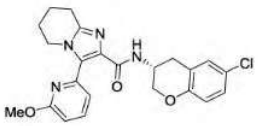
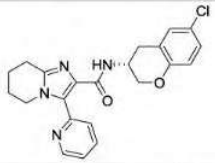
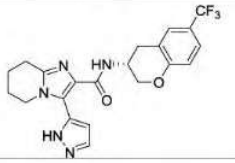
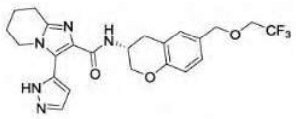
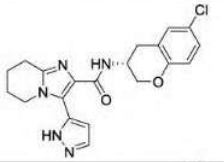
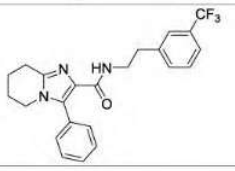
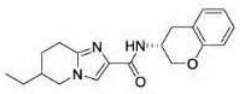
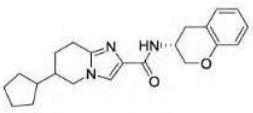
[0879]

[Table 2]

Example	Structural formula	NMR	MS
8		1H-NMR ($CDCl_3$) δ : 1.98 (1H, m), 2.36 (1H, m), 2.74-2.91 (3H, m), 3.04-3.17 (2H, m), 4.00 (1H, t, J=11.5 Hz), 4.11-4.20 (2H, m), 4.28 (1H, dd, J=4.2, 12.4 Hz), 4.68 (1H, m), 6.80 (1H, d, J=8.0 Hz), 6.98 (1H, dd, J=8.0, 1.2 Hz), 7.07 (1H, t, J=8.0 Hz), 7.17 (1H, d, J=7.9 Hz), 7.47 (1H, s).	ESI-MS m/z: 400 [M+H]+
9 (isomer A)		1H-NMR ($CDCl_3$) δ : 1.96 (1H, m), 2.35 (1H, m), 2.76-2.88 (3H, m), 3.05-3.14 (2H, m), 4.00 (1H, m), 4.10-4.20 (2H, m), 4.28 (1H, m), 4.67 (1H, m), 6.85 (1H, dd, J=8.2, 1.0 Hz), 7.01 (1H, t, J=8.1 Hz), 7.16-7.18 (2H, m), 7.48 (1H, s).	ESI-MS m/z: 444, 446 [M+H]+
9 (isomer B)		1H-NMR ($CDCl_3$) δ : 1.95 (1H, m), 2.35 (1H, m), 2.77-2.88 (3H, m), 3.04-3.14 (2H, m), 4.00 (1H, m), 4.10-4.20 (2H, m), 4.28 (1H, m), 4.67 (1H, m), 6.85 (1H, dd, J=8.2, 1.0 Hz), 7.01 (1H, t, J=8.1 Hz), 7.16-7.19 (2H, m), 7.47 (1H, s).	ESI-MS m/z: 444, 446 [M+H]+
10		1H-NMR ($CDCl_3$) δ :0.60-0.64 (2H, m), 0.85-0.94 (2H, m), 1.70-1.79 (1H, m), 1.90-2.01 (1H, m), 2.32-2.41 (1H, m), 2.71-2.88 (2H, m), 2.95 (1H, dd, J=17.0, 4.7 Hz), 3.02-3.12 (1H, m), 3.24 (1H, dd, J=17.0, 6.1 Hz), 4.00 (1H, t, J=10.8 Hz), 4.08-4.12 (1H, m), 4.20 (1H, dd, J=10.6, 2.4 Hz), 4.28 (1H, dd, J=12.6, 5.4 Hz), 4.67-4.70 (1H, m), 6.62 (1H, d, J=7.5 Hz), 6.74 (1H, d, J= 8.0 Hz), 7.05 (1H, t, J=7.8 Hz), 7.20-7.26 (1H, m), 7.47 (1H, s).	ESI-MS m/z: 406 [M+H]+
11		1H-NMR ($CDCl_3$) δ : 1.20 (3H, t, J=7.6 Hz), 1.95 (1H, m), 2.34 (1H, m), 2.55 (2H, q, J=7.6 Hz), 1.74-1.86 (3H, m), 3.06 (1H, m), 3.17 (1H, m), 3.99 (1H, m), 4.12 (1H, m), 4.19 (1H, m), 4.27 (1H, m), 4.61 (1H, m), 6.79 (1H, d, J=8.3 Hz), 6.87 (1H, s), 6.95 (1H, dd, J=8.3, 2.1 Hz), 7.20 (1H, d, J=8.4 Hz), 7.45 (1H, s).	ESI-MS m/z: 394 [M+H]+
12		1H-NMR ($CDCl_3$) δ : 1.95 (1H, m), 2.34 (1H, m), 2.75-2.89 (3H, m), 3.06 (1H, m), 3.15 (1H, m), 3.99 (1H, m), 4.13-4.22 (2H, m), 4.28 (1H, m), 4.60 (1H, m), 6.75 (1H, d, J=8.6 Hz), 7.15-7.18 (2H, m), 7.21 (1H, dd, J=8.6, 2.4 Hz), 7.46 (1H, s).	ESI-MS m/z: 444, 446 [M+H]+
13		1H-NMR ($CDCl_3$) δ : 1.94 (1H, m), 2.43 (1H, m), 2.74-2.87 (3H, m), 3.05 (1H, m), 3.17 (1H, m), 3.74 (3H, s), 3.99 (1H, m), 4.10-4.18 (2H, m), 4.27 (1H, m), 4.60 (1H, m), 6.58 (1H, d, J=2.7 Hz), 6.70 (1H, dd, J=8.9, 3.0 Hz), 6.80 (1H, d, J=8.9 Hz), 7.22 (1H, d, J=7.8 Hz), 7.45 (1H, s).	ESI-MS m/z: 396 [M+H]+
14		1H-NMR ($CDCl_3$) δ : 1.92 (1H, m), 2.35 (1H, m), 2.72-2.90 (3H, m), 3.08 (1H, m), 3.19 (1H, dd, J=16.8, 5.4 Hz), 3.74 (1H, m), 4.14-4.24 (3H, m), 4.61 (1H, m), 6.86-6.91 (2H, m), 7.06 (1H, d, J=7.4 Hz), 7.13 (1H, m), 7.31 (1H, d, J=7.8 Hz).	ESI-MS m/z: 492 [M+H]+
15		1H-NMR ($CDCl_3$) δ : 1.96 (1H, m), 2.33 (1H, m), 2.72 (1H, m), 2.80-2.90 (2H, m), 3.10-3.20 (2H, m), 3.89 (3H, d, J=1.0 Hz), 4.09-4.23 (3H, m), 4.48 (1H, m), 4.55 (1H, m), 6.75 (1H, m), 6.86-6.91 (2H, m), 7.05 (1H, m), 7.12 (1H, m), 7.48 (1H, d, J=8.2 Hz), 7.64-7.71 (2H, m).	ESI-MS m/z: 473 [M+H]+

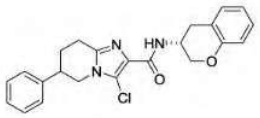
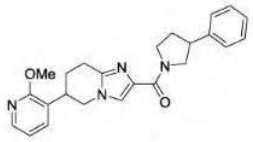
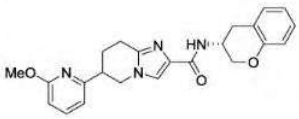
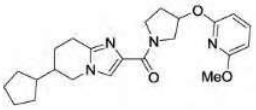
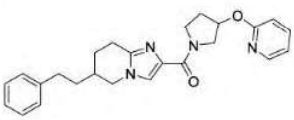
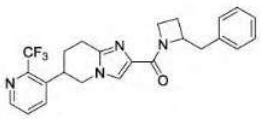
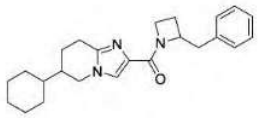
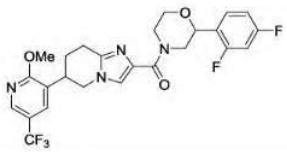
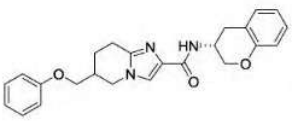
[0880]

[Table 3]

Example	Structural formula	NMR	MS
16		1H-NMR ($CDCl_3$) δ : 1.92-1.93 (4H, m), 2.81-2.90 (3H, m), 3.12 (1H, dd, J=16.6, 5.6 Hz), 3.68-3.70 (2H, m), 4.07-4.21 (2H, m), 4.54 (1H, m), 6.84-6.89 (2H, m), 7.03 (1H, d, J=7.4 Hz), 7.11 (1H, m), 7.30 (1H, m), 7.39-7.44 (5H, m).	ESI-MS m/z: 374 [M+H]+
17		1H-NMR ($CDCl_3$) δ : 1.93-1.95 (4H, m), 2.81-2.92 (3H, m), 3.10 (1H, dd, J=16.7, 5.6 Hz), 3.91 (3H, s), 4.05 (2H, s), 4.11 (1H, m), 4.19 (1H, dd, J=10.8, 2.0 Hz), 4.53 (1H, m), 6.72 (1H, d, J=8.2 Hz), 6.79 (1H, d, J=8.7 Hz), 7.01 (1H, d, J=2.3 Hz), 7.06 (1H, dd, J=8.7, 2.4 Hz), 7.42 (1H, d, J=8.0 Hz), 7.54 (1H, d, J=7.3 Hz), 7.66 (1H, t, J=7.8 Hz).	ESI-MS m/z: 439 [M+H]+
18		1H-NMR ($CDCl_3$) δ : 1.94 (4H, s), 2.81-2.88 (3H, m), 3.11 (1H, dd, J=16.7, 5.8 Hz), 4.01 (2H, m), 4.09-4.20 (2H, m), 4.53 (1H, m), 6.79 (1H, d, J=8.7 Hz), 7.02 (1H, s), 7.07 (1H, d, J=7.4 Hz), 7.47 (1H, d, J=8.5 Hz), 7.78 (1H, t, J=7.7 Hz), 7.91 (1H, d, J=8.0 Hz), 8.63 (1H, d, J=4.0 Hz).	ESI-MS m/z: 409 [M+H]+
19		1H-NMR ($CDCl_3$) δ : 1.94 (2H, m), 2.05 (2H, m), 2.87 (2H, q, J=6.1 Hz), 2.97 (1H, dt, J=16.7, 4.9 Hz), 3.23 (1H, dt, J=16.7, 4.9 Hz), 4.15 (2H, q, J=5.8 Hz), 4.28 (2H, m), 4.64 (1H, m), 6.52 (1H, d, J=4.3 Hz), 6.95 (1H, m), 7.33 (1H, d, J=2.9 Hz), 7.38 (1H, m), 7.66 (1H, d, J=4.4 Hz), 7.70 (1H, m), 14.4 (1H, brs).	ESI-MS m/z: 432 [M+H]+
20		1H-NMR ($CDCl_3$) δ : 1.94 (2H, m), 2.06 (2H, m), 2.87 (2H, t, J=6.4 Hz), 2.93 (1H, dd, J=16.8, 4.5 Hz), 3.21 (1H, dd, J=16.5, 5.3 Hz), 3.82 (2H, q, J=8.7 Hz), 4.15 (2H, d, J=6.0 Hz), 4.20-4.27 (2H, m), 4.57 (2H, s), 4.64 (1H, m), 6.52 (1H, s), 6.89 (1H, d, J=8.3 Hz), 7.06 (1H, s), 7.12 (1H, d, J=8.4 Hz), 7.67 (1H, s), 7.74 (1H, d, J=7.8 Hz), 14.5 (1H, brs).	ESI-MS m/z: 476 [M+H]+
21		1H-NMR ($CDCl_3$) δ : 1.91-1.97 (2H, m), 2.04-2.10 (2H, m), 2.86-2.93 (3H, m), 3.18 (1H, dd, J=16.9, 5.3 Hz), 4.16 (2H, t, J=6.1 Hz), 4.21-4.23 (2H, m), 4.62 (1H, m), 6.53 (1H, d, J=1.9 Hz), 6.82 (1H, d, J=8.7 Hz), 7.05 (1H, d, J=2.4 Hz), 7.09 (1H, dd, J=8.7, 2.6 Hz), 7.67 (1H, d, J=1.9 Hz), 7.72 (1H, d, J=7.9 Hz).	ESI-MS m/z: 397 [M+H]+
22		1H-NMR ($CDCl_3$) δ : 1.94-1.95 (4H, m), 2.86-2.94 (4H, m), 3.58 (2H, q, J=7.1 Hz), 3.71 (2H, t, J=5.4 Hz), 7.38-7.46 (9H, m)..	ESI-MS m/z: 414 [M+H]+
23		1H-NMR ($CDCl_3$) δ : 2.05-2.15 (8H, m), 2.28 (1H, m), 2.93 (1H, m), 3.10 (1H, m), 3.23 (1H, m), 3.80 (1H, t, J=11.7 Hz), 3.92 (1H, t, J=12.7 Hz), 4.11 (1H, m), 4.24 (1H, dd, J=12.6, 4.4 Hz), 4.57 (1H, m), 6.98-7.20 (4H, s), 7.33 (1H, m), 7.48 (1H, s).	ESI-MS m/z: 326 [M+H]+
24		1H-NMR ($CDCl_3$) δ : 1.15-1.88 (12H, m), 2.11 (1H, m), 2.72 (1H, m), 2.85-2.96 (2H, m), 3.17 (1H, m), 3.61 (1H,m), 4.06-4.13 (2H, m), 4.25 (1H, m), 4.62 (1H, m), 6.85-6.89 (2H, m), 7.05 (1H, d, J=6.6 Hz), 7.12 (1H, t, J=7.7 Hz), 7.41 (1H, s).	ESI-MS m/z: 366 [M+H]+

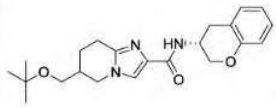
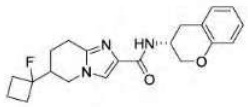
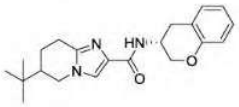
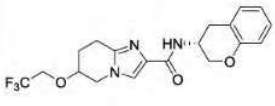
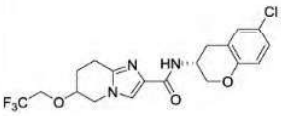
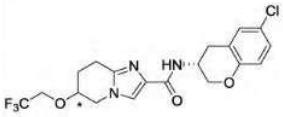
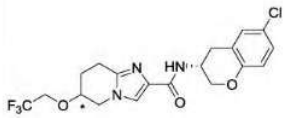
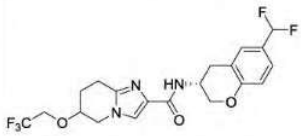
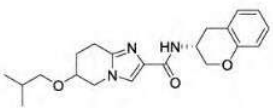
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[Table 4]

Example	Structural formula	NMR	MS
25		1H-NMR ($CDCl_3$) δ : 2.08-2.14 (1H, m), 2.24-2.28 (1H, m), 2.81-2.91 (2H, m), 2.97-3.02 (1H, m), 3.17-3.22 (2H, m), 3.75 (1H, t, J=8.0 Hz), 4.11-4.25 (3H, m), 4.56-4.66 (1H, m), 6.80-6.91 (2H, m), 7.03-7.40 (8H, m).	ESI-MS m/z: 408 [M+H]+
26		1H-NMR ($CDCl_3$) δ : 2.05 (2H, m), 2.20 (2H, m), 2.34 (1H, m), 2.85-3.11 (3H, m), 3.41 (1H, m), 3.52 (1H, m), 3.69 (1H, m), 3.89 (2H, m), 3.98 (3H, s), 4.33 (1H, m), 6.89 (1H, m), 7.23-7.35 (5H, m), 7.41 (1H, m), 7.48 (1H, d, J=11.8 Hz), 8.10 (1H, s).	ESI-MS m/z: 403 [M+H]+
27		1H-NMR ($CDCl_3$) δ : 2.25 (2H, m), 2.81-3.01 (3H, m), 3.18 (1H, dd, J=16.4, 5.4 Hz), 3.29 (1H, m), 3.86 (3H, s), 4.14 (1H, m), 4.24-4.33 (3H, m), 4.63 (1H, m), 6.63 (1H, d, J=8.3 Hz), 6.79 (1H, d, J=7.2 Hz), 6.85-6.90 (2H, m), 7.05 (1H, d, J=7.4 Hz), 7.12 (1H, t, J=7.7 Hz), 7.21 (1H, d, J=8.1 Hz), 7.48 (1H, s), 7.54 (1H, t, J=7.8 Hz).	ESI-MS m/z: 405 [M+H]+
28		1H-NMR ($CDCl_3$) δ : 1.18-1.28 (2H, m), 1.56-1.91 (9H, m), 2.12-2.31 (3H, m), 2.69-2.81 (1H, m), 2.93-3.02 (1H, m), 3.56-3.64 (1H, m), 3.77-3.85 (1H, m), 3.90-3.99 (4H, m), 4.07-4.25 (2H, m), 4.33-4.39 (1H, m), 5.56-5.58 (1H, m), 6.24-6.30 (2H, m), 7.41-7.48 (2H, m).	ESI-MS m/z: 411 [M+H]+
29		1H-NMR ($CDCl_3$) δ : 1.55-1.76 (4H, m), 2.01 (1H, m), 2.14-2.28 (3H, m), 2.66-2.83 (3H, m), 2.93-3.03 (1H, m), 3.54-3.62 (1H, m), 3.77-3.97 (2H, m), 4.05-4.38 (3H, m), 5.64 (1H, m), 6.68 (1H, dd, J=8.3, 2.4 Hz), 6.85 (1H, t, J=5.8 Hz), 7.18-7.32 (4H, m), 7.42 (1H, d, J=10.2 Hz), 7.55 (1H, t, J=7.7 Hz), 8.14 (1H, m).	ESI-MS m/z: 417 [M+H]+
30		1H-NMR ($CDCl_3$) δ : 2.01 (1H, m), 2.20-2.43 (3H, m), 2.88-3.17 (3H, m), 3.48-3.50 (2H, m), 3.98 (1H, m), 4.30-4.39 (3H, m), 4.79 (0.6H, m), 5.23 (0.4H, m), 7.20-7.32 (5H, m), 7.43-7.52 (2H, m), 7.61 (1H, d, J=7.3 Hz), 7.88 (1H, t, J=7.8 Hz).	ESI-MS m/z: 441 [M+H]+
31		1H-NMR ($CDCl_3$) δ : 1.01-1.31 (6H, m), 1.68-1.84 (6H, m), 1.94-2.11 (2H, m), 2.26-2.35 (1H, m), 2.63-2.74 (1H, m), 2.93-3.07 (2H, m), 3.45-3.69 (1H, m), 3.64-3.69 (1H, m), 3.94-4.09 (2H, m), 4.31-4.41 (1H, m), 4.71-4.82 (1H, m), 5.20-5.23 (1H, m), 7.20-7.31 (5H, m), 7.39-7.45 (1H, m).	ESI-MS m/z: 378 [M+H]+
32		1H-NMR ($CDCl_3$) δ : 1.83 (2H, m), 2.23 (3H, m), 3.11 (1H, m), 3.38 (1H, m), 3.54 (1H, m), 3.76-3.89 (2H, m), 4.05 (3H, s), 4.35 (1H, dd, J=12.1, 5.0 Hz), 4.63 (1H, m), 4.93 (1H, d, J=11.0 Hz), 5.35 (1H, m), 6.83-6.95 (2H, m), 7.47 (1H, s), 7.49-7.53 (1H, m), 7.63 (1H, s), 8.40 (1H, s).	ESI-MS m/z: 523 [M+H]+
33		1H-NMR ($CDCl_3$) δ : 1.76-1.87 (1H, m), 2.12-2.17 (1H, m), 2.49-2.58 (1H, m), 2.76-2.90 (2H, m), 2.95-3.02 (1H, m), 3.15-3.20 (1H, m), 3.81-3.87 (1H, m), 3.90-3.95 (1H, m), 4.03-4.07 (1H, m), 4.11-4.15 (1H, m), 4.22-4.29 (2H, m), 4.58-4.64 (1H, m), 6.85-6.90 (4H, m), 6.96-7.00 (1H, m), 7.05 (1H, d, J=6.6 Hz), 7.10-7.14 (1H, m), 7.19 (1H, d, J=8.0 Hz), 7.28-7.32 (2H, m), 7.45 (1H, s)	ESI-MS m/z: 404 [M+H]+

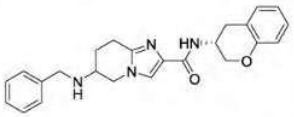
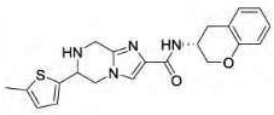
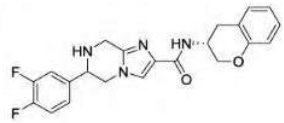
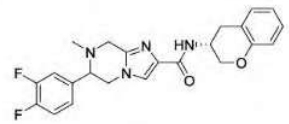
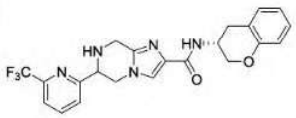
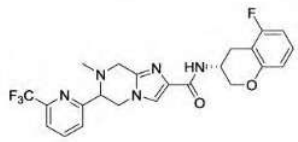
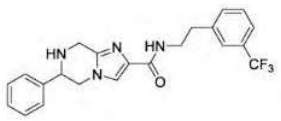
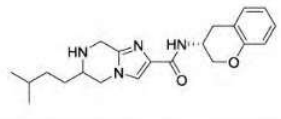
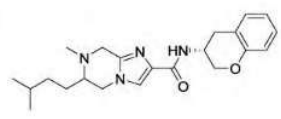
[0882]

[Table 5]

Example	Structural formula	NMR	MS
34		1H-NMR ($CDCl_3$) δ: 1.18 (9H, m), 1.65 (1H, m), 2.02 (1H, m), 2.20 (1H, m), 2.75 (1H, m), 2.84-2.94 (2H, m), 3.18 (1H, m), 3.29 (1H, m), 3.43 (1H,m), 3.68 (1H, m), 4.10-4.16 (2H, m), 4.24 (1H, m), 4.62 (1H, m), 6.85-6.90 (2H, m), 7.05 (1H, d, J=7.4 Hz), 7.12 (1H, t, J=7.7 Hz), 7.18 (1H, d, J=7.9 Hz), 7.42 (1H, s).	ESI-MS m/z: 384 [M+H]+
35		1H-NMR ($CDCl_3$) δ: 0.94 (1H, m), 1.60-1.78 (3H, m), 2.02 (1H, m), 2.13 (1H, m), 2.24-2.45 (3H, m), 2.67-2.90 (3H, m), 3.18 (1H, m), 3.81 (1H, m), 4.09-4.16 (2H, m), 4.24 (1H, m), 4.61 (1H, m), 6.85-6.90 (2H, m), 7.05 (1H, d, J=7.2 Hz), 7.12 (1H, t, J=7.7 Hz), 7.19 (1H, d, J=8.1 Hz), 7.44 (1H, s).	ESI-MS m/z: 370 [M+H]+
36		1H-NMR ($CDCl_3$) δ: 0.98 (9H, s), 1.47-1.56 (1H, m), 1.67-1.76 (1H, m), 2.09-2.15 (1H, m), 2.61-2.70 (1H, m), 2.86 (1H, dd, J=16.6, 5.4 Hz), 2.93-3.00 (1H, m), 3.17 (1H, dd, J=16.5, 5.5 Hz), 3.66 (1H, dt, J=12.0, 1.5 Hz), 4.05-4.14 (2H, m), 4.23-4.26 (1H, m), 4.62 (1H, m), 6.85-6.90 (2H, m), 7.04-7.06 (1H, m), 7.09-7.17 (2H, m), 7.41 (1H, s).	ESI-MS m/z: 354 [M+H]+
37		1H-NMR ($CDCl_3$) δ: 1.99-2.06 (1H, m), 2.20-2.28 (1H, m), 2.78-3.01 (3H, m), 3.15-3.21 (1H, m), 3.84-3.98 (2H, m), 4.06-4.16 (4H, m), 4.22-4.25 (1H, m), 4.58-4.65 (1H, m), 6.85-6.90 (2H, m), 7.05 (1H, d, J=7.3 Hz), 7.10-7.14 (1H, m), 7.19 (1H, d, J=7.9 Hz), 7.42 (1H, s).	ESI-MS m/z: 396 [M+H]+
38		1H-NMR ($CDCl_3$) δ: 2.03 (1H, m), 2.24 (1H, m), 2.80-2.87 (2H, m), 2.91-3.01 (1H, m), 3.14 (1H, m), 3.85-3.96 (2H, m), 4.10-4.23 (5H, m), 4.60 (1H, m), 6.80 (1H, d, J=8.6 Hz), 7.03 (1H, d, J=2.4 Hz), 7.07 (1H, dd, J=8.9, 2.6 Hz), 7.17 (1H, d, J=8.0 Hz), 7.42 (1H, s).	ESI-MS m/z: 430 [M+H]+
39 (isomer A)		1H-NMR ($CDCl_3$) δ: 2.03 (1H, m), 2.24 (1H, m), 2.80-2.87 (2H, m), 2.95 (1H, m), 3.14 (1H, m), 3.86-3.96 (2H, m), 4.11-4.23 (5H, m), 4.60 (1H, m), 6.79 (1H, d, J=8.6 Hz), 7.03 (1H, d, J=2.4 Hz), 7.07 (1H, dd, J=8.7, 2.6 Hz), 7.17 (1H, d, J=8.1 Hz), 7.42 (1H, s).	ESI-MS m/z: 430 [M+H]+
39 (isomer B)		1H-NMR ($CDCl_3$) δ :2.03 (1H, m), 2.24 (1H, m), 2.79-2.87 (2H, m), 2.92-3.01 (1H, m), 3.14 (1H, m), 3.86-3.96 (2H, m), 4.10-4.23 (5H, m), 4.60 (1H, m), 6.80 (1H, d, J=8.7 Hz), 7.02 (1H, d, J=2.5 Hz), 7.07 (1H, dd, J=8.7, 2.6 Hz), 7.17 (1H, d, J=7.7 Hz), 7.42 (1H, s).	ESI-MS m/z: 430 [M+H]+
40		1H-NMR ($CDCl_3$) δ: 2.03 (1H, m), 2.24 (1H, m), 2.79-3.00 (3H, m), 3.19 (1H, m), 3.86-3.96 (2H, m), 4.11-4.20 (4H, m), 4.27 (1H, m), 4.63 (1H, m), 6.56 (1H, t, J=56.8 Hz), 6.92 (1H, d, J=8.4 Hz), 7.17 (1H, d, J=8.0 Hz), 7.21 (1H, s), 7.26 (1H, m), 7.43 (1H, s).	ESI-MS m/z: 446 [M+H]+
41		1H-NMR ($CDCl_3$) δ: 0.85-0.89 (6H, m), 1.81 (1H, m), 1.95 (1H, m), 2.17 (1H, m), 2.73-2.99 (3H, m), 3.15-3.31 (3H, m), 3.88 (1H, m), 4.03 (2H, d, J=4.0 Hz), 4.13 (1H, m), 4.24 (1H, m), 4.62 (1H, m), 6.85-6.90 (2H, m), 7.05 (1H, d, J=6.4 Hz), 7.12 (1H, m), 7.18 (1H, d, J=7.8 Hz), 7.41 (1H, s).	ESI-MS m/z: 370 [M+H]+

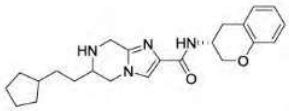
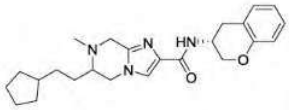
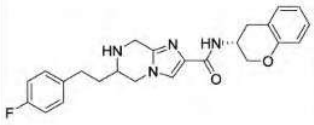
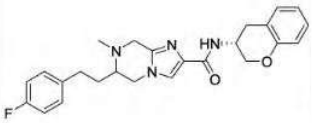
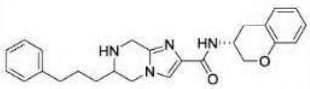
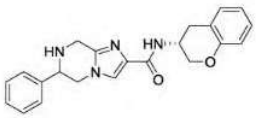
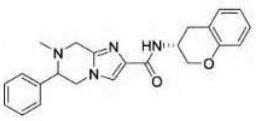
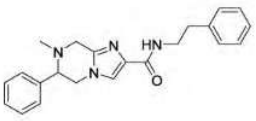
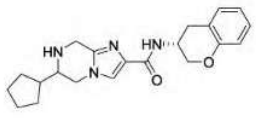
[0883]

[Table 6]

Example	Structural formula	NMR	MS
42		1H-NMR ($CDCl_3$) δ : 1.85-1.94 (1H, m), 2.09-2.16 (1H, m), 2.73-3.01 (3H, m), 3.15-3.25 (2H, m), 3.73-3.78 (1H, m), 3.83-3.91 (2H, m), 4.09-4.15 (2H, m), 4.22-4.25 (1H, m), 4.58-4.65 (1H, m), 6.85-6.90 (2H, m), 7.05 (1H, d, J=7.3 Hz), 7.10-7.14 (1H, m), 7.17 (1H, d, J=8.0 Hz), 7.25-7.36 (5H, m), 7.38 (1H, s).	ESI-MS m/z: 403 [M+H]+
43		1H-NMR ($CDCl_3$) δ :2.47 (3H, m), 2.85-2.90 (1H, m), 3.17-3.22 (1H, m), 3,99-4.06 (1H, m), 4.11-4.17 (3H, m), 4.19-4.25 (3H, m), 4.41-4.45 (1H, m), 4.58-4.66 (1H, m), 6.64 (1H, m), 6.81 (1H, d, J=3.6 Hz), 6.86-6.91 (2H, m), 7.05-7.06 (1H, m), 7.12 (1H, t, J=7.6 Hz), 7.17-7.21 (1H, m), 7.47 (1H, s).	
44		1H-NMR ($CDCl_3$) δ : 2.88 (1H, dd, J=16.3, 5.0 Hz), 3.20 (1H, dd, J=16.3, 5.0 Hz), 3.91 (1H, t, J=12.2 Hz), 4.05-4.19 (4H, m), 4.23-4.28 (2H, m), 4.61-4.65 (1H, m), 6.86-6.91 (2H, m), 7.06 (1H, d, J=7.6 Hz), 7.11-7.23 (4H, m), 7.31 (1H, ddd, J=10.7, 7.6, 2.2 Hz), 7.46 (1H, s).	ESI-MS m/z: 411 [M+H]+
45		1H-NMR ($CDCl_3$) δ : 2.17 (3H, s), 2.88 (1H, dd, J=16.3, 5.0 Hz), 3.20 (1H, dd, J=16.3, 5.0 Hz), 3.49 (1H, t, J=12.2 Hz), 4.05-4.18 (4H, m), 4.21-4.26 (2H, m), 4.61-4.64 (1H, m), 6.86-6.91 (2H, m), 7.05-7.22 (6H, m), 7.44 (1H, s)	ESI-MS m/z: 425 [M+H]+
46		1H-NMR ($CDCl_3$) δ : 2.27 (1H, brs), 2.85-2.91 (1H, m), 3.17-3.22 (1H, m), 4.11-4.29 (5H, m), 4.41-4.46 (2H, m), 4.60-4.65 (1H, m), 6.86-6.91 (2H, m), 7.06 (1H, d, J=7.2 Hz), 7.13 (1H, t, J=7.8 Hz), 7.20-7.23 (1H, m), 7.52 (1H, s), 7.66-7.72 (2H, m), 7.94 (1H, t, J=7.8 Hz).	ESI-MS m/z: 444 [M+H]+
47		1H-NMR ($CDCl_3$) δ : 2.26 (3H, s), 2.87 (1H, dd, J=17.5, 5.7 Hz), 3.08-3.14 (1H, m), 3.84 (1H, dd, J=16.4, 3.7 Hz), 4.02 (1H, dd, J=16.1, 2.6 Hz), 4.11-4.24 (3H, m), 4.31-4.36 (1H, m), 4.38-4.45 (1H, m), 4.63-4.67 (1H, m), 6.62-6.70 (2H, m), 7.05-7.09 (1H, m), 7.17-7.20 (1H, m), 7.52 (1H, d, J=2.9 Hz), 7.66-7.71 (2H, m), 7.94 (1H, t, J=7.8 Hz).	ESI-MS m/z: 476 [M+H]+
48		1H-NMR ($CDCl_3$) δ : 2.97 (2H, t, J=7.3 Hz), 3.67 (2H, q, J=7.0 Hz), 3.98 (1H,m), 4.13-4.30 (4H, m), 7.11 (1H, m), 7.34-7.49 (10H, m).	ESI-MS m/z: 415 [M+H]+
49		1H-NMR ($CDCl_3$) δ : 0.92 (6H, d, J=7.3 Hz), 1.22-1.41 (3H, m), 1.51-1.56 (2H, m), 2.87 (1H, dd, J=16.3, 5.5 Hz), 3.00-3.04 (1H, m), 3.18 (1H, dd, J=16.3, 5.5 Hz), 3.60 (1H, t, J=12.4 Hz), 3.95-4.03 (2H, m), 4.11-4.16 (2H, m), 4.24 (1H, d, J=10.7 Hz), 4.60-4.64 (1H, m), 6.85-6.90 (2H, m), 7.05 (1H, d, J=7.3 Hz), 7.12 (1H, t, J=7.3 Hz), 7.17 (1H, d, J=7.3 Hz), 7.43 (1H, s)	ESI-MS m/z: 369 [M+H]+
50		1H-NMR ($CDCl_3$) δ : 0.90 (3H, d, J=6.6 Hz), 0.91 (3H, d, J=7.3 Hz), 1.20-1.32 (2H, m), 1.35-1.44 (1H, m), 1.50-1.57 (1H, m), 1.62-1.71 (1H, m), 2.39 (3H, s), 2.84-2.90 (2H, m), 3.18 (1H, dd, J=16.3, 5.5 Hz), 3.70 (1H, dd, J=12.4, 4.2 Hz), 3.79 (1H, ddd, J=12.4, 8.2, 1.5 Hz), 3.85 (1H, dd, J=16.2, 3.8 Hz), 3.98 (1H, dd, J=12.4, 4.2 Hz), 4.14 (1H, ddd, J=10.7, 5.4, 1.5 Hz), 4.24 (1H, d, J=10.7 Hz), 4.59-4.65 (1H, m), 6.85-6.90 (2H, m), 7.05 (1H, d, J=7.3 Hz), 7.12 (1H, t, J=7.3 Hz), 7.17 (1H, d, J=8.5 Hz), 7.43 (1H, s)	ESI-MS m/z: 383 [M+H]+

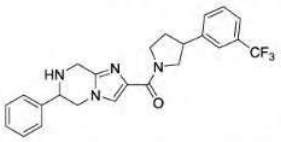
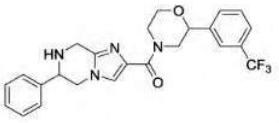
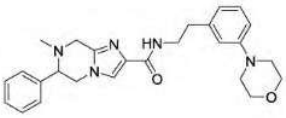
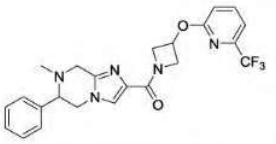
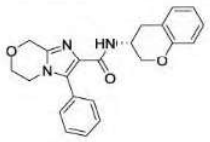
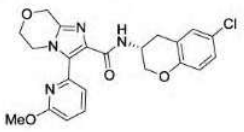
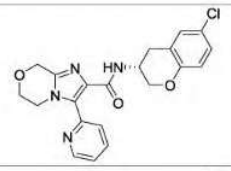
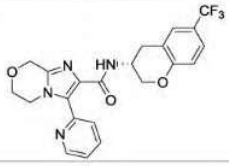
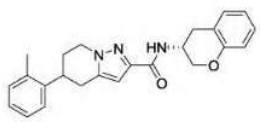
[0884]

[Table 7]

Example	Structural formula	NMR	MS
51		1H-NMR ($CDCl_3$) δ : 1.08-1.13 (3H, m), 1.39-1.44 (2H, m), 1.46-1.57 (5H, m), 1.72-1.77 (3H, m), 2.86 (1H, dd, J=16.3, 5.5 Hz), 3.00-3.05 (1H, m), 3.18 (1H, dd, J=16.3, 5.5 Hz), 3.59 (1H, t, J=12.4 Hz), 3.95-4.03 (2H, m), 4.10-4.15 (2H, m), 4.24 (1H, d, J=10.7 Hz), 4.59-4.64 (1H, m), 6.85-6.90 (2H, m), 7.05 (1H, d, J=7.3 Hz), 7.12 (1H, t, J=7.3 Hz), 7.17 (1H, d, J=7.3 Hz), 7.43 (1H, s).	ESI-MS m/z: 395 [M+H]+
52		1H-NMR ($CDCl_3$) δ : 1.06-1.11 (3H, m), 1.35-1.42 (3H, m), 1.52-1.56 (4H, m), 1.72-1.76 (3H, m), 2.38 (3H, s), 2.84-2.90 (2H, m), 3.18 (1H, dd, J=16.3, 5,5 Hz), 3.69 (1H, dd, J=12.4, 4.2 Hz), 3.79 (1H, ddd, J=12.4, 8.2, 1.5 Hz), 3.85 (1H, dd, J=16.2, 3.8 Hz), 3.98 (1H, dd, J=12.4, 4.2 Hz), 4.14 (1H, ddd, J=10.7, 5.4, 1.5 Hz), 4.24 (1H, d, J=10.7 Hz), 4.60-4.64 (1H, m), 6.85-6.90 (2H, m), 7.05 (1H, d, J=7.3 Hz), 7.12 (1H, t, J=7.3 Hz), 7.18 (1H, d, J=7.3 Hz), 7.43 (1H, s).	ESI-MS m/z: 409 [M+H]+
53		1H-NMR ($CDCl_3$) δ : 1.80-1.85 (2H, m), 2.70-2.81 (2H, m), 2.86 (1H, dd, J=16.3, 5.0 Hz), 3.01-3.09 (1H, m), 3.18 (1H, dd, J=16.3, 5.0 Hz), 3.63 (1H, t, J=10.2 Hz), 3.95 (1H, dd, J=16.3, 5.0 Hz), 4.00 (1H, dd, J=12.4, 3.1 Hz), 4.11-4.16 (2H, m), 4.23 (1H, d, J=10.7 Hz), 4.58-4.65 (1H, m), 6.85-6.90 (2H, m), 6.99 (2H, t, J=8.7 Hz), 7.05 (1H, d, J=7.3 Hz), 7.10-7.18 (4H, m), 7.42 (1H, s).	ESI-MS m/z: 421 [M+H]+
54		1H-NMR ($CDCl_3$) δ : 1.63-1.72 (1H, m), 1.92-1.97 (1H, m), 2.39 (3H, s), 2.66-2.74 (2H, m), 2.87 (1H, dd, J=16.3, 5.0 Hz), 2.95-2.97 (1H, m), 3.18 (1H, dd, J=16.3, 5.0 Hz), 3.74-3.88 (3H, m), 3.98 (1H, dd, J=12.4, 3.1 Hz), 4.14 (1H, ddd, J=10.7, 5.4, 1.5 Hz), 4.23 (1H, d, J=10.7 Hz), 4.59-4.65 (1H, m), 6.86-6.90 (2H, m), 6.98 (2H, t, J=8.7 Hz), 7.05 (1H, d, J=7.3 Hz), 7.11-7.19 (4H, m), 7.43 (1H, s).	ESI-MS m/z: 435 [M+H]+
55		1H-NMR ($CDCl_3$) δ : 1.56 (1H, q, J=7.6 Hz), 1.69-1.85 (2H, m), 2.05 (2H, s), 2.67 (2H, t, J=7.5 Hz), 2.87 (1H, dd, J=16.6, 5.3 Hz), 3.02-3.09 (1H, m), 3.16 (1H, dd, J=16.5, 5.4 Hz), 3.57 (1H, t, J=11.3 Hz), 3.92-4.00 (2H, m), 4.09-4.15 (2H, m), 4.23 (1H, d, J=10.7 Hz), 4.58-4.64 (1H, m), 6.84-6.89 (2H, m), 7.03-7.29 (8H, m), 7.43 (1H, s).	ESI-MS m/z: 417 [M+H]+
56		1H-NMR ($CDCl_3$) δ : 2.00 (1H, brs), 2.88 (1H, dd, J=16.7, 4.9 Hz), 3.17-3.22 (1H, m), 3.97 (1H, t, J=11.3 Hz), 4.11-4.27 (6H, m), 4.63 (1H, s), 6.89 (2H, t, J=9.4 Hz), 7.06 (1H, d, J=7.4 Hz), 7.13 (1H, t, J=7.6 Hz), 7.21 (1H, m), 7.36-7.46 (6H, m).	ESI-MS m/z: 375 [M+H]+
57		1H-NMR ($CDCl_3$) δ : 2.16 (3H, s), 2.89 (1H, dd, J=16.7, 5.1 Hz), 3.20 (1H, d, J=16.3 Hz), 3.49 (1H, dd, J=15.7, 4.9 Hz), 3.57 (1H, m), 4.07-4.10 (3H, m), 4.14-4.17 (1H, m), 4.25 (1H, d, J=10.6 Hz), 4.63 (1H, m), 6.89 (2H, t, J=9.0 Hz), 7.06 (1H, d, J=7.1 Hz), 7.13 (1H, t, J=7.5 Hz), 7.22 (1H, m), 7.32-7.39 (5H, m), 7.45 (1H, s).	ESI-MS m/z: 389 [M+H]+
58		1H-NMR ($CDCl_3$) δ : 2.18 (3H, s), 2.91 (2H, t, J=7.5 Hz), 3.52 (1H, d, J=15.6 Hz), 3.59 (1H, t, J=7.1 Hz), 3.68 (2H, q, J=7.0 Hz), 4.07-4.13 (3H, m), 7.11 (1H, t, J=7.8 Hz), 7.20-7.46 (11H, m).	ESI-MS m/z: 361 [M+H]+
59		1H-NMR ($CDCl_3$) δ : 1.23-1.38 (2H, m), 1.60-1.70 (4H, m), 1.79-1.93 (3H, m), 2.17 (1H, s), 2.78-2.89 (2H, m), 3.15-3.21 (1H, m), 3.66 (1H, t, J=11.0 Hz), 3.94-4.05 (2H, m), 4.12-4.17 (2H, m), 4.24 (1H, d, J=10.7 Hz), 4.61 (1H, m), 6.85-6.90 (2H, m), 7.05 (1H, d, J=7.5 Hz), 7.10-7.17 (2H, m), 7.43 (1H, s).	ESI-MS m/z: 367 [M+H]+

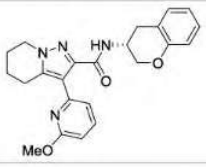
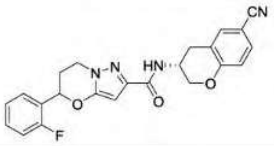
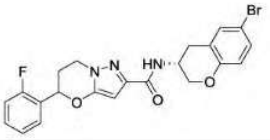
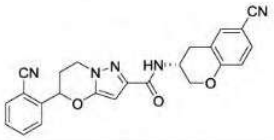
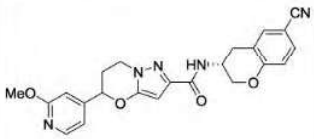
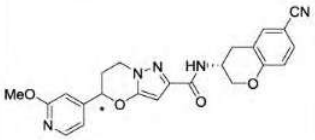
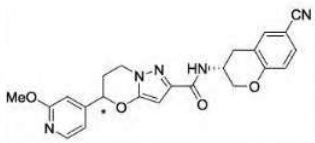
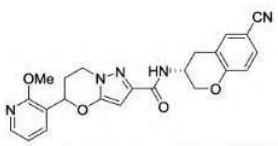
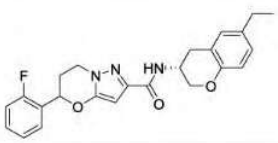
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[Table 8]

Example	Structural formula	NMR	MS
60		1H-NMR ($CDCl_3$) δ : 2.00-2.14 (2H, m), 2.33-2.41 (1H, m), 3.44-3.52 (1H, m), 3.64-3.77 (1H, m), 3.87-4.02 (2H, m), 4.13-4.41 (4H, m), 4.65 (1H, m), 7.36-7.54 (10H, m).	ESI-MS m/z: 441 [M+H]+
61		1H-NMR ($CDCl_3$) δ : 2.07 (1H, brs), 2.79-3.50 (2H, m), 3.79-3.85 (1H, m), 3.99 (1H, t, J=11.1 Hz), 4.14-4.35 (5H, m), 4.61-4.84 (2H, m), 5.39-5.57 (1H, m), 7.37-7.50 (7H, m), 7.56-7.62 (2H, m), 7.73 (1H, s).	ESI-MS m/z: 457 [M+H]+
62		1H-NMR ($CDCl_3$) δ : 2.18 (3H, s), 2.87 (2H, t, J=7.1 Hz), 3.15-3.17 (4H, m), 3.48-3.53 (1H, m), 3.57-3.68 (3H, m), 3.85-3.87 (4H, m), 4.08-4.12 (3H, m), 6.75-6.80 (3H, m), 7.17-7.24 (2H, m), 7.33-7.43 (6H, m).	ESI-MS m/z: 446 [M+H]+
63		1H-NMR ($CDCl_3$) δ : 2.18 (3H, s), 3.51-3.61 (2H, m), 4.08 (2H, d, J=6.7 Hz), 4.11-4.23 (2H, m), 4.58-4.60 (2H, m), 5.01-5.09 (1H, m), 5.47-5.53 (1H, m), 6.98 (1H, d, J=8.4 Hz), 7.28-7.41 (6H, m), 7.46 (1H, s), 7.76 (1H, t, J=7.5 Hz).	ESI-MS m/z: 458 [M+H]+
64		1H-NMR ($CDCl_3$) δ : 2.84 (1H, dd, J=16.6, 4.5 Hz), 3.14 (1H, dd, J=16.6, 5.4 Hz), 3.80 (2H, t, J=5.1 Hz), 3.99 (2H, t, J=5.1 Hz), 4.09-4.20 (2H, m), 4.54 (1H, m), 4.83 (2H, s), 6.85-6.90 (2H, m), 7.04 (1H, d, J=7.4 Hz), 7.12 (1H, m), 7.30 (1H, m), 7.40-7.46 (5H, m).	ESI-MS m/z: 376 [M+H]+
65		1H-NMR ($CDCl_3$) δ : 2.85 (1H, dd, J = 17.0, 4,4 Hz), 3.12 (1H, dd, J = 16.6, 5.4 Hz), 3.91 (3H, s), 4.02 (2H, t, J = 5.0 Hz), 4.13-4.24 (4H, m), 4.54 (1H, m), 4.84 (2H, s), 6.74 (1H, d, J = 7.7 Hz), 6.80 (1H, d, J = 8.7 Hz), 7.03 (1H, s), 7.07 (1H, d, J = 8.8 Hz), 7.45 (1H, d, J = 7.6 Hz), 7.66-7.73 (2H, m).	ESI-MS m/z: 441 [M+H]+
66		1H-NMR ($CDCl_3$) δ : 2.84 (1H, dd, J = 16.7, 4.8 Hz), 3.13 (1H, dd, J = 17.0, 5.4 Hz), 4.02 (2H, t, J = 4.8 Hz), 4.13-4.20 (4H, m), 4.54 (1H, m), 4.84 (2H, s), 6.81 (1H, d, J = 8.7 Hz), 7.03 (1H, s), 7.08 (1H, d, J = 8.9 Hz), 7.29 (1H, m), 7.51 (1H, d, J = 7.8 Hz), 7.80 (1H, t, J = 7.8 Hz), 8.07 (1H, d, J = 7.8 Hz), 8.63 (1H, d, J = 4.2 Hz).	ESI-MS m/z: 411 [M+H]+
67		1H-NMR ($CDCl_3$) δ : 2.92 (1H, dd, J = 16.7, 4.9 Hz), 3.18 (1H, dd, J = 16.8, 5.3 Hz), 4.02 (2H, t, J = 5.0 Hz), 4.17-4.28 (4H, m), 4.58 (1H, m), 4.84 (2H, s), 6.94 (1H, d, J = 8.5 Hz), 7.28 (1H, m), 7.32 (1H, s), 7.38 (1H, d, J = 8.6 Hz), 7.50 (1H, d, J = 8.0 Hz), 7.80 (1H, dt, J = 1.8, 7.8 Hz), 8.07 (1H, dt, J = 1.0, 8.0 Hz), 8.62 (1H, m).	ESI-MS m/z: 445 [M+H]+
68		1H-NMR ($CDCl_3$) δ : 2.21-2.30 (2H, m), 2.37 (3H, s), 2.80-2.92 (2H, m), 3.12 (1H, dd, J=16.6, 4.5 Hz), 3.20 (1H, dd, J=16.6, 5.5 Hz), 3.32 (1H, m), 4.09-4.30 (4H, m), 4.65 (1H, m), 6.55 (1H, s), 6.87-6.92 (2H, m), 7.06-7.19 (7H, m).	ESI-MS m/z: 388 [M+H]+

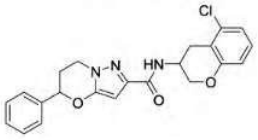
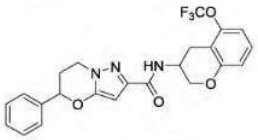
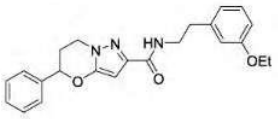
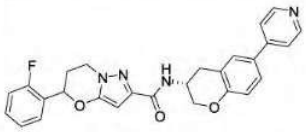
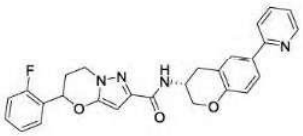
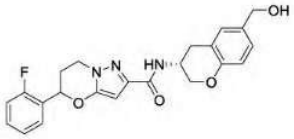
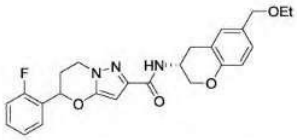
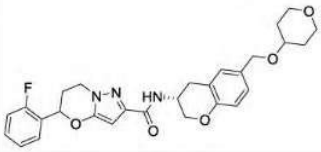
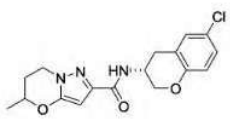
[0886]

[Table 9]

Example	Structural formula	NMR	MS
69		1H-NMR ($CDCl_3$) δ : 1.82-1.88 (2H, m), 2.01-2.08 (2H, m), 2.86 (1H, dd, J=16.6, 4.6 Hz), 2.98-3.01 (2H, m), 3.16 (1H, dd, J=16.7, 5.5 Hz), 3.90 (3H, s), 4.12-4.19 (4H, m), 4.57-4.65 (1H, m), 6.60 (1H, dd, J=8.2, 0.68 Hz), 6.83-6.90 (2H, m), 7.04 (1H, d, J=7.5 Hz), 7.09-7.14 (1H, m), 7.21-7.29 (1H, m), 7.40 (1H, dd, J=7.4, 0.70 Hz), 7.54-7.59 (1H, m).	ESI-MS m/z: 405 [M+H]+
70		1H-NMR ($CDCl_3$) δ : 2.34-2.50 (2H, m), 2.92 (1H, m), 3.18 (1H, m), 4.14-4.32 (4H, m), 4.65 (1H, m), 5.56 (1H, m), 6.12 (1H, s), 6.93-6.95 (2H, m), 7.11 (1H, m), 7.21 (1H, t, J=7.6 Hz), 7.34-7.49 (4H, m).	ESI-MS m/z: 419 [M+H]+
71		1H-NMR ($CDCl_3$) δ : 2.39-2.48 (2H, m), 2.87 (1H, m), 3.16 (1H, m), 4.15-4.28 (4H, m), 4.63 (1H, m), 5.56 (1H, m), 6.11 (1H, s), 6.77 (1H, d, J=8.7 Hz), 7.02 (1H, m), 7.10 (1H, m), 7.19-7.27 (3H, m), 7.36 (1H, m), 7.47 (1H, m).	ESI-MS m/z: 472, 474 [M+H]+
72		1H-NMR ($CDCl_3$) δ : 2.32-2.43 (1H, m), 2.53-2.57 (1H, m), 2.93 (1H, dd, J=17.1, 4.7 Hz), 3.19 (1H, dt, J=16.6, 4.9 Hz), 4.21-4.35 (4H, m), 4.63-4.67 (1H, m), 5.59-5.62 (1H, m), 6.14 (1H, s), 6.90-6.98 (2H, m), 7.39-7.44 (2H, m), 7.49-7.55 (1H, m), 7.67-7.74 (3H, m).	ESI-MS m/z: 426 [M+H]+
73		1H-NMR ($CDCl_3$) δ : 2.30-2.49 (2H, m), 2.91 (1H, dd, J=16.9, 4.8 Hz), 3.18 (1H, dd, J=16.6, 5.2 Hz), 3.95 (3H, s), 4.09-4.32 (4H, m), 4.65 (1H, m), 5.24 (1H, d, J=9.2 Hz), 6.13 (1H, s), 6.75 (1H, s), 6.86 (1H, d, J=5.3 Hz), 6.93 (2H, d, J=8.4 Hz), 7.37-7.43 (2H, m), 8.20 (1H, d, J=5.3 Hz).	ESI-MS m/z: 432 [M+H]+
74 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.36 (1H, m), 2.44 (1H, m), 2.91 (1H, dd, J=16.7, 4.3 Hz), 3.18 (1H, dd, J=16.8, 5.3 Hz), 3.95 (3H, s), 4.09-4.32 (4H, m), 4.64 (1H, m), 5.24 (1H, dd, J=9.3, 2.5 Hz), 6.13 (1H, s), 6.75 (1H, s), 6.86 (1H, d, J=4.4 Hz), 6.93 (2H, d, J=8.4 Hz), 7.39 (1H, s), 7.41 (1H, dd, J=16.8, 1.6 Hz), 8.19 (1H, d, J=5.3 Hz).	ESI-MS m/z: 432 [M+H]+
74 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.36 (1H, m), 2.44 (1H, m), 2.91 (1H, dd, J=16.7, 4.3 Hz), 3.18 (1H, dd, J=16.8, 5.3 Hz), 3.95 (3H, s), 4.11-4.30 (4H, m), 4.64 (1H, m), 5.24 (1H, dd, J=9.3, 2.5 Hz), 6.13 (1H, s), 6.75 (1H, s), 6.86 (1H, d, J=4.4 Hz), 6.93 (2H, d, J=8.4 Hz), 7.39 (1H, s), 7.41 (1H, dd, J=16.8, 1.6 Hz), 8.19 (1H, d, J=5.3 Hz).	ESI-MS m/z: 432 [M+H]+
75		1H-NMR ($CDCl_3$) δ : 2.24 (1H, m), 2.54 (1H, m), 2.92 (1H, dd, J=16.9, 4.8 Hz), 3.18 (1H, dd, J=16.6, 5.0 Hz), 3.99 (3H, s), 4.12 (1H, s), 4.18-4.32 (3H, m), 4.65 (1H, m), 5.47 (1H, d, J=9.6 Hz), 6.11 (1H, s), 6.93-6.97 (3H, m), 7.39 (1H, s), 7.42 (1H, d, J=8.5 Hz), 7.70 (1H, d, J=7.4 Hz), 8.16 (1H, dd, J=5.0, 1.4 Hz).	ESI-MS m/z: 432 [M+H]+
76		1H-NMR ($CDCl_3$) δ : 1.20 (3H, t, J=7.6 Hz), 2.3-2.49 (2H, m), 2.56 (2H, q, J=7.6 Hz), 2.86 (1H, m), 3.17 (1H, m), 4.12-4.27 (4H, m), 4.64 (1H, m), 5.55 (1H, m), 6.11 (1H, s), 6.80 (1H, d, J=8.3 Hz), 6.89 (1H, s), 6.96 (1H, d, J=8.3 Hz), 7.07-7.12 (2H, m), 7.20 (1H, m), 7.35 (1H, m), 7.47 (1H, m).	ESI-MS m/z: 422 [M+H]+

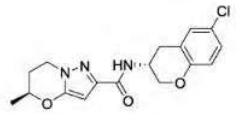
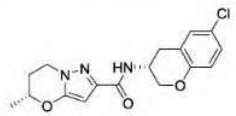
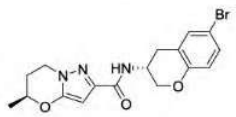
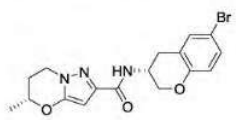
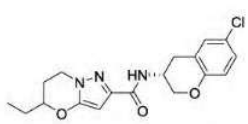
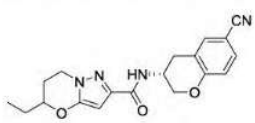
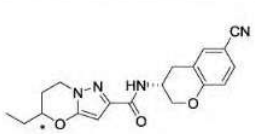
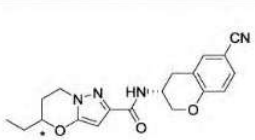
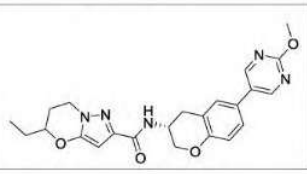
[0887]

[Table 10]

Example	Structural formula	NMR	MS
77		1H-NMR ($CDCl_3$) δ : 2.41-2.47 (2H, m), 2.91 (1H, dd, J=17.5, 4.4 Hz), 3.13 (1H, dd, J=17.6, 5.9 Hz), 4.15-4.24 (4H, m), 4.68 (1H, m), 5.27 (1H, m), 6.11 (1H, s), 6.82 (1H, dd, J=8.2, 1.1 Hz), 6.99-7.03 (2H, m), 7.08 (1H, t, J=8.0 Hz), 7.36-7.44 (5H, m).	ESI-MS m/z: 410 [M+H]+
78		1H-NMR ($CDCl_3$) δ : 2.41-2.47 (2H, m), 2.90 (1H, m), 3.12 (1H, dd, J=17.4, 5.7 Hz), 4.14-4.19 (4H, m), 4.65 (1H, m), 5.27 (1H, m), 6.11 (1H, s), 6.83-6.86 (2H, m), 6.98 (1H, d, J=8.1 Hz), 7.15 (1H, t, J=8.3 Hz), 7.35-7.44 (5H, m).	ESI-MS m/z: 460 [M+H]+
79		1H-NMR ($CDCl_3$) δ : 1.41 (3H, t, J=6.6 Hz), 2.41-2.49 (2H, m), 2.88 (2H, t, J=7.2 Hz), 3.66 (2H, q, J=7.2 Hz), 4.03 (2H, q, J=7.0 Hz), 4.16-4.28 (2H, m), 5.28 (1H, dd, J=9.0, 3.6 Hz), 6.09 (1H, s), 6.75-6.88 (4H, m), 7.21 (1H, t, J=8.1 Hz), 7.36-7.45 (5H, m).	ESI-MS m/z: 392 [M+H]+
80		1H-NMR ($CDCl_3$) δ : 2.33-2.50 (2H, m), 2.98 (1H, dd, J=16.6, 4.4 Hz), 3.26 (1H, dd, J=16.7, 5.3 Hz), 4.13-4.30 (4H, m), 4.69 (1H, m), 5.56 (1H, m), 6.12 (1H, s), 6.99 (1H, d, J=8.5 Hz), 7.05-7.12 (2H, m), 7.20 (1H, m), 7.32-7.39 (2H, m), 7.43-7.49 (4H, m), 8.61 (2H, d, J=5.2 Hz).	ESI-MS m/z: 471 [M+H]+
81		1H-NMR ($CDCl_3$) δ : 2.36-2.47 (2H, m), 2.97 (1H, dd, J=16.5, 3.5 Hz), 3.27 (1H, dd, J=16.4, 5.3 Hz), 4.13-4.28 (4H, m), 4.68 (1H, m), 5.55 (1H, d, J=9.4 Hz), 6.11 (1H, s), 6.98 (1H, d, J=8.3 Hz), 7.04-7.12 (2H, m), 7.16-7.22 (2H, m), 7.35 (1H, m), 7.46 (1H, m), 7.64-7.77 (4H, m), 8.64 (1H, d, J=3.8 Hz).	ESI-MS m/z: 471 [M+H]+
82		1H-NMR ($CDCl_3$) δ : 1.66 (1H, m), 2.33-2.49 (2H, m), 2.88 (1H, dd, J=16.7, 4.2 Hz), 3.19 (1H, dd, J=16.9, 5.3 Hz), 4.12-4.27 (4H, m), 4.59-4.65 (3H, m), 5.55 (1H, td, J=9.5, 3.0 Hz), 6.11 (1H, s), 6.87 (1H, d, J=8.3 Hz), 7.05-7.14 (4H, m), 7.20 (1H, tt, J=7.6, 1.6 Hz), 7.35 (1H, m), 7.46 (1H, tt, J=11.4, 1.9 Hz).	ESI-MS m/z: 424 [M+H]+
83		1H-NMR ($CDCl_3$) δ : 1.24 (3H, t, J=6.8 Hz), 2.34-2.48 (2H, m), 2.87 (1H, m), 3.19 (1H, dd, J=5.3, 17.1 Hz), 3.55 (2H, q, J=7.0 Hz), 4.14-4.27 (4H, m), 4.39 (2H, s), 4.63 (1H, m), 5.56 (1H, d, J=9.5 Hz), 6.10 (1H, s), 6.85 (1H, d, J=8.3 Hz), 7.03-7.12 (4H, m), 7.20 (1H, t, J=7.6 Hz), 7.35 (1H, q, J=6.9 Hz), 7.47 (1H, t, J=7.4 Hz).	ESI-MS m/z: 452 [M+H]+
84		1H-NMR ($CDCl_3$) δ : 1.59-1.70 (2H, m), 1.89-1.96 (2H, m), 2.38-2.49 (2H, m), 2.88 (1H, dd, J=16.2, 3.8 Hz), 3.19 (1H, dd, J=16.8, 5.6 Hz), 3.44 (2H, m), 3.59 (1H, m), 3.95-4.00 (2H, m), 4.10-4.27 (4H, m), 4.45 (2H, s), 4.64 (1H, m), 5.56 (1H, d, J=9.5 Hz), 6.11 (1H, s), 6.86 (1H, d, J=8.3 Hz), 7.04-7.13 (4H, m), 7.21 (1H, t, J=7.2 Hz), 7.36 (1H, q, J=6.9 Hz), 7.47 (1H, t, J=7.6 Hz).	ESI-MS m/z: 508 [M+H]+
85		1H-NMR ($CDCl_3$) δ : 1.46 (3H, d, J=6.3 Hz), 2.06 (1H, m), 2.17 (1H, m), 2.84 (1H, dd, J=16.8, 4.3 Hz), 3.14 (1H, dd, J=16.8, 5.4 Hz), 4.02-4.19 (4H, m), 4.34 (1H, m), 4.60 (1H, m), 5.98 (1H, s), 6.80 (1H, d, J=8.6 Hz), 6.99 (1H, d, J=8.3 Hz), 7.03 (1H, d, J=2.2 Hz), 7.08 (1H, dd, J=8.7, 2.4 Hz).	ESI-MS m/z: 348 [M+H]+

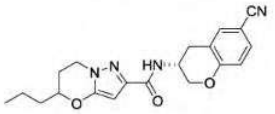
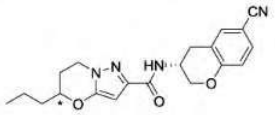
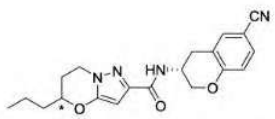
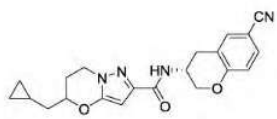
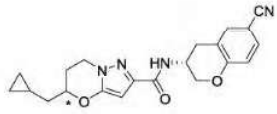
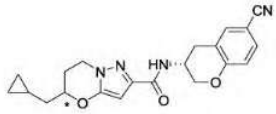
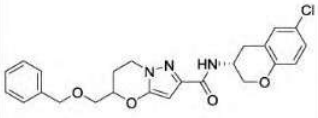
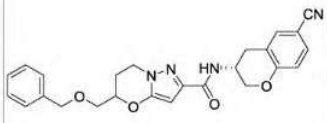
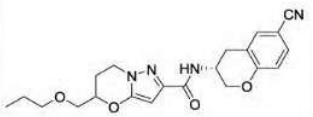
[0888]

[Table 11]

Example	Structural formula	NMR	MS
86		1H-NMR ($CDCl_3$) δ : 1.46 (3H, d, J=6.3 Hz), 2.05 (1H, m), 2.17 (1H, m), 2.84 (1H, dd, J=16.9, 4.3 Hz), 3.14 (1H, dd, J=16.7, 5.4 Hz), 4.07 (1H, m), 4.13-4.19 (3H, m), 4.34 (1H, m), 4.60 (1H, m), 5.98 (1H, s), 6.80 (1H, d, J=8.6 Hz), 6.99 (1H, d, J=8.5 Hz), 7.04 (1H, s), 7.08 (1H, dd, J=8.7, 2.4 Hz).	ESI-MS m/z: 348 [M+H]+
87		1H-NMR ($CDCl_3$) δ : 1.46 (3H, d, J=6.3 Hz), 2.06 (1H, m, J=3.9 Hz), 2.18 (1H, m), 2.84 (1H, dd, J=16.9, 4.3 Hz), 3.14 (1H, dd, J=16.8, 5.4 Hz), 4.07 (1H, m), 4.13-4.19 (3H, m), 4.34 (1H, m), 4.60 (1H, m), 5.98 (1H, s), 6.80 (1H, d, J=8.7 Hz), 6.99 (1H, d, J=7.9 Hz), 7.04 (1H, s), 7.08 (1H, dd, J=8.7, 2.4 Hz).	ESI-MS m/z: 348 [M+H]+
88		1H-NMR ($CDCl_3$) δ : 1.46 (3H, d, J=6.3 Hz), 2.05 (1H, m), 2.17 (1H, m), 2.85 (1H, dd, J=16.6, 4.1 Hz), 3.15 (1H, dd, J=16.9, 5.4 Hz), 4.13 (1H, m), 4.13-4.19 (3H, m), 4.34 (1H, m), 4.61 (1H, m), 5.98 (1H, s), 6.76 (1H, d, J=8.6 Hz), 6.98 (1H, d, J=8.4 Hz), 7.18 (1H, s), 7.22 (1H, dd, J=8.8, 2.2 Hz)..	ESI-MS m/z: 392, 394 [M+H]+
89		1H-NMR ($CDCl_3$) δ : 1.46 (3H, d, J=6.3 Hz), 2.06 (1H, m), 2.17 (1H, m), 2.85 (1H, dd, J=16.9, 4.0 Hz), 3.15 (1H, dd, J=17.0, 5.4 Hz), 4.06 (1H, m), 4.13-4.19 (3H, m), 4.34 (1H, m), 4.60 (1H, m), 5.98 (1H, s), 6.76 (1H, d, J=8.6 Hz), 6.98 (1H, d, J=7.8 Hz), 7.18 (1H, s), 7.21 (1H, d, J=8.6 Hz).	ESI-MS m/z: 392, 394 [M+H]+
90		1H-NMR ($CDCl_3$) δ : 1.05 (3H, t, J=7.5 Hz), 1.72 (1H, m), 1.85 (1H, m), 2.05 (1H, m), 2.18 (1H, m), 2.84 (1H, dd, J=16.8, 4.2 Hz), 3.14 (1H, dd, J=16.9, 5.2 Hz), 4.01-4.19 (5H, m), 4.60 (1H, m), 5.99 (1H, s), 6.80 (1H, d, J=8.7 Hz), 6.99 (1H, d, J=7.9 Hz), 7.04 (1H, s), 7.08 (1H, dd, J=8.6, 2.3 Hz).	ESI-MS m/z: 362 [M+H]+
91		1H-NMR ($CDCl_3$) δ : 1.06 (3H, t, J=7.5 Hz), 1.73 (1H, m,), 1.81 (1H, m), 2.05 (1H, m), 2.18 (1H, m), 2.90 (1H, dd, J=16.7, 4.5 Hz), 3.17 (1H, dd, J=16.8, 5.1 Hz), 4.02-4.18 (3H, m), 4.21-4.31 (2H, m), 4.63 (1H, m), 5.99 (1H, s), 6.90-6.94 (2H, m), 7.38 (1H, s), 7.42 (1H, d, J=8.5 Hz).	ESI-MS m/z: 353 [M+H]+
92 (isomer A)		1H-NMR ($CDCl_3$) δ : 1.06 (3H, t, J=7.5 Hz), 1.64-1.88 (2H, m), 2.05 (1H, m), 2.19 (1H, m), 2.90 (1H, dd, J=16.7, 5.1), 3.17 (1H, dd, J=16.7, 5.1 Hz), 3.99-4.19 (3H, m), 4.21-4.33 (2H, m), 4.63 (1H, m), 6.00 (1H, s), 6.93 (2H, m), 7.38 (1H, s), 7.42 (1H, d, J=8.6 Hz).	ESI-MS m/z: 353 [M+H]+
92 (isomer B)		1H-NMR ($CDCl_3$) δ : 1.06 (3H, t, J=7.5 Hz), 1.64-1.88 (2H, m), 2.05 (1H, m), 2.19 (1H, m), 2.90 (1H, dd, J=16.7, 5.1 Hz), 3.17 (1H, dd, J=16.7, 5.1 Hz), 3.99-4.19 (3H, m), 4.21-4.33 (2H, m), 4.63 (1H, m), 6.00 (1H, s), 6.93 (2H, m), 7.38 (1H, s), 7.42 (1H, d, J=8.6 Hz).	ESI-MS m/z: 353 [M+H]+
93		1H-NMR ($CDCl_3$) δ : 1.05 (3H, t, J=7.5 Hz), 1.72 (1H, m), 1.83 (1H, m), 2.00 (1H, m), 2.18 (1H, m), 2.96 (1H, dd, J=16.8, 4.3 Hz), 3.24 (1H, dd, J=16.7, 5.4 Hz), 4.01-4.28 (8H, m), 4.67 (1H, m), 6.00 (1H, s), 6.98 (1H, d, J=8.4 Hz), 7.03 (1H, d, J=8.0 Hz), 7.20 (1H, d, J=2.1 Hz), 7.29 (1H, d, J=2.3 Hz), 8.65 (2H, s).	ESI-MS m/z: 436 [M+H]+

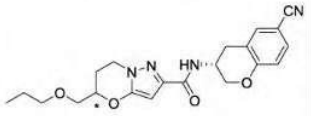
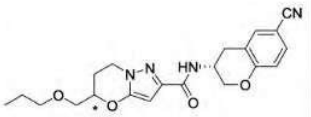
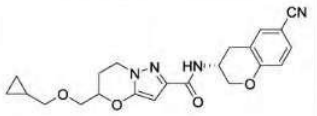
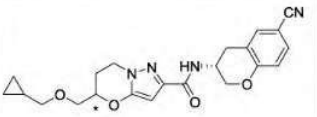
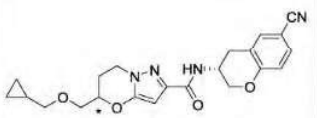
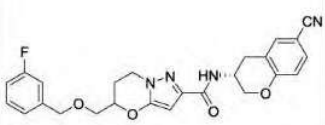
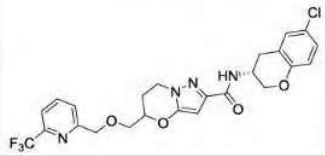
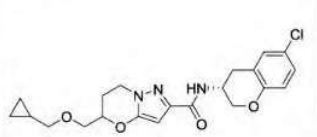
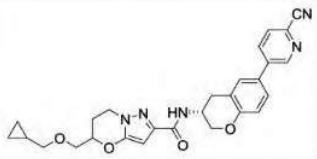
[0889]

[Table 12]

Example	Structural formula	NMR	MS
94		1H-NMR ($CDCl_3$) δ : 0.98 (3H, t, J=7.2 Hz), 1.48 (1H, m), 1.64 (1H, m), 1.80 (1H, m), 2.06 (1H, m), 2.18 (1H, m), 2.91 (1H, dd, J= 17.7, 5.2 Hz), 3.17 (1H, dd, J= 17.7, 6.9 Hz), 4.06 (1H, m), 4.12-4.32 (5H, m), 4.63 (1H, m), 5.98 (1H, s), 6.92 (2H, m), 7.38 (1H, s), 7.42 (1H, d, J = 8.7 Hz).	ESI-MS m/z: 367 [M+H]+
95 (isomer A)		1H-NMR ($CDCl_3$) δ : 0.98 (3H, t, J=7.2 Hz), 1.48 (1H, m), 1.64 (1H, m), 1.80 (1H, m), 2.06 (1H, m), 2.18 (1H, m), 2.91 (1H, dd, J= 17.7, 5.2 Hz), 3.17 (1H, dd, J= 17.7, 6.9 Hz), 4.06 (1H, m), 4.12-4.32 (5H, m), 4.63 (1H, m), 5.98 (1H, s), 6.92 (2H, m), 7.38 (1H, s), 7.42 (1H, d, J = 8.7 Hz)	ESI-MS m/z: 367 [M+H]+
95 (isomer B)		1H-NMR ($CDCl_3$) δ : 0.98 (3H, t, J=7.2 Hz), 1.48 (1H, m), 1.64 (1H, m), 1.80 (1H, m), 2.06 (1H, m), 2.18 (1H, m), 2.91 (1H, dd, J= 17.7, 5.2 Hz), 3.17 (1H, dd, J= 17.7, 6.9 Hz), 4.06 (1H, m), 4.12-4.32 (5H, m), 4.63 (1H, m), 5.98 (1H, s), 6.92 (2H, m), 7.38 (1H, s), 7.42 (1H, d, J = 8.7 Hz)	ESI-MS m/z: 367 [M+H]+
96		1H-NMR ($CDCl_3$) δ : 0.12-0.15 (2H, m), 0.53-0.55 (2H, m), 0.84 (1H, m), 1.49 (1H, m), 1.81 (1H, m), 2.10 (1H, m), 2.28 (1H, m), 2.91 (1H, m), 3.17 (1H, m), 4.08 (1H, m), 4.15 (1H, m), 4.23-4.31 (3H, m), 4.63 (1H, m), 5.99 (1H, m), 6.92-6.94 (2H, m), 7.38 (1H, m), 7.42 (1H, m).	ESI-MS m/z: 379 [M+H]+
97 (isomer A)		1H-NMR ($CDCl_3$) δ : 0.12-0.15 (2H, m), 0.53-0.55 (2H, m), 0.84 (1H, m), 1.49 (1H, m), 1.81 (1H, m), 2.10 (1H, m), 2.28 (1H, m), 2.91 (1H, dd, J=16.4, 4.5 Hz), 3.17 (1H, dd, J=16.9, 5.2 Hz), 4.08 (1H, m), 4.16 (1H, m), 4.23-4.31 (3H, m), 4.63 (1H, m), 5.99 (1H, s), 6.92-6.94 (2H, m), 7.38 (1H, s), 7.42 (1H, d, J=8.7 Hz).	ESI-MS m/z: 379 [M+H]+
97 (isomer B)		1H-NMR ($CDCl_3$) δ : 0.12-0.15 (2H, m), 0.53-0.55 (2H, m), 0.84 (1H, m), 1.49 (1H, m), 1.81 (1H, m), 2.11 (1H, m), 2.28 (1H, m), 2.90 (1H, m), 3.17 (1H, dd, J=16.8, 4.8 Hz), 4.07 (1H, m), 4.17 (1H, m), 4.23-4.31 (3H, m), 4.63 (1H, m), 5.99 (1H, s), 6.92-6.94 (2H, m), 7.39 (1H, s), 7.42 (1H, d, J=8.4 Hz).	ESI-MS m/z: 379 [M+H]+
98		1H-NMR ($CDCl_3$) δ : 2.18-2.27 (2H, m), 2.84 (1H, dd, J=17.0, 4.1 Hz), 3.14 (1H, dd, J=17.0, 5.2 Hz), 3.66 (1H, dd, J=10.3, 5.1 Hz), 3.75 (1H, dd, J=10.3, 5.1 Hz), 4.07 (1H, m), 4.15-4.19 (3H, m), 4.37 (1H, m), 4.56-4.64 (3H, m), 6.02 (1H, s), 6.80 (1H, d, J=8.6 Hz), 6.98 (1H, d, J=7.9 Hz), 7.03 (1H, d, J=2.2 Hz), 7.08 (1H, dd, J=8.7, 2.4 Hz), 7.34 (5H, m).	ESI-MS m/z: 454 [M+H]+
99		1H-NMR ($CDCl_3$) δ : 2.16-2.27 (2H, m), 2.90 (1H, dd, J=16.7, 4.6 Hz), 3.17 (1H, dd, J=16.8, 5.0 Hz), 3.67 (1H, dd, J=10.3, 5.0 Hz), 3.75 (1H, dd, J=10.3, 5.1 Hz), 4.06 (1H, m), 4.17 (1H, m), 4.23-4.31 (2H, m), 4.36 (1H, m), 4.60-4.65 (3H, m), 6.03 (1H, s), 6.90-6.94 (2H, m), 7.30-7.43 (7H, m).	ESI-MS m/z: 445 [M+H]+
100		1H-NMR ($CDCl_3$) δ : 0.92 (3H, t, J=7.4 Hz), 1.56-1.64 (2H, m), 2.15-2.29 (2H, m), 2.90 (1H, dd, J=16.6, 4.8 Hz), 3.17 (1H, dd, J=16.7, 5.3 Hz), 3.47 (1H, t, J=6.6 Hz), 3.62 (1H, m), 3.72 (1H, dd, J=10.5, 5.1 Hz), 4.04-4.37 (6H, m), 4.63 (1H, m), 6.02 (1H, s), 6.91-6.94 (2H, m), 7.38 (1H, s), 7.42 (1H, d, J=8.5 Hz).	ESI-MS m/z: 397 [M+H]+

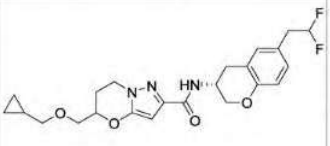
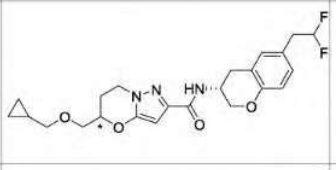
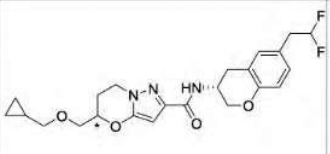
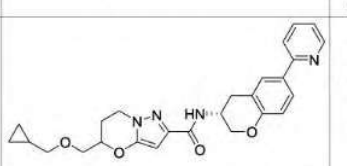
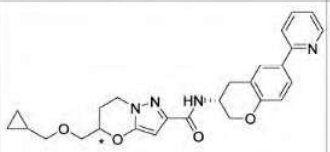
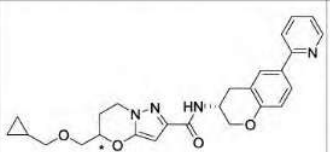
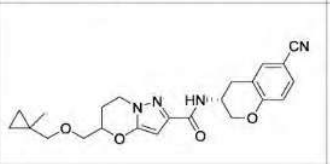
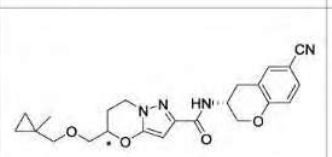
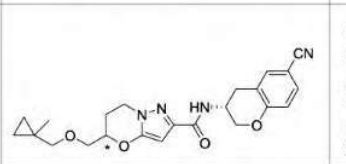
[0890]

[Table 13]

Example	Structural formula	NMR	MS
101 (isomer A)		1H-NMR ($CDCl_3$) δ : 0.92 (3H, t, J=7.3 Hz), 1.58-1.64 (2H, m), 2.14-2.27 (2H, m), 2.90 (1H, dd, J=16.4, 4.2 Hz), 3.17 (1H, dd, J=16.4, 4.6 Hz), 3.47 (2H, t, J=6.6 Hz), 3.62 (1H, m), 3.72 (1H, m), 4.08 (1H, m), 4.17-4.36 (4H, m), 4.63 (1H, m), 6.02 (1H, s), 6.92-6.94 (2H, m), 7.38 (1H, s), 7.42 (1H, d, J=8.5 Hz).	ESI-MS m/z: 397 [M+H]+
101 (isomer B)		1H-NMR ($CDCl_3$) δ : 0.92 (3H, t, J=7.4 Hz), 1.57-1.66 (2H, m), 2.14-2.28 (2H, m), 2.90 (1H, dd, J=16.9, 4.5 Hz), 3.17 (1H, dd, J=16.7, 5.0 Hz), 3.47 (2H, t, J=6.6 Hz), 3.62 (1H, m), 3.72 (1H, m), 4.08 (1H, m), 4.17-4.36 (4H, m), 4.63 (1H, m), 6.02 (1H, s), 6.92-6.94 (2H, m), 7.38 (1H, s), 7.42 (1H, d, J=8.8 Hz).	ESI-MS m/z: 397 [M+H]+
102		1H-NMR ($CDCl_3$) δ : 0.20-0.23 (2H, m), 0.54-0.58 (2H, m), 1.06 (1H, m), 2.16-2.29 (2H, m), 2.90 (1H, dd, J=16.6, 4.9 Hz), 3.17 (1H, dd, J=16.8, 5.1 Hz), 3.37 (2H, d, J=6.9 Hz), 3.66 (1H, ddd, J=10.5, 5.1, 1.7 Hz), 3.76 (1H, dd, J=10.4, 5.2 Hz), 4.05-4.38 (5H, m), 4.63 (1H, m), 6.02 (1H, s), 6.91-6.94 (2H, m), 7.38 (1H, s), 7.42 (1H, dd, J=8.6, 1.7 Hz).	ESI-MS m/z: 409 [M+H]+
103 (isomer A)		1H-NMR ($CDCl_3$) δ : 0.20-0.23 (2H, m), 0.54-0.58 (2H, m), 1.06 (1H, m), 2.14-2.27 (2H, m), 2.90 (1H, dd, J=16.7, 4.5 Hz), 3.17 (1H, dd, J=16.8, 5.3 Hz), 3.37 (2H, d, J=6.9 Hz), 3.65 (1H, dd, J=10.4, 5.2 Hz), 3.76 (1H, dd, J=10.4, 5.2 Hz), 4.08 (1H, m), 4.16-4.40 (4H, m), 4.63 (1H, m), 6.02 (1H, s), 6.90-6.94 (2H, m), 7.38 (1H, s), 7.42 (1H, d, J=8.5 Hz).	ESI-MS m/z: 409 [M+H]+
103 (isomer B)		1H-NMR ($CDCl_3$) δ : 0.20-0.24 (2H, m), 0.54-0.58 (2H, m), 1.06 (1H, m), 2.15-2.30 (2H, m), 2.90 (1H, dd, J=4.7, 16.7 Hz), 3.17 (1H, dd, J=16.8, 5.0 Hz), 3.37 (2H, d, J=6.9 Hz), 3.66 (1H, dd, J=10.4, 5.2 Hz), 3.76 (1H, dd, J=10.4, 5.2 Hz), 4.08 (1H, m), 4.17-4.39 (4H, m), 4.63 (1H, m), 6.02 (1H, s), 6.91-6.94 (2H, m), 7.38 (1H, s), 7.42 (1H, d, J=8.5 Hz).	ESI-MS m/z: 409 [M+H]+
104		1H-NMR ($CDCl_3$) δ : 2.20-2.28 (2H, m), 2.90 (1H, dd, J=16.7, 4.9 Hz), 3.17 (1H, dd, J=16.5, 5.0 Hz), 3.69 (1H, m), 3.76 (1H, dd, J=10.4, 5.1 Hz), 4.09 (1H, m), 4.15-4.31 (3H, m), 4.38 (1H, m), 4.60-4.65 (3H, m), 6.03 (1H, s), 6.91-6.94 (2H, m), 6.98-7.05 (2H, m), 7.09 (1H, d, J=7.7 Hz), 7.32 (1H, q, J=6.8 Hz), 7.38 (1H, s), 7.42 (1H, dd, J=8.5, 1.7 Hz).	ESI-MS m/z: 463 [M+H]+
105		1H-NMR ($CDCl_3$) δ : 2.24-2.29 (2H, m), 2.85 (1H, dd, J=16.6, 3.9 Hz), 3.15 (1H, dd, J=16.8, 5.3 Hz), 3.82-3.90 (2H, m), 4.11 (1H, m), 4.19-4.24 (3H, m), 4.45 (1H, m), 4.61 (1H, m), 4.79 (2H, s), 6.03 (1H, s), 6.81 (1H, d, J=8.7 Hz), 7.00 (1H, d, J=8.1 Hz), 7.04 (1H, m), 7.08 (1H, dd, J=8.8, 2.3 Hz), 7.59-7.65 (2H, m), 7.88 (1H, m).	ESI-MS m/z: 523 [M+H]+
106		1H-NMR ($CDCl_3$) δ : 0.20-0.23 (2H, m), 0.53-0.58 (2H, m), 1.07 (1H, m), 2.14-2.30 (2H, m), 2.84 (1H, dd, J = 16.9, 4.2 Hz), 3.14 (1H, dd, J =16.9, 5.3 Hz), 3.37 (2H, d, J = 6.9 Hz), 3.65 (1H, m), 3.76 (1H, m), 4.09 (1H, m), 4.18-4.22 (3H, m), 4.36 (1H, m), 4.60 (1H, m), 6.02 (1H, s), 6.81 (1H, d, J = 8.6 Hz), 6.99 (1H, d, J = 8.3 Hz), 7.04 (1H, s), 7.08 (1H, dd, J = 8.7, 2.4 Hz).	ESI-MS m/z: 418 [M+H]+
107		1H-NMR ($CDCl_3$) δ : 0.21 (2H, d, J=4.6 Hz), 0.56 (2H, d, J=7.9 Hz), 1.07 (1H, m), 2.14-2.30 (2H, m), 2.98 (1H, m), 3.25 (1H, dd, J=16.2, 5.3 Hz), 3.36-3.39 (2H, m), 3.66 (1H, m), 3.76 (1H, m), 4.03-4.30 (4H, m), 4.39 (1H, m), 4.67 (1H, m), 6.03 (1H, s), 7.02 (2H, d, J=8.4 Hz), 7.31 (1H, s), 7.39 (1H, dd, J=8.6, 2.0 Hz), 7.73 (1H, d, J=8.0 Hz), 7.93 (1H, dd, J=8.1, 2.2 Hz), 8.90 (1H, d, J=1.9 Hz).	ESI-MS m/z: 486 [M+H]+

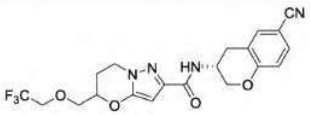
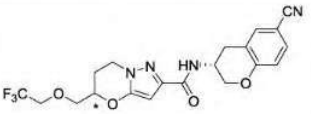
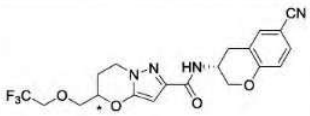
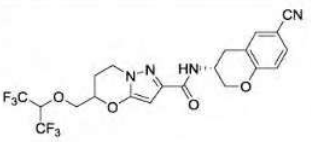
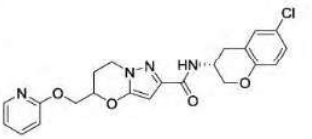
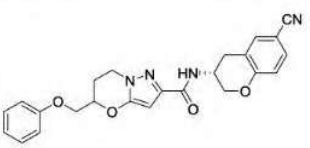
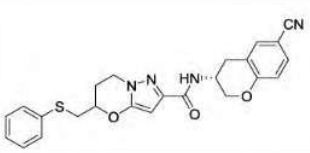
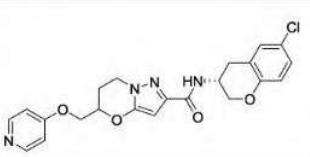
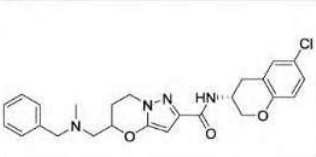
[0891]

[Table 14]

Example	Structural formula	NMR	MS
108		1H-NMR ($CDCl_3$) δ : 0.20-0.22 (2H, m), 0.55-0.57 (2H, m), 1.06 (1H, m), 2.13-2.29 (2H, m), 2.86 (1H, dd, J = 4.1, 16.8 Hz), 3.04 (2H, dt, J = 17.4, 4.4 Hz), 3.16 (1H, dd, J = 16.7, 5.4 Hz), 3.37 (2H, d, J = 6.9 Hz), 3.65 (1H, dd, J =10.3, 5.3 Hz), 3.75 (1H, dd, J = 10.4, 5.2 Hz), 4.08 (1H, m), 4.14-4.22 (3H, m), 4.36 (1H, m), 4.61 (1H, m), 5.72-6.02 (2H, m), 6.84 (1H, d, J = 8.3 Hz), 6.93 (1H, s), 7.00-7.01 (2H, m).	ESI-MS m/z: 448 [M+H]+
109 (isomer A)		1H-NMR ($CDCl_3$) δ : 0.21 (2H, d, J = 4.5 Hz), 0.56 (2H, d, J = 7.9 Hz), 1.06 (1H, m), 2.13-2.29 (2H, m), 2.86 (1H, m), 3.04 (2H, dt, J = 17.3, 4.2 Hz), 3.16 (1H, dd, J = 16.9, 5.2 Hz), 3.37 (2H, d, J = 6.9 Hz), 3.65 (1H, m), 3.75 (1H, m), 4.05-4.21 (4H, m), 4.36 (1H, m), 4.61 (1H, m), 5.73-6.02 (2H, m), 6.84 (1H, d, J = 8.2 Hz), 6.94 (1H, s), 7.01 (2H, d, J = 8.3 Hz).	ESI-MS m/z: 448 [M+H]+
109 (isomer B)		1H-NMR ($CDCl_3$) δ : 0.22 (2H, d, J = 4.7 Hz), 0.56 (2H, d, J = 8.0 Hz), 1.07 (1H, m), 2.14-2.29 (2H, m), 2.86 (1H, dd, J = 16.8, 3.7 Hz), 3.04 (2H, dt, J = 17.5, 4.3 Hz), 3.16 (1H, dd, J = 16.7, 5.3 Hz), 3.37 (2H, d, J = 7.0 Hz), 3.65 (1H, m), 3.76 (1H, m), 4.07 (1H, m), 4.15-4.21 (3H, m), 4.35 (1H, m), 4.62 (1H, m), 5.73-6.02 (2H, m), 6.84 (1H, d, J = 8.4 Hz), 6.94 (1H, s), 7.01 (2H, d, J = 8.0 Hz).	ESI-MS m/z: 448 [M+H]+
110		1H-NMR ($CDCl_3$) δ : 0.21 (2H, d, J = 4.6 Hz), 0.55 (2H, d, J = 7.9 Hz), 1.06 (1H, m), 2.12-2.28 (2H, m), 2.95 (1H, dd, J = 16.6, 4.1 Hz), 3.26 (1H, dd, J = 16.6, 5.3 Hz), 3.36 (2H, d, J = 6.8 Hz), 3.64 (1H, dd, J = 5.4, 9.9 Hz), 3.75 (1H, dd, J = 10.4, 5.2 Hz), 4.02-4.43 (5H, m), 4.66 (1H, m), 6.02 (1H, s), 6.97 (1H, d, J = 8.2 Hz), 7.02 (1H, d, J = 8.1 Hz), 7.18 (1H, m), 7.64-7.77 (4H, m), 8.64 (1H, d, J = 4.2 Hz).	ESI-MS m/z: 461 [M+H]+
111 (isomer A)		1H-NMR ($CDCl_3$) δ : 0.19-0.22 (2H, m), 0.53-0.57 (2H, m), 1.06 (1H, m), 2.12-2.29 (2H, m), 2.95 (1H, dd, J = 16.6, 4.0 Hz), 3.26 (1H, dd, J = 16.5, 5.3 Hz), 3.36 (2H, d, J = 6.9 Hz), 3.64 (1H, dd, J = 10.4, 5.2 Hz), 3.75 (1H, dd, J = 10.4, 5.2 Hz), 4.07 (1H, m), 4.18 (1H, m), 4.22-4.28 (2H, m), 4.36 (1H, m), 4.69 (1H, m), 6.02 (1H, s), 6.94-7.03 (2H, m), 7.18 (1H, m), 7.64-7.76 (4H, m), 8.64 (1H, m).	ESI-MS m/z: 461 [M+H]+
111 (isomer B)		1H-NMR ($CDCl_3$) δ : 0.20-0.23 (2H, m), 0.53-0.58 (2H, m), 1.06 (1H, m), 2.13-2.28 (2H, m), 2.96 (1H, dd, J = 16.5, 4.4 Hz), 3.26 (1H, dd, J = 16.5, 5.4 Hz), 3.37 (2H, d, J = 6.9 Hz), 3.65 (1H, m), 3.75 (1H, dd, J = 10.4, 5.2 Hz), 4.06 (1H, m), 4.19 (1H, m), 4.25-4.26 (2H, m), 4.35 (1H, m), 4.66 (1H, m), 6.02 (1H, s), 6.96-7.03 (2H, m), 7.18 (1H, m), 7.64-7.76 (4H, m), 8.64 (1H, m).	ESI-MS m/z: 461 [M+H]+
112		1H-NMR ($CDCl_3$) δ : 0.29-0.43 (4H, m), 1.12 (3H, s), 2.13-2.33 (2H, m), 2.91 (1H, dd, J= 16.2, 4.8 Hz), 3.17 (1H, dd, J= 16.8, 5.5 Hz), 3.28-3.35 (2H, m,), 3.63 (1H, dd, J= 10.3, 4.8 Hz), 3.75 (1H, dd, J= 10.6, 6.1 Hz), 4.08 (1H, m), 4.16-4.41 (4H, m), 4.63 (1H, m), 6.02 (1H, s), 6.88-6.95 (2H, m), 7.39 (1H, s), 7.42 (1H, dd, J = 8.7, 2.4 Hz).	ESI-MS m/z: 423 [M+H]+
113 (isomer A)		1H-NMR ($CDCl_3$) δ : 0.29-0.43 (4H, m), 1.12 (3H, s), 2.13-2.33 (2H, m), 2.91 (1H, dd, J= 16.2, 4.8 Hz), 3.17 (1H, dd, J= 16.8, 5.5 Hz), 3.28-3.35 (2H, m,), 3.63 (1H, dd, J= 10.3, 4.8 Hz), 3.75 (1H, dd, J= 10.6, 6.1 Hz), 4.08 (1H, m), 4.16-4.41 (4H, m), 4.63 (1H, m), 6.02 (1H, s), 6.88-6.95 (2H, m), 7.39 (1H, s), 7.42 (1H, dd, J = 8.7, 2.4 Hz).	ESI-MS m/z: 423 [M+H]+
113 (isomer B)		1H-NMR ($CDCl_3$) δ : 0.29-0.43 (4H, m), 1.12 (3H, s), 2.13-2.33 (2H, m), 2.91 (1H, dd, J= 16.2, 4.8 Hz), 3.17 (1H, dd, J= 16.8, 5.5 Hz), 3.28-3.35 (2H, m,), 3.63 (1H, dd, J= 10.3, 4.8 Hz), 3.75 (1H, dd, J= 10.6, 6.1 Hz), 4.08 (1H, m), 4.16-4.41 (4H, m), 4.63 (1H, m), 6.02 (1H, s), 6.88-6.95 (2H, m), 7.39 (1H, s), 7.42 (1H, dd, J = 8.7, 2.4 Hz)	ESI-MS m/z: 423 [M+H]+

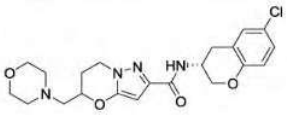
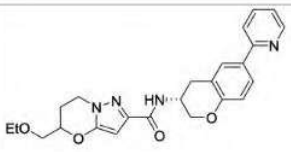
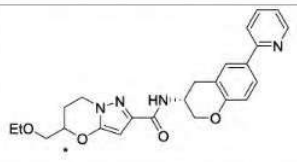
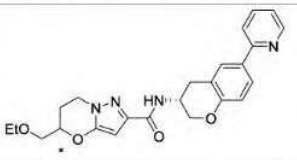
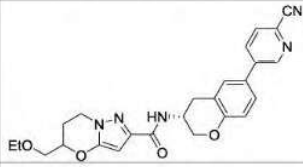
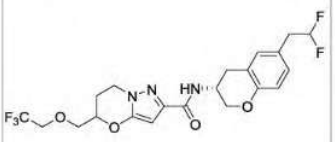
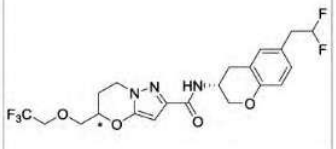
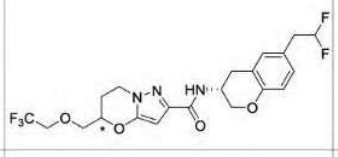
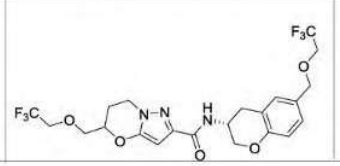
[0892]

[Table 15]

Example	Structural formula	NMR	MS
114		1H-NMR ($CDCl_3$) δ : 2.23-2.27 (2H, m), 2.90 (1H, dd, J=16.6, 4.8 Hz), 3.17 (1H, dd, J=16.7, 5.2 Hz), 3.85-3.98 (4H, m), 4.09 (1H, m), 4.20-4.31 (3H, m), 4.37 (1H, m), 4.63 (1H, m), 6.03 (1H, s), 6.91-6.94 (2H, m), 7.38 (1H, s), 7.42 (1H, dd, J=8.5, 1.9 Hz).	ESI-MS m/z: 437 [M+H]+
115 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.24-2.27 (2H, m), 2.90 (1H, m), 3.17 (1H, dd, J=16.8, 5.4 Hz), 3.84-3.97 (4H, m), 4.10 (1H, m), 4.18-4.31 (3H, m), 4.38 (1H, m), 4.63 (1H, m), 6.03 (1H, s), 6.91-6.94 (2H, m), 7.39 (1H, s), 7.42 (1H, d, J=8.5 Hz).	ESI-MS m/z: 437 [M+H]+
115 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.22-2.27 (2H, m), 2.91 (1H, dd, J=16.8, 3.9 Hz), 3.17 (1H, dd, J=16.7, 5.0 Hz), 3.85-3.98 (4H, m), 4.09 (1H, m), 4.19-4.31 (3H, m), 4.37 (1H, m), 4.64 (1H, m), 6.03 (1H, s), 6.91-6.94 (2H, m), 7.39 (1H, s), 7.42 (1H, d, J=8.6 Hz).	ESI-MS m/z: 437 [M+H]+
116		1H-NMR ($CDCl_3$) δ : 2.24-2.31 (2H, m), 2.91 (1H, m), 3.17 (1H, m), 4.06-4.15 (3H, m), 4.21-4.31 (4H, m), 4.41 (1H, m), 4.63 (1H, m), 6.04 (1H, s), 6.91-6.94 (2H, m), 7.39 (1H, s), 7.42 (1H, d, J=8.5 Hz).	ESI-MS m/z: 505 [M+H]+
117		1H-NMR ($CDCl_3$) δ : 2.23-2.33 (2H, m), 2.85 (1H, m), 3.15 (1H, dd, J=16.8, 5.3 Hz), 4.07-4.25 (4H, m), 4.59-4.61 (4H, m), 6.05 (1H, s), 6.81 (2H, d, J=8.6 Hz), 6.91 (1H, t, J=6.1 Hz), 6.99 (1H, d, J=7.8 Hz), 7.04 (1H, s), 7.08 (1H, dd, J=8.8, 2.4 Hz), 7.60 (1H, t, J=6.9 Hz), 8.13 (1H, d, J=3.9 Hz).	ESI-MS m/z: 441 [M+H]+
118		1H-NMR ($CDCl_3$) δ : 2.27-2.43 (2H, m), 2.91 (1H, dd, J=16.4, 4.5 Hz), 3.18 (1H, m), 4.11-4.17 (2H, m), 4.24-4.32 (4H, m), 4.55-4.65 (2H, m), 6.06 (1H, s), 6.91-6.94 (4H, m), 7.00 (1H, t, J=7.4 Hz), 7.31 (2H, t, J=7.9 Hz), 7.39 (1H, s), 7.42 (1H, d, J=8.4 Hz).	ESI-MS m/z: 431 [M+H]+
119		1H-NMR ($CDCl_3$) δ : 2.14 (1H, m), 2.44 (1H, m), 2.90 (1H, dd, J=16.7, 4.6 Hz), 3.08 (1H, dd, J=14.1, 8.0 Hz), 3.16 (1H, m), 3.40 (1H, dd, J=14.1, 5.0 Hz), 4.04 (1H, m), 4.14 (1H, m), 4.22-4.30 (3H, m), 4.62 (1H, m), 6.00 (1H, s), 6.89-6.93 (2H, m), 7.23-7.43 (7H, m).	ESI-MS m/z: 447 [M+H]+
120		1H-NMR ($CDCl_3$) δ : 2.28-2.37 (2H, m), 2.85 (1H, dd, J=16.7, 3.9 Hz), 3.15 (1H, dd, J=16.8, 5.2 Hz), 4.09-4.33 (6H, m), 4.56-4.62 (2H, m), 6.05 (1H, s), 6.80-6.85 (3H, m), 7.01 (1H, d, J=8.0 Hz), 7.04 (1H, s), 7.09 (1H, dd, J=8.6, 2.3 Hz), 8.48 (2H, d, J=4.8 Hz).	ESI-MS m/z: 441 [M+H]+
121		1H-NMR ($CDCl_3$) δ : 2.02 (1H, m), 2.26 (1H, m), 2.34 (3H, s), 2.69 (1H, dd, J=13.2, 6.6 Hz), 2.74 (1H, dd, J=13.3, 5.7 Hz), 2.84 (1H, dd, J=16.8, 4.0 Hz), 3.14 (1H, dd, J=16.9, 5.2 Hz), 3.54-3.65 (2H, m), 3.97-4.13 (2H, m), 4.18 (2H, d, J=2.8 Hz), 4.29 (1H, m), 4.60 (1H, m), 5.99 (1H, s), 6.80 (1H, d, J=8.6 Hz), 6.97 (1H, d, J=7.9 Hz), 7.03 (1H, s), 7.08 (1H, dd, J=8.7, 2.3 Hz), 7.30-7.34 (5H, m).	ESI-MS m/z: 467 [M+H]+

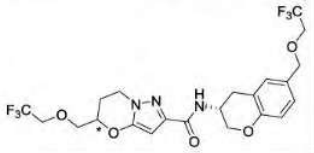
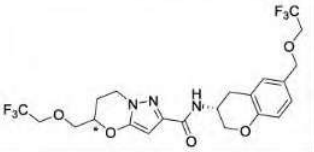
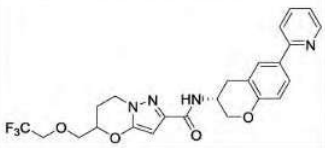
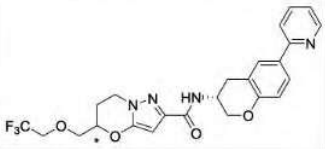
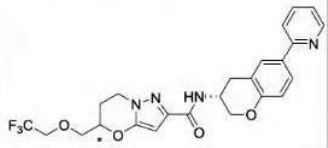
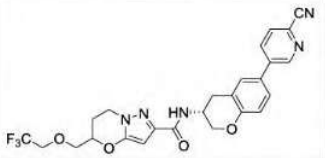
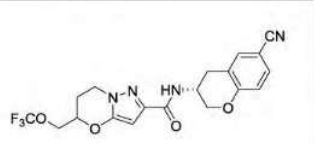
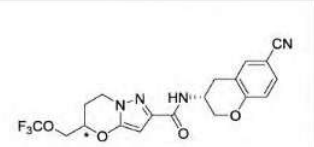
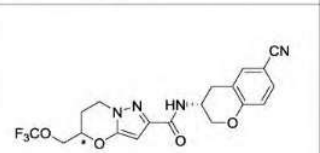
[0893]

[Table 16]

Example	Structural formula	NMR	MS
122		1H-NMR ($CDCl_3$) δ : 2.13 (1H, m), 2.28 (1H, m), 2.50-2.60 (5H, m), 2.76 (1H, dd, J=13.5, 6.2 Hz), 2.84 (1H, dd, J=16.9, 4.2 Hz), 3.15 (1H, m), 3.72 (4H, t, J=4.6 Hz), 4.04-4.19 (4H, m), 4.34 (1H, m), 4.60 (1H, m), 6.01 (1H, s), 6.81 (1H, d, J=8.7 Hz), 6.99 (1H, d, J=8.0 Hz), 7.04 (1H, s), 7.08 (1H, dd, J=8.7, 2.4 Hz).	ESI-MS m/z: 433 [M+H]+
123		1H-NMR ($CDCl_3$) δ : 1.22 (3H, dt, J=7.0, 1.0 Hz), 2.12-2.28 (2H, m), 2.95 (1H, dd, J=16.7, 4.2 Hz), 3.26 (1H, dd, J=16.6, 5.2 Hz), 3.55-3.65 (3H, m), 3.71 (1H, dd, J=10.4, 5.3 Hz), 4.06(1H, m), 4.17 (1H, m), 4.26 (2H, s), 4.33 (1H, m), 4.66 (1H, m), 6.02 (1H, s), 6.97 (1H, d, J=8.2 Hz), 7.02 (1H, d, J=8.1 Hz), 7.18 (1H, m), 7.64-7.76 (4H, m), 8.64 (1H, d, J=4.3 Hz).	ESI-MS m/z: 435 [M+H]+
124 (isomer A)		1H-NMR ($CDCl_3$) δ : 1.22 (3H, t, J = 7.0 Hz), 2.12-2.25 (2H, m), 2.95 (1H, dd, J = 16.4, 3.8 Hz), 3.26 (1H, dd, J = 16.7, 4.9 Hz), 3.55-3.65 (3H, m), 3.71 (1H, dd, J = 10.5, 5.3 Hz), 4.07 (1H, m), 4.17 (1H, m), 4.26 (2H, s), 4.34 (1H, m), 4.66 (1H, m), 6.02 (1H, s), 6.96-7.03 (2H, m), 7.18 (1H, t, J = 6.0 Hz), 7.65 (1H, d, J = 7.8 Hz), 7.70-7.76 (3H, m), 8.64 (1H, d, J = 4.5 Hz).	ESI-MS m/z: 435 [M+H]+
124 (isomer B)		1H-NMR ($CDCl_3$) δ : 1.22 (3H, t, J = 7.0 Hz), 2.13-2.26 (2H, m), 2.96 (1H, dd, J = 16.6, 3.9 Hz), 3.26 (1H, dd, J = 16.6, 5.4 Hz), 3.55-3.65 (3H, m), 3.71 (1H, dd, J = 10.4, 5.2 Hz), 4.06 (1H, m), 4.15-4.36 (4H, m), 4.66 (1H, m), 6.02 (1H, s), 6.96-7.03 (2H, m), 7.18 (1H, m), 7.65 (1H, d, J = 7.9 Hz), 7.70-7.76 (3H, m), 8.64 (1H, d, J = 4.0 Hz).	ESI-MS m/z: 435 [M+H]+
125		1H-NMR ($CDCl_3$) δ : 1.22 (3H, dt, J = 7.0, 1.0 Hz), 2.13-2.28 (2H, m), 2.98 (1H, dd, J = 16.7, 4.1 Hz), 3.25 (1H, dd, J = 16.7, 5.3 Hz), 3.55-3.65 (3H, m), 3.72 (1H, dd, J = 10.1, 4.9 Hz), 4.08 (1H, m), 4.15-4.38 (4H, m), 4.66 (1H, m), 6.03 (1H, s), 7.02 (2H, d, J = 8.4 Hz), 7.31 (1H, s), 7.39 (1H, dd, J = 8.5, 2.0 Hz), 7.73 (1H, d, J = 8.1 Hz), 7.93 (1H, dd, J = 8.1, 2.2 Hz), 8.89 (1H, d, J = 2.0 Hz).	ESI-MS m/z: 460 [M+H]+
126		1H-NMR ($CDCl_3$) δ : 2.17-2.24 (2H, m), 2.86 (1H, dd, J = 16.7, 3.9 Hz), 3.04 (2H, dt, J = 17.3, 4.5 Hz), 3.17 (1H, dd, J = 16.8, 5.4 Hz), 3.84-3.98 (4H, m), 4.05-4.23 (4H, m), 4.37 (1H, m), 4.61 (1H, m), 5.73-6.03 (2H, m), 6.84 (1H, d, J = 8.3 Hz), 6.94 (1H, s), 7.01 (2H, d, J = 7.1 Hz).	ESI-MS m/z: 476 [M+H]+
127 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.16-2.26 (2H, m), 2.86 (1H, dd, J = 16.6, 3.8 Hz), 3.04 (2H, dt, J = 17.4, 4.4 Hz), 3.17 (1H, dd, J = 16.8, 5.5 Hz), 3.84-3.97 (4H, m), 4.06-4.22 (4H, m), 4.37 (1H, m), 4.61 (1H, m), 5.73-6.03 (2H, m), 6.84 (1H, d, J = 8.3 Hz), 6.94 (1H, s), 7.01 (2H, d, J = 8.6 Hz).	ESI-MS m/z: 476 [M+H]+
127 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.17-2.26 (2H, m), 2.86 (1H, dd, J = 16.7, 4.3 Hz), 3.04 (2H, dt, J = 17.4, 4.5 Hz), 3.17 (1H, dd, J = 16.8, 5.5 Hz), 3.84-3.98 (4H, m), 4.05-4.24 (4H, m), 4.36 (1H, m), 4.61 (1H, m), 5.73-6.03 (2H, m), 6.84 (1H, d, J = 8.3 Hz), 6.94 (1H, s), 7.00-7.03 (2H,m).	ESI-MS m/z: 476 [M+H]+
128		1H-NMR ($CDCl_3$) δ : 2.22-2.26 (2H, m), 2.85-2.90 (1H, m), 3.15-3.21 (1H, m), 3.79-3.98 (6H, m), 4.06-4.14 (1H, m), 4.17-4.23 (3H, m), 4.35-4.40 (1H, m), 4.57 (2H, s), 4.60-4.64 (1H, m), 6.03 (1H, s), 6.87 (1H, d, J=8.3 Hz), 7.00-7.05 (2H, m), 7.12 (1H, dd, J=8.4, 2.0 Hz).	ESI-MS m/z: 524 [M+H]+

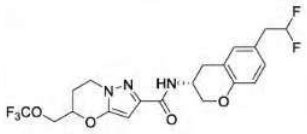
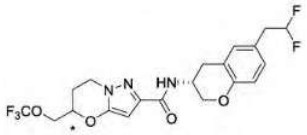
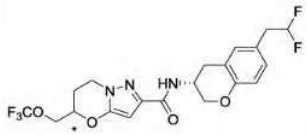
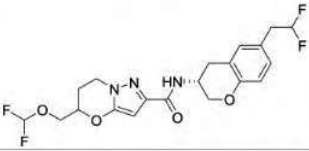
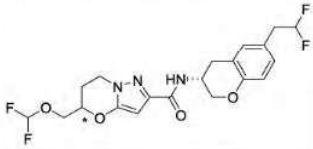
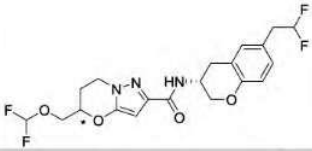
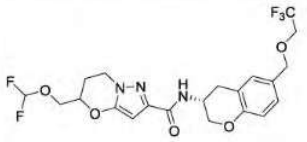
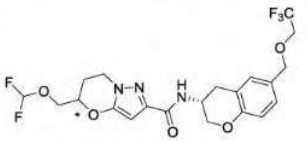
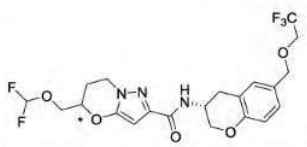
[0894]

[Table 17]

Example	Structural formula	NMR	MS
129 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.27 (2H, m), 2.85-2.89 (1H, m), 3.15-3.21 (1H,m), 3.78-3.97 (6H, m), 4.08-4.12 (1H, m), 4.20 (3H,m), 4.35-4.38 (1H, m), 4.57 (2H, s), 4.62 (1H, m), 6.03 (1H, s), 6.87 (1H, d, J=8.5 Hz), 7.01 (1H, d, J=8.2 Hz), 7.05 (1H, s), 7.12 (1H, d, J=7.4 Hz).	ESI-MS m/z: 524 [M+H]+
129 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.24 (2H, m), 2.85-2.89 (1H, m), 3.15-3.21 (1H,m), 3.78-3.97 (6H, m), 4.09-4.12 (1H,m), 4.21 (3H, m), 4.35-4.37 (1H, m), 4.57 (2H, s), 4.63 (1H, m), 6.03 (1H, s), 6.87 (1H, d, J=8.3 Hz), 7.01 (1H, d, J=8.2 Hz), 7.05 (1H, s), 7.12 (1H, d, J=8.0 Hz).	ESI-MS m/z: 524 [M+H]+
130		1H-NMR ($CDCl_3$) δ : 2.18-2.25 (2H, m), 2.96 (1H, m), 3.26 (1H, dd, J = 5.2, 16.6 Hz), 3.84-3.97 (4H, m), 4.08 (1H, m), 4.20 (1H, m), 4.26 (2H, d, J = 2.5 Hz), 4.36 (1H, m), 4.66 (1H, m), 6.03 (1H, s), 6.97 (1H, d, J = 8.3 Hz), 7.02 (1H, d, J = 8.0 Hz), 7.18 (1H, m), 7.65 (1H, d, J = 7.9 Hz), 7.70-7.76 (3H, m), 8.64 (1H, d, J = 4.3 Hz).	ESI-MS m/z: 489 [M+H]+
131 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.16-2.25 (2H, m), 2.96 (1H, m), 3.26 (1H, dd, J = 16.5, 5.3 Hz), 3.83-3.97 (4H, m), 4.08 (1H, m), 4.18 (1H, m), 4.26 (2H, s), 4.36 (1H, m), 4.66 (1H, m), 6.03 (1H, s), 6.96-7.03 (2H, m), 7.18 (1H, t, J = 5.8 Hz), 7.64-7.76 (4H, m), 8.64 (1H, d, J = 4.5 Hz).	ESI-MS m/z: 489 [M+H]+
131 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.18-2.25 (2H, m), 2.96 (1H, m), 3.26 (1H, dd, J = 16.6, 5.0 Hz), 3.84-3.97 (4H, m), 4.07 (1H, m), 4.20 (1H, m), 4.26 (2H, d, J = 3.0 Hz), 4.36 (1H, m), 4.66 (1H, m), 6.03 (1H, s), 6.96-7.03 (2H, m), 7.18 (1H, m), 7.64-7.76 (4H, m), 8.64 (1H, d, J = 4.7 Hz).	ESI-MS m/z: 489 [M+H]+
132		1H-NMR ($CDCl_3$) δ : 2.16-2.27 (2H, m), 2.98 (1H, dd, J=16.7, 4.6 Hz), 3.25 (1H, dd, J=16.7, 5.2 Hz), 3.84-3.98 (4H, m), 4.10 (1H, m), 4.18-4.31 (3H, m), 4.37 (1H, m), 4.68 (1H, m), 6.04 (1H, s), 7.02 (2H, d, J=8.5 Hz), 7.31 (1H, d, J=2.2 Hz), 7.39 (1H, dd, J=8.5, 2.3 Hz), 7.73 (1H, dd, J=8.1, 0.7 Hz), 7.93 (1H, dd, J=8.1, 2.3 Hz), 8.89 (1H, dd, J=2.3, 0.7 Hz).	ESI-MS m/z: 514 [M+H]+
133		1H-NMR ($CDCl_3$) δ : 2.25-2.29 (2H, m), 2.91 (1H, dd, J=4.8, 16.5 Hz), 3.17 (1H, dd, J=16.2, 5.1 Hz), 4.11-4.28 (6H, m), 4.45 (1H, m), 4.64 (1H, m), 6.06 (1H, s), 6.90-6.94 (2H, m), 7.39-7.43 (2H, m).	ESI-MS m/z: 423 [M+H]+
134 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.18-2.31 (2H, m), 2.88-2.93 (1H, m), 3.17 (1H, dd, J=16.7, 5.1 Hz), 4.01-4.30 (6H, m), 4.42-4.47 (1H, m), 4.62-4.64 (1H, m), 6.06 (1H, s), 6.90-6.94 (2H, m), 7.39-7.43 (2H, m).	ESI-MS m/z: 423 [M+H]+
134 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.23-2.30 (2H, m), 2.91 (1H, dd, J=16.5, 4.5 Hz), 3.17 (1H, dd, J=16.7, 5.1 Hz), 4.08-4.31 (6H, m), 4.41-4.47 (1H, m), 4.63 (1H, m), 6.06 (1H, s), 6.91-6.94 (2H, m), 7.39-7.43 (2H, m).	ESI-MS m/z: 423 [M+H]+

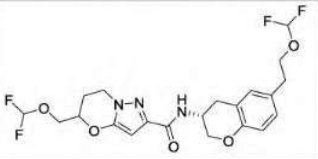
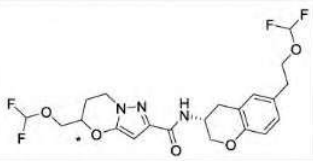
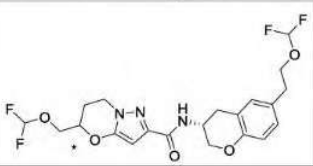
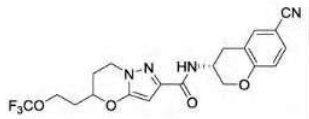
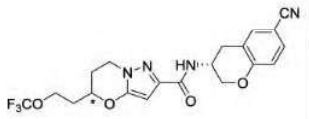
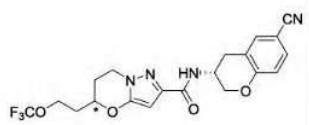
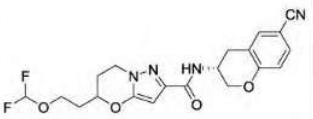
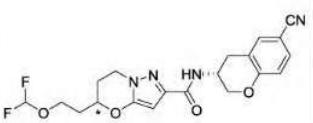
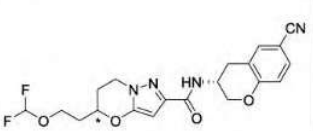
[0895]

[Table 18]

Example	Structural formula	NMR	MS
135		1H-NMR ($CDCl_3$) δ : 2.23-2.28 (2H, m), 2.84-3.29 (4H, m), 4.10-4.25 (6H, m), 4.42-4.45 (1H, m), 4.62 (1H, m), 5.73-6.05 (2H, m), 6.84 (1H, m), 6.94 (1H, s), 7.00-7.02 (2H, m).	ESI-MS m/z: 462 [M+H]+
136 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.28-2.30 (2H, m), 2.81-3.20 (4H, m), 4.09-4.26 (6H, m), 4.42-4.49 (1H, m), 4.61-4.63 (1H, m), 5.88 (1H, m), 6.05 (1H, s), 6.84 (1H, m), 6.94 (1H, s), 7.01 (2H, m).	ESI-MS m/z: 462 [M+H]+
136 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.22-2.29 (2H, m), 2.84-3.20 (4H, m), 4.07-4.27 (6H, m), 4.41-4.45 (1H, m), 4.61-4.63 (1H, m), 5.87 (1H, m), 6.05 (1H, s), 6.85 (1H, m), 6.94 (1H, s), 7.01 (2H, m).	ESI-MS m/z: 462 [M+H]+
137		1H-NMR ($CDCl_3$) δ : 2.18-2.25 (2H, m), 2.86 (1H, dd, J = 16.9, 3.7 Hz), 3.04 (2H, dt, J = 17.4, 4.4 Hz), 3.17 (1H, dd, J = 16.8, 5.3 Hz), 4.05-4.24 (6H, m), 4.41 (1H, m), 4.61 (1H, m), 5.73-6.04 (2H, m), 6.30 (1H, t, J = 73.5 Hz), 6.84 (1H, d, J = 8.3 Hz), 6.94 (1H, s), 7.00-7.02 (2H, m).	ESI-MS m/z: 444 [M+H]+
138 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.16-2.29 (2H, m), 2.86 (1H, dd, J = 16.8, 4.1 Hz), 3.04 (2H, dt, J = 17.4, 4.5 Hz), 3.17 (1H, dd, J = 16.7, 5.5 Hz), 4.05-4.25 (6H, m), 4.41 (1H, m), 4.62 (1H, m), 5.88 (1H, tt, J = 56.7, 4.5 Hz), 6.04 (1H, s), 6.30 (1H, t, J = 73.4 Hz), 6.84 (1H, d, J = 8.3 Hz), 6.94 (1H, s), 7.00-7.02 (2H, m).	ESI-MS m/z: 444 [M+H]+
138 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.17-2.28 (2H, m), 2.86 (1H, m), 3.04 (2H, dt, J = 17.4, 4.5 Hz), 3.17 (1H, dd, J = 16.8, 5.5 Hz), 4.05-4.26 (6H, m), 4.40 (1H, m), 4.62 (1H, m), 5.88 (1H, tt, J = 56.7, 4.5 Hz), 6.04 (1H, s), 6.30 (1H, t, J = 73.4 Hz), 6.84 (1H, d, J = 8.3 Hz), 6.94 (1H, s), 7.00-7.02 (2H, m).	ESI-MS m/z: 444 [M+H]+
139		1H-NMR ($CDCl_3$) δ : 2.16-2.26 (2H, m), 2.87 (1H, dd, J = 16.8, 3.9 Hz), 3.18 (1H, dd, J = 16.7, 5.3 Hz), 3.82 (2H, q, J = 8.8 Hz), 4.05-4.14 (3H, m), 4.20-4.23 (3H, m), 4.41 (1H, m), 4.57-4.63 (3H, m), 6.04 (1H, s), 6.30 (1H, t, J = 73.4 Hz), 6.87 (1H, d, J = 8.3 Hz), 7.00-7.05 (2H, m), 7.12 (1H, d, J = 8.0 Hz).	ESI-MS m/z: 492 [M+H]+
140 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.16-2.28 (2H, m), 2.87 (1H, dd, J = 16.8, 4.0 Hz), 3.18 (1H, dd, J = 16.7, 5.2 Hz), 3.82 (2H, q, J = 8.7 Hz), 4.05-4.14 (3H, m), 4.19-4.24 (3H, m), 4.41 (1H, s), 4.57 (2H, s), 4.63 (1H, m), 6.04 (1H, s), 6.30 (1H, t, J = 73.4 Hz), 6.87 (1H, d, J = 8.3 Hz), 7.01 (1H, d, J = 8.3 Hz), 7.05 (1H, s), 7.12 (1H, dd, J = 8.3, 2.0 Hz).	ESI-MS m/z: 492 [M+H]+
140 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.18-2.27 (2H, m), 2.87 (1H, m), 3.18 (1H, dd, J = 16.9, 5.5 Hz), 3.82 (2H, q, J = 8.7 Hz), 4.05-4.14 (3H, m), 4.20-4.24 (3H, m), 4.40 (1H, m), 4.57 (2H, s), 4.62 (1H, m), 6.05 (1H, s), 6.30 (1H, t, J = 73.4 Hz), 6.88 (1H, d, J = 8.2 Hz), 7.01 (1H, d, J = 8.1 Hz), 7.05 (1H, s), 7.12 (1H, d, J = 8.1 Hz).	ESI-MS m/z: 492 [M+H]+

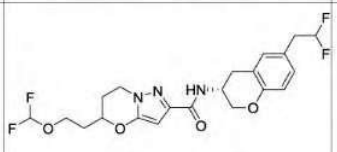
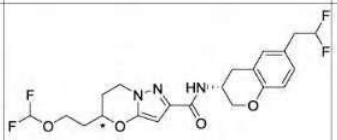
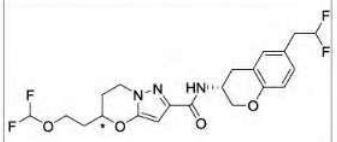
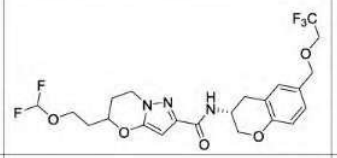
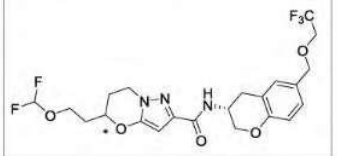
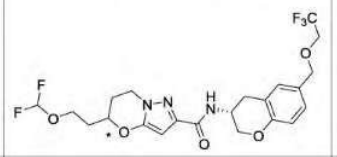
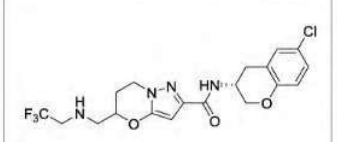
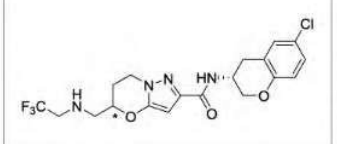
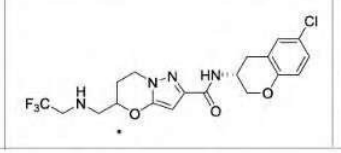
[0896]

[Table 19]

Example	Structural formula	NMR	MS
141		1H-NMR ($CDCl_3$) δ : 2.17-2.24 (2H, m), 2.82-2.88 (3H, m), 3.16 (1H, dd, J = 16.7, 5.3 Hz), 4.00-4.24 (8H, m), 4.41 (1H, m), 4.61 (1H, m), 6.00-6.48 (3H, m), 6.82 (1H, d, J = 8.3 Hz), 6.91 (1H, s), 6.97-7.33 (2H, m).	ESI-MS m/z: 474 [M+H]+
142 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.16-2.26 (2H, m), 2.82-2.88 (3H, m), 3.16 (1H, dd, J = 16.7, 5.1 Hz), 4.00-4.23 (8H, m), 4.41 (1H, m), 4.61 (1H, m), 6.00-6.48 (3H, m), 6.82 (1H, d, J = 8.2 Hz), 6.91 (1H, s), 6.98-7.03 (2H, m).	ESI-MS m/z: 474 [M+H]+
142 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.17-2.27 (2H, m), 2.82-2.88 (3H, m), 3.16 (1H, dd, J = 16.6, 5.3 Hz), 4.00-4.25 (8H, m), 4.40 (1H, m), 4.61 (1H, m), 6.00-6.48 (3H, m), 6.82 (1H, d, J = 8.3 Hz), 6.91 (1H, s), 6.98-7.03 (2H, m).	ESI-MS m/z: 474 [M+H]+
143		1H-NMR ($CDCl_3$) δ : 2.03-2.25 (4H, m), 2.91 (1H, m), 3.17 (1H, m), 4.07-4.31 (6H, m), 4.38 (1H, m), 4.63 (1H, m), 6.01 (1H, m), 6.91-6.94 (2H, m), 7.38 (1H, m), 7.42 (1H, m).	ESI-MS m/z: 437 [M+H]+
144 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.07-2.24 (4H, m), 2.91 (1H, m), 3.17 (1H, dd, J=16.6, 5.2 Hz), 4.07-4.31 (6H, m), 4.38 (1H, m), 4.63 (1H, m), 6.01 (1H, s), 6.91-6.94 (2H, m), 7.38 (1H, s), 7.42 (1H, d, J=8.7 Hz).	ESI-MS m/z: 437 [M+H]+
144 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.09-2.24 (4H, m), 2.90 (1H, dd, J=16.9, 5.0 Hz), 3.17 (1H, dd, J=5.2, 16.7 Hz), 4.06-4.31 (6H, m), 4.37 (1H, m), 4.63 (1H, s), 6.02 (1H, s), 6.90-6.94 (2H, m), 7.39 (1H, s), 7.42 (1H, d, J=8.6 Hz).	ESI-MS m/z: 437 [M+H]+
145		1H-NMR ($CDCl_3$) δ : 2.04-2.18 (3H, m), 2.23 (1H, m), 2.91 (1H, m), 3.17 (1H, m), 4.02-4.19 (4H, m), 4.23-4.31 (2H, m), 4.38 (1H, m), 4.63 (1H, m), 6.01 (1H, m), 6.22 (1H, m), 6.91-6.94 (2H, m), 7.38 (1H, m), 7.42 (1H, m).	ESI-MS m/z: 419 [M+H]+
146 (isomer A)		1H-NMR ($CDCl_3$) δ : 1.99-2.16 (3H, m), 2.23 (1H, m), 2.91 (1H, dd, J=16.7, 4.8 Hz), 3.17 (1H, dd, J=5.2, 16.8 Hz), 4.02-4.20 (4H, m), 4.23-4.32 (2H, m), 4.38 (1H, m), 4.63 (1H, m), 6.01 (1H, s), 6.22 (1H, t, J=74.4 Hz), 6.91-6.94 (2H, m), 7.38 (1H, s), 7.42 (1H, dd, J=8.5, 2.0 Hz).	ESI-MS m/z: 419 [M+H]+
146 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.01-2.17 (3H, m), 2.23 (1H, m), 2.91 (1H, m), 3.17 (1H, dd, J=16.8, 5.1 Hz), 4.02-4.13 (3H, m), 4.18 (1H, m), 4.23-4.31 (2H, m), 4.37 (1H, m), 4.63 (1H, m), 6.01 (1H, s), 6.22 (1H, t, J=74.4 Hz), 6.90-6.93 (2H, m), 7.39 (1H, s), 7.42 (1H, dd, J=8.5, 2.0 Hz).	ESI-MS m/z: 419 [M+H]+

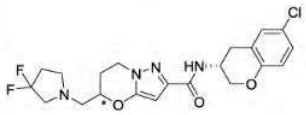
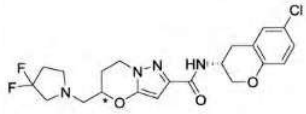
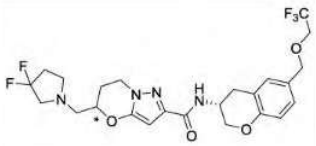
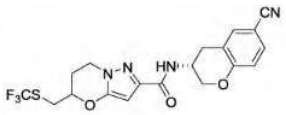
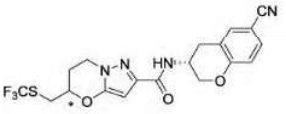
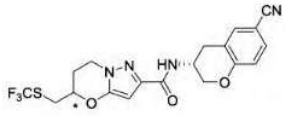
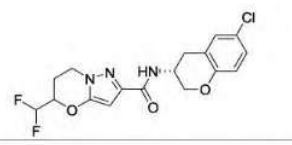
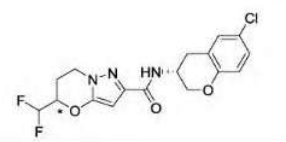
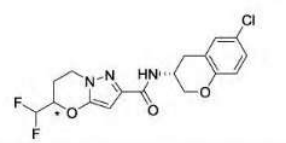
[0897]

[Table 20]

Example	Structural formula	NMR	MS
147		1H-NMR ($CDCl_3$) δ : 2.00-2.16 (3H, m), 2.22 (1H, m), 2.86 (1H, m), 2.99-3.09 (2H, m), 3.16 (1H, m), 4.02-4.21 (6H, m), 4.37 (1H, m), 4.61 (1H, m), 5.72-6.40 (3H, m), 6.84 (1H, m), 6.94 (1H, m), 7.00-7.02 (2H, m).	ESI-MS m/z: 458 [M+H]+
148 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.00-2.15 (3H, m), 2.22 (1H, m), 2.86 (1H, m), 3.02 (2H, dt, J=26.2, 4.4 Hz), 3.16 (1H, dd, J=16.8, 5.4 Hz), 4.02-4.22 (6H, m), 4.37 (1H, m), 4.61 (1H, m), 5.72-6.40 (3H, m), 6.84 (1H, d, J=8.3 Hz), 6.94 (1H, s), 7.01 (2H, m).	ESI-MS m/z: 458 [M+H]+
148 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.00-2.16 (3H, m), 2.22 (1H, m), 2.86 (1H, m), 3.02 (2H, dt, J=26.2, 4.2 Hz), 3.17 (1H, m), 4.03-4.21 (6H, m), 4.36 (1H, m), 4.62 (1H, m), 5.73-6.40 (3H, m), 6.84 (1H, d, J=8.3 Hz), 6.94 (1H, s), 7.00-7.02 (2H, m).	ESI-MS m/z: 458 [M+H]+
149		1H-NMR ($CDCl_3$) δ : 2.02-2.24 (4H, m), 2.87 (1H, m), 3.18 (1H, m), 3.79-3.85 (2H, m), 4.02-4.22 (6H, m), 4.37 (1H, m), 4.57-4.63 (3H, m), 6.00 (1H, m), 6.22 (1H, m), 6.87 (1H, m), 7.00 (1H, m), 7.05 (1H, m), 7.12 (1H, m).	ESI-MS m/z: 506 [M+H]+
150 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.00-2.30 (4H, m), 2.87 (1H, m), 3.18 (1H, dd, J=16.6, 5.1 Hz), 3.82 (2H, q, J=8.7 Hz), 4.02-4.23 (6H, m), 4.38 (1H, m), 4.57 (2H, s), 4.63 (1H, m), 6.00 (1H, s), 6.22 (1H, t, J=74.4 Hz), 6.87 (1H, d, J=8.3 Hz), 7.00 (1H, d, J=7.8 Hz), 7.05 (1H, s), 7.12 (1H, d, J=7.8 Hz).	ESI-MS m/z: 506 [M+H]+
150 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.00-2.25 (4H, m), 2.87 (1H, dd, J=17.1, 4.3 Hz), 3.18 (1H, dd, J=16.8, 5.4 Hz), 3.82 (2H, q, J=8.8 Hz), 4.02-4.23 (6H, m), 4.37 (1H, m), 4.57 (2H, s), 4.62 (1H, m), 6.00 (1H, s), 6.22 (1H, t, J=74.4 Hz), 6.87 (1H, d, J=8.3 Hz), 7.01 (1H, d, J=7.6 Hz), 7.05 (1H, s), 7.12 (1H, dd, J=8.3, 2.0 Hz).	ESI-MS m/z: 506 [M+H]+
151		1H-NMR ($CDCl_3$) δ : 2.14-2.27 (2H, m), 2.84 (1H, dd, J=16.5, 4.0 Hz), 3.05-3.26 (5H, m), 4.04-4.22 (5H, m), 4.28 (1H, m), 4.61 (1H, m), 6.00 (1H, s), 6.81 (1H, d, J=8.7 Hz), 6.98-7.09 (3H, m).	ESI-MS m/z: 445 [M+H]+
152 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.15-2.23 (2H, m), 2.84 (1H, dd, J=17.0, 4.3 Hz), 3.03-3.08 (2H, m), 3.15 (1H, dd, J=16.9, 5.4 Hz), 3.26 (2H, q, J=9.3 Hz), 4.09 (1H, m), 4.16-4.22 (3H, m), 4.28 (1H, m), 4.60 (1H, m), 6.01 (1H, s), 6.81 (1H, d, J=8.7 Hz), 6.99 (1H, d, J=7.2 Hz), 7.04 (1H, s), 7.08 (1H, dd, J=8.7, 2.3 Hz).	ESI-MS m/z: 445 [M+H]+
152 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.14-2.27 (2H, m), 2.85 (1H, m), 3.03-3.08 (2H, m), 3.15 (1H, m), 3.26 (2H, q, J=9.3 Hz), 4.08 (1H, m), 4.18-4.22 (3H, m), 4.29 (1H, m), 4.61 (1H, m), 6.01 (1H, s), 6.81 (1H, d, J=8.7 Hz), 6.99 (1H, d, J=7.8 Hz), 7.04 (1H, s), 7.08 (1H, dd, J=8.6, 2.4 Hz).	ESI-MS m/z: 445 [M+H]+

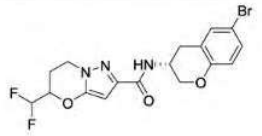
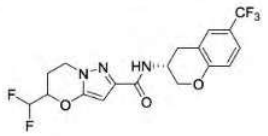
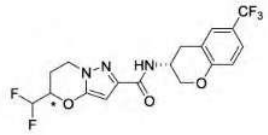
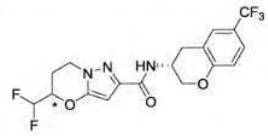
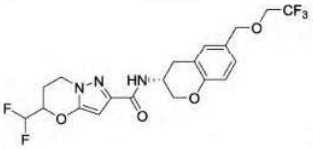
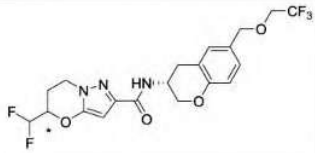
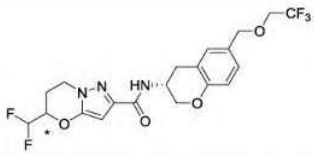
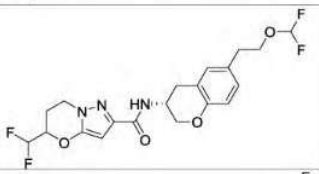
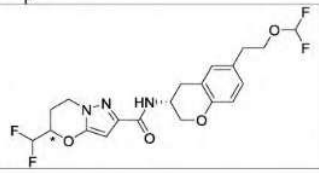
[0898]

[Table 21]

Example	Structural formula	NMR	MS
153 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.10-2.34 (4H, m), 2.76-2.90 (5H, m), 2.93-3.10 (2H, m), 3.14 (1H, dd, J = 16.7, 5.1 Hz), 4.08 (1H, m), 4.15-4.21 (3H, m), 4.31 (1H, m), 4.60 (1H, m), 6.01 (1H, s), 6.81 (1H, d, J = 8.6 Hz), 6.98 (1H, d, J = 8.3 Hz), 7.04 (1H, s), 7.08 (1H, d, J = 9.0 Hz).	ESI-MS m/z: 453 [M+H]+
153 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.10-2.34 (4H, m), 2.77-2.90 (5H, m), 2.94-3.08 (2H, m), 3.15 (1H, m), 4.08 (1H, m), 4.19 (3H, d, J = 2.4 Hz), 4.29 (1H, m), 4.61 (1H, m), 6.01 (1H, s), 6.81 (1H, d, J = 8.6 Hz), 6.98 (1H, d, J = 7.8 Hz), 7.04 (1H, s), 7.08 (1H, d, J = 9.0 Hz).	ESI-MS m/z: 453 [M+H]+
154 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.10-2.33 (4H, m), 2.76-2.90 (5H, m), 2.93-3.08 (2H, m), 3.18 (1H, dd, J = 16.5, 5.0 Hz), 3.82 (2H, q, J = 8.7 Hz), 4.08 (1H, m), 4.15-4.20 (3H, m), 4.30 (1H, m), 4.57 (2H, s), 4.62 (1H, m), 6.01 (1H, s), 6.87 (1H, d, J = 8.3 Hz), 7.00 (1H, d, J = 8.1 Hz), 7.04 (1H, s), 7.12 (1H, d, J = 8.0 Hz).	ESI-MS m/z: 531 [M+H]+
155		1H-NMR ($CDCl_3$) δ : 2.20 (1H, m), 2.38 (1H, m), 2.91 (1H, dd, J=17.7, 4.4 Hz), 3.12-3.22 (2H, m), 3.30 (1H, dd, J=15.7, 6.3 Hz), 4.09 (1H, m), 4.07-4.17 (1H, m), 4.18-4.31 (3H, m), 4.63 (1H, m), 6.04 (1H, s), 6.93 (2H, m), 7.38 (1H, s), 7.42 (1H, d, J =8.7 Hz).	ESI-MS m/z: 439 [M+H]+
156 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.20 (1H, m), 2.38 (1H, m), 2.91 (1H, dd, J=17.7, 4.4 Hz), 3.12-3.22 (2H, m), 3.30 (1H, dd, J=15.7, 6.3 Hz), 4.09 (1H, m), 4.07-4.17 (1H, m), 4.18-4.31 (3H, m), 4.63 (1H, m), 6.04 (1H, s), 6.93 (2H, m), 7.38 (1H, s), 7.42 (1H, d, J =8.7 Hz).	ESI-MS m/z: 439 [M+H]+
156 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.20 (1H, m), 2.38 (1H, m), 2.91 (1H, dd, J=17.7, 4.4 Hz), 3.12-3.22 (2H, m), 3.30 (1H, dd, J=15.7, 6.3 Hz), 4.09 (1H, m), 4.07-4.17 (1H, m), 4.18-4.31 (3H, m), 4.63 (1H, m), 6.04 (1H, s), 6.93 (2H, m), 7.38 (1H, s), 7.42 (1H, d, J =8.7 Hz).	ESI-MS m/z: 439 [M+H]+
157		1H-NMR ($CDCl_3$) δ : 2.26-2.38 (2H, m), 2.84 (1H, dd, J=16.7, 3.5 Hz), 3.15 (1H, dd, J=16.9, 5.5 Hz), 4.08-4.19 (3H, m), 4.27 (1H, m), 4.38 (1H, m), 4.61 (1H, m), 5.82-6.10 (2H, m), 6.81 (1H, d, J=8.7 Hz), 6.98-7.10 (3H, m).	ESI-MS m/z: 384 [M+H]+
158 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.29-2.36 (2H, m), 2.84 (1H, dd, J=16.8, 4.0 Hz), 3.15 (1H, dd, J=16.8, 5.4 Hz), 4.08-4.30 (4H, m), 4.38 (1H, m), 4.61 (1H, m), 5.90 (1H, dt, J=82.1, 3.4 Hz), 6.08 (1H, s), 6.81 (1H, d, J=8.6 Hz), 6.99 (1H, d, J=8.2 Hz), 7.04 (1H, s), 7.09 (1H, dd, J=8.7, 2.4 Hz).	ESI-MS m/z: 384 [M+H]+
158 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.26-2.38 (2H, m), 2.85 (1H, dd, J=16.6, 3.7 Hz), 3.15 (1H, dd, J=16.6, 5.1 Hz), 4.08-4.38 (4H, m), 4.38 (1H, m), 4.60 (1H, m), 5.83-6.11 (2H, m), 6.81 (1H, d, J=8.7 Hz), 6.99 (1H, d, J=7.1 Hz), 7.04 (1H, s), 7.09 (1H, dd, J=8.7, 2.4 Hz).	ESI-MS m/z: 384 [M+H]+

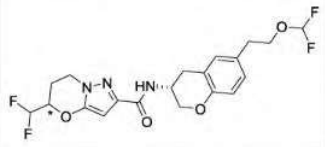
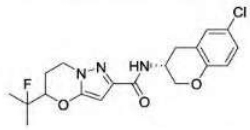
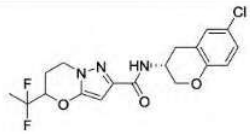
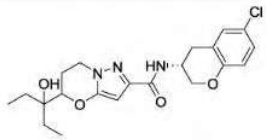
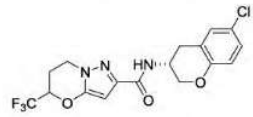
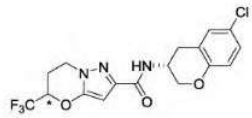
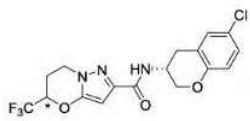
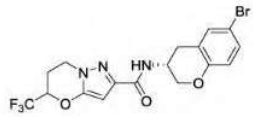
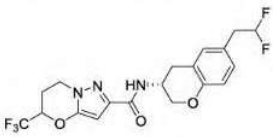
[0899]

[Table 22]

Example	Structural formula	NMR	MS
159		1H-NMR ($CDCl_3$) δ : 2.28-2.38 (2H, m), 2.85 (1H, dd, J=16.7, 3.7 Hz), 3.15 (1H, dd, J=16.9, 5.4 Hz), 4.08-4.29 (4H, m), 4.37 (1H, m), 4.60 (1H, m), 5.90 (1H, dt, J=82.3, 3.2 Hz), 6.08 (1H, s), 6.76 (1H, d, J=8.6 Hz), 6.99 (1H, d, J=7.8 Hz), 7.19 (1H, s), 7.22 (1H, dd, J=8.6, 2.4 Hz).	ESI-MS m/z: 428, 430 [M+H]+
160		1H-NMR ($CDCl_3$) δ : 2.28-2.38 (2H, m), 2.92 (1H, m), 3.21 (1H, m), 4.12 (1H, m), 4.22-4.42 (4H, m), 4.65 (1H, m), 5.83-6.10 (2H, m), 6.94-6.98 (2H, m), 7.33 (1H, m), 7.39 (1H, m).	ESI-MS m/z: 418 [M+H]+
161 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.25-2.40 (2H, m), 2.92 (1H, dd, J=16.9, 4.2 Hz), 3.21 (1H, dd, J=16.9, 5.4 Hz), 4.12 (1H, m), 4.25-4.30 (3H, m), 4.39 (1H, m), 4.65 (1H, m), 5.82-6.10 (2H, m), 6.94-6.98 (2H, m), 7.33 (1H, s), 7.38 (1H, d, J=8.6 Hz).	ESI-MS m/z: 418 [M+H]+
161 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.28-2.35 (2H, m), 2.92 (1H, dd, J=16.3, 4.1 Hz), 3.21 (1H, dd, J=16.4, 5.2 Hz), 4.12 (1H, m), 4.25-4.30 (3H, m), 4.38 (1H, m), 4.65 (1H, m), 5.83-6.11 (2H, m), 6.94-6.98 (2H, m), 7.33 (1H, s), 7.39 (1H, d, J=8.8 Hz).	ESI-MS m/z: 418 [M+H]+
162		1H-NMR ($CDCl_3$) δ : 2.24-2.37 (2H, m), 2.87 (1H, m), 3.18 (1H, m), 3.77-3.86 (2H, m), 4.11 (1H, m), 4.20-4.21 (2H, m), 4.26 (1H, m), 4.38 (1H, m), 4.57 -4.63 (3H, m), 5.82-6.10 (2H, m), 6.88 (1H, m), 7.01 (1H, m), 7.05 (1H, m), 7.12 (1H, m).	ESI-MS m/z: 462 [M+H]+
163 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.25-2.37 (2H, m), 2.87 (1H, m), 3.18 (1H, dd, J=16.9, 5.6 Hz), 3.82 (2H, q, J=8.7 Hz), 4.12 (1H, m), 4.21 (2H, d, J=2.1 Hz), 4.26 (1H, m), 4.38 (1H, m), 4.57 (2H, s), 4.62 (1H, m), 5.82-6.10 (2H, m), 6.88 (1H, d, J=8.4 Hz), 7.01 (1H, d, J=8.1 Hz), 7.05 (1H, s), 7.12 (1H, d, J=8.7 Hz).	ESI-MS m/z: 462 [M+H]+
163 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.26-2.39 (2H, m), 2.87 (1H, dd, J=16.5, 4.0 Hz), 3.18 (1H, dd, J=16.7, 5.4 Hz), 3.82 (2H, q, J=8.8 Hz), 4.11 (1H, m), 4.20 (2H, d, J=2.92 Hz), 4.27 (1H, m), 4.37 (1H, m), 4.57 (2H, s), 4.63 (1H, m), 5.82-6.11 (2H, m), 6.88 (1H, d, J=8.3 Hz), 7.01 (1H, d, J=8.0 Hz), 7.05 (1H, s), 7.12 (1H, dd, J=8.4, 2.0 Hz).	ESI-MS m/z: 462 [M+H]+
164		1H-NMR ($CDCl_3$) δ : 2.25-2.38 (2H, m), 2.82-2.88 (3H, m), 3.17 (1H, m), 4.00-4.03 (2H, m), 4.07-4.18 (3H, m), 4.27 (1H, m), 4.38 (1H, m), 4.61 (1H, m), 5.82-6.38 (3H, m), 6.82 (1H, m), 6.91 (1H, m), 6.99 (1H, m), 7.03 (1H, m).	ESI-MS m/z: 444 [M+H]+
165 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.25-2.37 (2H, m), 2.82-2.88 (3H, m), 3.17 (1H, dd, J=16.6, 5.4 Hz), 4.01 (2H, t, J=7.1 Hz), 4.09-4.18 (3H, m), 4.27 (1H, m), 4.38 (1H, m), 4.62 (1H, m), 5.82-6.38 (3H, m), 6.82 (1H, d, J=8.3 Hz), 6.91 (1H, s), 6.99 (1H, d, J=8.4 Hz), 7.03 (1H, d, J=8.0 Hz).	ESI-MS m/z: 444 [M+H]+

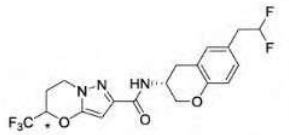
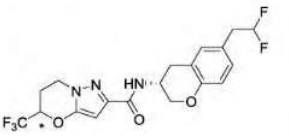
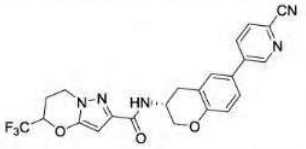
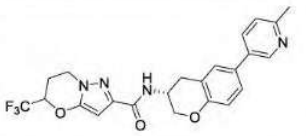
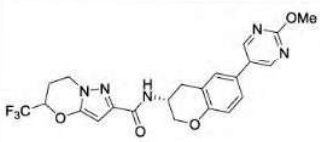
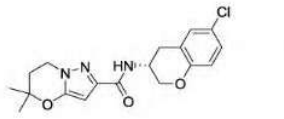
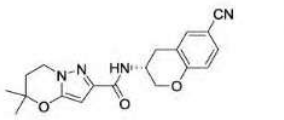
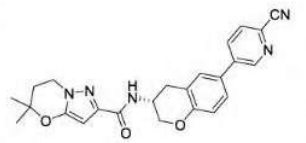
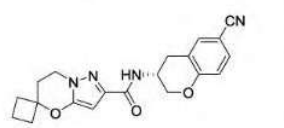
[0900]

[Table 23]

Example	Structural formula	NMR	MS
165 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.26-2.39 (2H, m), 2.82-2.88 (3H, m), 3.17 (1H, dd, J=16.7, 5.4 Hz), 4.01 (2H, t, J=7.1 Hz), 4.07-4.18 (3H, m), 4.28 (1H, m), 4.37 (1H, m), 4.61 (1H, m), 5.82-6.38 (3H, m), 6.82 (1H, d, J=8.3 Hz), 6.91 (1H, s), 6.99 (1H, dd, J=8.4, 2.0 Hz), 7.03 (1H, d, J=7.9 Hz).	ESI-MS m/z: 444 [M+H]+
166		1H-NMR ($CDCl_3$) δ : 1.44-1.54 (6H, m), 2.17 (1H, m), 2.31 (1H, m), 2.84 (1H, dd, J=16.7, 3.8 Hz), 3.15 (1H, dd, J=16.8, 5.3 Hz), 4.03-4.13 (2H, m), 4.19 (2H, d, J=3.0 Hz), 4.24 (1H, dd, J=12.6, 5.9 Hz), 4.60 (1H, m), 6.03 (1H, s), 6.81 (1H, d, J=8.6 Hz), 6.99 (1H, d, J=8.1 Hz), 7.04 (1H, s), 7.08 (1H, dd, J=8.7, 2.4 Hz).	ESI-MS m/z: 394 [M+H]+
167		1H-NMR ($CDCl_3$) δ : 1.78 (3H, t, J=19.1 Hz), 2.24-2.41 (2H, m), 2.85 (1H, m), 3.15 (1H, dd, J=16.9, 5.3 Hz), 4.09 (1H, m), 4.19 (2H, d, J=2.8 Hz), 4.23-4.29 (2H, m), 4.60 (1H, m), 6.07 (1H, s), 6.81 (1H, d, J=8.7 Hz), 6.99 (1H, d, J=8.0 Hz), 7.04 (1H, s), 7.09 (1H, dd, J=8.6, 2.4 Hz).	ESI-MS m/z: 398 [M+H]+
168		1H-NMR ($CDCl_3$) δ : 0.91-0.95 (6H, m), 1.44-1.77 (5H, m), 2.17-2.28 (2H, m), 2.85 (1H, m), 3.14 (1H, dd, J=16.4, 5.2 Hz), 4.01-4.12 (2H, m), 4.15-4.25 (3H, m), 4.60 (1H, m), 6.01 (1H, s), 6.81 (1H, d, J=8.7 Hz), 6.99 (1H, d, J=8.0 Hz), 7.04 (1H, s), 7.08 (1H, d, J=8.8 Hz).	ESI-MS m/z: 420 [M+H]+
169		1H-NMR ($CDCl_3$) δ : 2.32-2.50 (2H, m), 2.84 (1H, dd, J=16.0, 4.6 Hz), 3.15 (1H, dd, J=17.4, 5.8 Hz), 4.09-4.24 (3H, m), 4.25-4.32 (1H, m), 4.58-4.62 (2H, m), 6.13 (1H, s), 6.81 (1H, d, J = 9.2 Hz), 6.98-7.10 (3H, m).	ESI-MS m/z: 402 [M+H]+
170 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.29-2.51 (2H, m), 2.83 (1H, dd, J=16.0, 4.6 Hz), 3.15 (1H, dd, J=17.4, 5.8 Hz), 4.10-4.24 (3H, m), 4.25-4.32 (1H, m), 4.57-4.61 (2H, m), 6.13 (1H, s), 6.81 (1H, d, J = 9.2 Hz), 6.96-7.12 (3H, m).	ESI-MS m/z: 402 [M+H]+
170 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.29-2.49 (2H, m), 2.84 (1H, dd, J=16.0, 4.6 Hz), 3.15 (1H, dd, J=17.4, 5.8 Hz), 4.10-4.26 (3H, m), 4.27-4.34 (1H, m), 4.57-4.60 (2H, m), 6.13 (1H, s), 6.81 (1H, d, J = 9.2 Hz), 6.95-7.16 (3H, m).	ESI-MS m/z: 402 [M+H]+
171		1H-NMR ($CDCl_3$) δ : 2.40-2.45 (2H, m), 2.81 (1H, dd, J=17.0, 3.9 Hz), 3.16 (1H, dd, J=16.7, 5.0 Hz), 4.10-4.23 (3H, m), 4.26-4.31 (1H, m), 4.56-4.61 (2H, m), 6.13 (1H, s), 6.77 (1H, d, J = 8.6 Hz), 6.99 (1H, d, J=8.4 Hz), 7.19-7.24 (2H, m).	ESI-MS m/z: 446, 448 [M+H]+
172		1H-NMR ($CDCl_3$) δ : 2.33-2.46 (2H, m), 2.86 (1H, dd, J = 16.9, 3.4 Hz), 3.04 (2H, dt, J = 17.4, 4.4 Hz), 3.17 (1H, dd, J = 16.8, 5.7 Hz), 4.10-4.19 (3H, m), 4.27 (1H, m), 4.55-4.65 (2H, m), 5.88 (1H, tt, J = 56.7, 4.5 Hz), 6.13 (1H, s), 6.85 (1H, d, J = 8.3 Hz), 6.94 (1H, s), 7.01 (2H, d, J = 8.4 Hz).	ESI-MS m/z: 432 [M+H]+

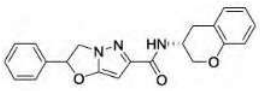
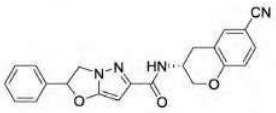
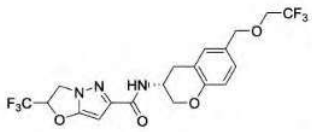
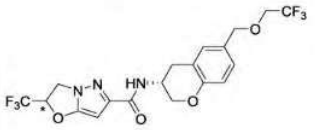
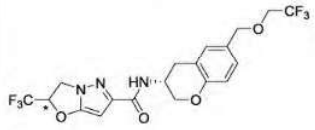
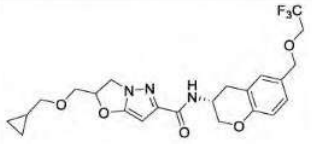
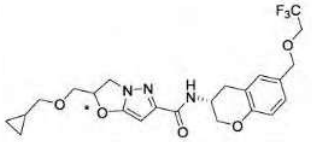
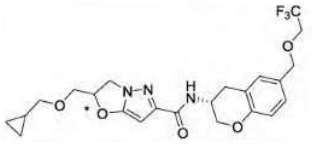
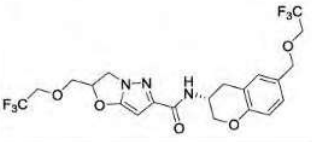
[0901]

[Table 24]

Example	Structural formula	NMR	MS
173 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.34-2.45 (2H, m), 2.86 (1H, m), 3.04 (2H, dt, J = 17.3, 4.5 Hz), 3.18 (1H, dd, J = 16.9, 5.3 Hz), 4.12-4.20 (3H, m), 4.26 (1H, m), 4.58-4.62 (2H, m), 5.88 (1H, m), 6.13 (1H, s), 6.85 (1H, d, J = 8.4 Hz), 6.94 (1H, s), 7.02 (2H, d, J = 8.8 Hz).	ESI-MS m/z: 432 [M+H]+
173 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.35-2.74 (2H, m), 2.86 (1H, dd, J = 16.9, 3.8 Hz), 3.04 (2H, dt, J = 17.4, 4.5 Hz), 3.17 (1H, dd, J = 16.7, 5.4 Hz), 4.10-4.19 (3H, m), 4.29 (1H, m), 4.53-4.65 (2H, m), 5.88 (1H, tt, J = 56.7, 4.5 Hz), 6.13 (1H, s), 6.85 (1H, d, J = 8.3 Hz), 6.94 (1H, s), 7.01 (2H, dd, J = 8.4, 2.0 Hz).	ESI-MS m/z: 432 [M+H]+
174		1H-NMR ($CDCl_3$) δ : 2.35-2.46 (2H, m), 2.98 (1H, dd, J=16.3, 4.0 Hz), 3.26 (1H, dd, J=17.1, 5.7 Hz), 4.10-4.19 (1H, m), 4.24-4.31 (3H, m), 4.55-4.61 (1H, m), 4.66-4.68 (1H, m), 6.15 (1H, s), 7.01-7.04 (2H, m), 7.32 (1H, s), 7.39 (1H, dd, J = 8.6, 2.4 Hz), 7.73 (1H, d, J=8.1 Hz), 7.93 (1H, dd, J=8.0, 2,1 Hz), 8.89 (1H, d, J=1.8 Hz).	ESI-MS m/z: 470 [M+H]+
175		1H-NMR ($CDCl_3$) δ : 2.33-2.47 (2H, m), 2.59 (3H, s), 2.97 (1H, dd, J=15.6, 3.0 Hz), 3.25 (1H, dd, J=16.6, 5.2 Hz), 4.12-4.19 (1H, m), 4.25-4.31 (3H, m), 4.54-4.60 (1H, m), 4.65-4.68 (1H, m), 6.14 (1H, s), 6.98 (1H, d, J=8.4 Hz), 7.05 (1H, d, J=7.8 Hz), 7.19 (1H, d, J=8.1 Hz), 7.33-7.35 (1H, m), 7.71 (1H, dd, J=8.1, 2.1 Hz), 8.67 (1H, d, J=1.3 Hz).	ESI-MS m/z: 459 [M+H]+
176		1H-NMR ($CDCl_3$) δ : 2.33-2.46 (2H, m), 2.96 (1H, dd, J=16.3, 3.3 Hz), 3.25 (1H, dd, J=16.2, 5.4 Hz), 4.05 (3H, s), 4.12-4.19 (1H, m), 4.25-4.30 (3H, m), 4.54-4.61 (1H, m), 4.66-4.68 (1H, m), 6.14 (1H, s), 6.98-7.05 (2H, m), 7.21 (1H, s), 7.26-7.30 (1H, m), 8.66 (2H, d, J=1.3 Hz).	ESI-MS m/z: 476 [M+H]+
177		1H-NMR ($CDCl_3$) δ : 1.42 (6H, s), 2.08 (2H, t, J=6.5 Hz), 2.84 (1H, dd, J=17.3, 4.2 Hz), 3.14 (1H, dd, J=16.5, 5.3 Hz), 4.10 (2H, t, J=6.5 Hz), 4.19 (2H, d, J=3.1 Hz), 4.60-4.61 (1H, m), 5.97 (1H, s), 6.81 (1H, d, J=8.6 Hz), 6.97-7.09 (3H, m).	ESI-MS m/z: 362 [M+H]+
178		1H-NMR ($CDCl_3$) δ : 1.42 (6H, s), 2.08 (2H, t, J=6.5 Hz), 2.91 (1H, dd, J=17.0, 4.8 Hz), 3.17 (1H, dd, J=17.0, 5.6 Hz), 4.10 (2H, t, J=5.5 Hz), 4.26-4.32 (2H, m), 4.62-4.65 (1H, m), 5.97 (1H, s), 6.91-6.94 (2H, m), 7.39 (1H, s), 7.42 (1H, d, J=8.5 Hz).	ESI-MS m/z: 353 [M+H]+
179		1H-NMR ($CDCl_3$) δ : 1.42 (6H, d, J=3.7 Hz), 2.08 (2H, t, J=6.4 Hz), 2.98 (1H, dd, J=16.1, 4.0 Hz), 3.25 (1H, dd, J=16.5, 5.3 Hz), 4.09 (2H, t, J=6.9 Hz), 4.23-4.31 (2H, m), 4.66-4.67 (1H, m), 5.98 (1H, s), 7.02 (2H, d, J=8.5 Hz), 7.31 (1H, s), 7.39 (1H, dd, J=8.5, 2.1 Hz), 7.73 (1H, d, J=8.1 Hz), 7.93 (1H, dd, J=8.1, 2.3 Hz), 8.89 (1H, d, J=1.6 Hz).	ESI-MS m/z: 430 [M+H]+
180		1H-NMR ($CDCl_3$) δ : 1.66-1.75 (1H, m), 1.91-2.04 (1H, m), 2.09-2.27 (4H, m), 2.36 (2H, m), 2.90 (1H, dd, J=16.1, 5.0 Hz), 3.16 (1H, dd, J=17.0, 5.0 Hz), 4.10 (2H, t, J=6.3 Hz), 4.21-4.32 (2H, m), 4.63 (1H, m), 6.00 (1H, s), 6.88-6.95 (2H, m), 7.38 (1H, s), 7.42 (1H, d, J=8.4 Hz).	ESI-MS m/z: 365 [M+H]+

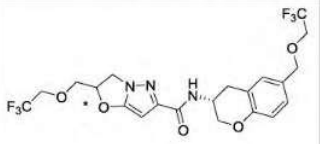
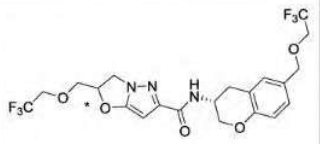
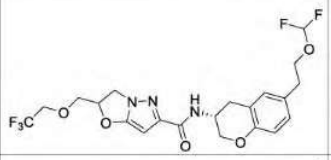
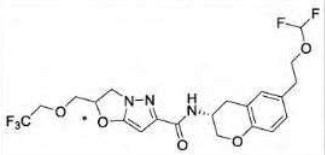
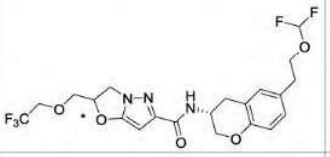
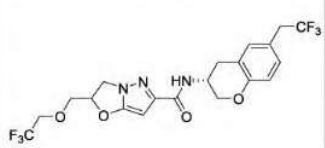
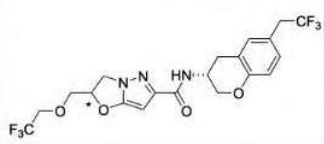
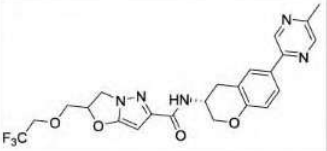
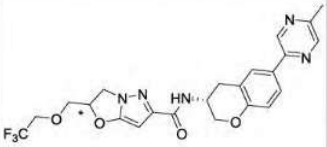
[0902]

[Table 25]

Example	Structural formula	NMR	MS
181		1H-NMR ($CDCl_3$) δ : 2.88 (1H, dd, J=16.2, 4.0 Hz), 3.20 (1H, dd, J=16.9, 4.3 Hz), 4.15-4.21 (3H, m), 4.57-4.65 (2H, m), 5.98 (1H, s), 6.18 (1H, dt, J=12.4, 3.2 Hz), 6.86-6.91 (2H, m), 7.05-7.07 (2H, m), 7.13 (1H, t, J=7.4 Hz), 7.37-7.44 (5H, m).	ESI-MS m/z: 362 [M+H]+
182		1H-NMR ($CDCl_3$) δ : 2.91 (1H, dd, J=16.6, 4.5 Hz), 3.18 (1H, dd, J=17.1, 4.1 Hz), 4.18 (1H, m), 4.24-4.33 (2H, m), 4.59-4.68 (2H, m), 5.99 (1H, s), 6.20 (1H, dt, J=12.5, 1.8 Hz), 6.91-6.98 (2H, m), 7.36-7.45 (7H, m).	ESI-MS m/z: 409 [M+H]+
183		1H-NMR ($CDCl_3$) δ : 2.86 (1H, dd, J= 16.8, 5.2 Hz), 3.19 (1H, dd, J= 16.8, 5.6 Hz), 3.82 (2H, dd, J= 17.8, 9.7 Hz), 4.16-4.25 (2H, m), 4.36 (1H, dd, J= 10.5, 5.5 Hz), 4.50 (1H, t, J=9.5 Hz) 4.57 (2H, s), 4.63 (1H, m), 5.50 (1H, m), 6.03 (1H, s), 6.88 (1H, d, J=8.8 Hz), 7.00 (1H, d, J=6.8 Hz), 7.05 (1H, s), 7.12 (1H, d, J = 8.8 Hz).	ESI-MS m/z: 466 [M+H]+
184 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.86 (1H, dd, J= 16.8, 5.2 Hz), 3.19 (1H, dd, J= 16.8, 5.6 Hz), 3.82 (2H, dd, J= 17.8, 9.7 Hz), 4.16-4.25 (2H, m), 4.36 (1H, dd, J= 10.5, 5.5 Hz), 4.50 (1H, t, J=9.5 Hz) 4.57 (2H, s), 4.63 (1H, m), 5.50 (1H, m), 6.03 (1H, s), 6.88 (1H, d, J=8.8 Hz), 7.00 (1H, d, J=6.8 Hz), 7.05 (1H, s), 7.12 (1H, d, J = 8.8 Hz).	ESI-MS m/z: 466 [M+H]+
184 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.86 (1H, dd, J= 16.8, 5.2 Hz), 3.19 (1H, dd, J= 16.8, 5.6 Hz), 3.82 (2H, dd, J= 17.8, 9.7 Hz), 4.16-4.25 (2H, m), 4.36 (1H, dd, J= 10.5, 5.5 Hz), 4.50 (1H, t, J=9.5 Hz) 4.57 (2H, s), 4.63 (1H, m), 5.50 (1H, m), 6.03 (1H, s), 6.88 (1H, d, J=8.8 Hz), 7.00 (1H, d, J=6.8 Hz), 7.05 (1H, s), 7.12 (1H, d, J = 8.8 Hz).	ESI-MS m/z: 466 [M+H]+
185		1H-NMR ($CDCl_3$) δ : 0.15-0.19 (2H, m), 0.50-0.57 (2H, m), 1.02 (1H, m), 2.87 (1H, m), 3.18 (1H, m), 3.36 (2H, dd, J = 6.9, 3.8 Hz), 3.73-3.85 (4H, m), 4.14-4.20 (3H, m), 4.31 (1H, dt, J = 13.6, 4.4 Hz), 4.57 (2H, s), 4.63 (1H, m), 5.41 (1H, m), 5.91 (1H, s), 6.87 (1H, d, J = 8.3 Hz), 7.00-7.14 (2H, m), 7.11 (1H, dd, J = 8.3, 2.1 Hz).	ESI-MS m/z: 482 [M+H]+
186 (isomer A)		1H-NMR ($CDCl_3$) δ : 0.14-0.23 (2H, m), 0.49-0.57 (2H, m), 1.02 (1H, m), 2.87 (1H, dd, J = 16.8, 4.3 Hz), 3.18 (1H, dd, J = 16.6, 5.3 Hz), 3.36 (2H, d, J = 6.9 Hz), 3.73-3.85 (4H, m), 4.14-4.21 (3H, m), 4.30 (1H, t, J = 9.2 Hz), 4.56 (2H, s), 4.63 (1H, m), 5.41 (1H, m), 5.90 (1H, s), 6.87 (1H, d, J = 8.3 Hz), 7.00-7.04 (2H, m), 7.11 (1H, dd, J = 8.4, 2.0 Hz).	ESI-MS m/z: 482 [M+H]+
186 (isomer B)		1H-NMR ($CDCl_3$) δ : 0.19 (2H, s), 0.54 (2H, d, J = 7.8 Hz), 1.03 (1H, m), 2.86 (1H, m), 3.18 (1H, dd, J = 16.6, 5.0 Hz), 3.37 (2H, d, J = 6.9 Hz), 3.74-3.85 (4H, m), 4.16-4.20 (3H, m), 4.29 (1H, t, J = 9.1 Hz), 4.57 (2H, s), 4.63 (1H, m), 5.40 (1H, m), 5.90 (1H, s), 6.87 (1H, d, J = 8.3 Hz), 7.00 (1H, d, J = 8.2 Hz), 7.04 (1H, s), 7.11 (1H, s).	ESI-MS m/z: 482 [M+H]+
187		1H-NMR ($CDCl_3$) δ : 2.84-2.89 (1H, m), 3.15-3.21 (1H, m), 3.20 (1H, d, J=5.16 Hz), 3.82 (2H, q, J=8.8 Hz), 3.89-3.99 (4H, m), 4.15-4.21 (3H, m), 4.31 (1H, dt, J=14.1, 4.3 Hz), 4.57 (1H, s), 4.63 (1H, m), 5.42 (1H, m), 5.92 (1H, s), 6.87 (1H, d, J=8.4 Hz), 7.00-7.04 (2H, m), 7.11 (1H, d, J=8.6 Hz).	ESI-MS m/z: 510 [M+H]+

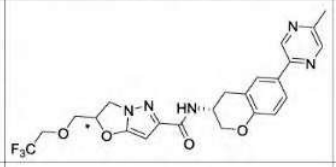
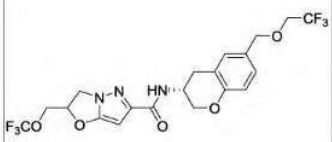
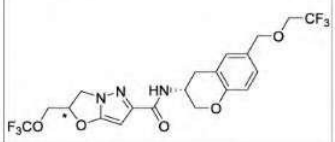
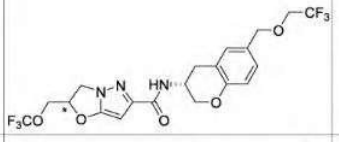
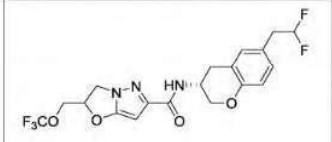
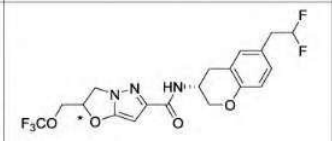
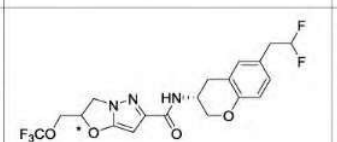
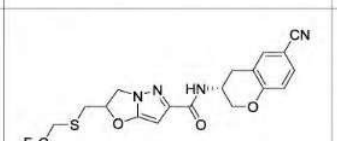
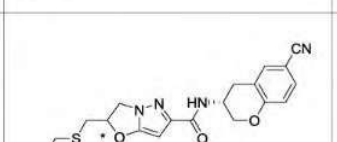
[0903]

[Table 26]

Example	Structural formula	NMR	MS
188 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.83-2.90 (1H, m), 3.15-3.23 (1H, m), 3.20 (1H, d, J=5.16 Hz), 3.82 (2H, q, J=8.8 Hz), 3.89-3.97 (4H, m), 4.15-4.23 (3H, m), 4.30 (1H, dt, J=14.1, 4.3 Hz), 4.57 (1H, s), 4.65 (1H, m), 5.42 (1H, m), 5.92 (1H, s), 6.87 (1H, d, J=8.4 Hz), 6.99-7.05 (2H, m), 7.11 (1H, d, J=8.6 Hz).	ESI-MS m/z: 510 [M+H]+
188 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.85-2.91 (1H, m), 3.14-3.25 (1H, m), 3.20 (1H, d, J=5.2 Hz), 3.81 (2H, q, J=8.8 Hz), 3.89-3.98 (4H, m), 4.16-4.23 (3H, m), 4.30 (1H, dt, J=4.3, 14.1 Hz), 4.58 (1H, s), 4.65 (1H, m), 5.42 (1H, m), 5.92 (1H, s), 6.88 (1H, d, J=8.4 Hz), 6.99-7.06 (2H, m), 7.11 (1H, d, J=8.6 Hz).	ESI-MS m/z: 510 [M+H]+
189		1H-NMR ($CDCl_3$) δ : 2.82-2.88 (3H, m), 3.16 (1H, dd, J = 16.7, 5.3 Hz), 3.89-4.03 (6H, m), 4.16-4.21 (3H, m), 4.32 (1H, dt, J = 9.3, 4.4 Hz), 4.61 (1H, m), 5.41 (1H, m), 5.92 (1H, s), 6.19 (1H, t, J = 74.8 Hz), 6.81 (1H, d, J = 8.4 Hz), 6.90 (1H, s), 6.97-7.03 (2H, m).	ESI-MS m/z: 492 [M+H]+
190 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.82-2.88 (3H, m), 3.16 (1H, dd, J = 16.6, 5.4 Hz), 3.89-4.03 (6H, m), 4.16-4.20 (3H, m), 4.33 (1H, t, J = 9.3 Hz), 4.61 (1H, m), 5.42 (1H, m), 5.92 (1H, s), 6.19 (1H, t, J = 74.8 Hz), 6.81 (1H, d, J = 8.3 Hz), 6.90 (1H, s), 6.97-7.03 (2H, m).	ESI-MS m/z: 492 [M+H]+
190 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.81-2.88 (3H, m), 3.16 (1H, dd, J = 16.7, 5.5 Hz), 3.90-4.03 (6H, m), 4.18-4.21 (3H, m), 4.31 (1H, t, J = 9.3 Hz), 4.61 (1H, m), 5.41 (1H, m), 5.92 (1H, s), 6.19 (1H, t, J = 74.8 Hz), 6.81 (1H, d, J = 8.3 Hz), 6.90 (1H, s), 6.97-7.02 (2H, m).	ESI-MS m/z: 492 [M+H]+
191		1H-NMR ($CDCl_3$) δ : 2.86 (1H, m), 3.15-3.31 (3H, m), 3.91-3.98 (4H, m), 4.20 (3H, d, J=2.3 Hz), 4.33 (1H, m), 4.63 (1H, m), 5.42 (1H, m), 5.92 (1H, s), 6.85 (1H, d, J=8.3 Hz), 6.98-7.08 (3H, m).	ESI-MS m/z: 480 [M+H]+
192 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.86 (1H, dd, J=17.2, 3.6 Hz), 3.18 (1H, dd, J=16.9, 5.1 Hz), 3.26 (2H, q, J=10.8 Hz), 3.89-3.97 (4H, m), 4.20 (3H, s), 4.33 (1H, t, J=9.5 Hz), 4.63 (1H, m), 5.42 (1H, m), 5.92 (1H, s), 6.85 (1H, d, J=8.4 Hz), 6.97 (1H, s), 7.01 (1H, d, J=7.3 Hz), 7.05 (1H, d, J=8.2 Hz).	ESI-MS m/z: 480 [M+H]+
193		1H-NMR ($CDCl_3$) δ : 2.59 (3H, s), 2.96 (1H, m), 3.26 (1H, m), 3.88-3.96 (4H, m), 4.17 (1H, m), 4.26-4.30 (3H, m), 4.67 (1H, m), 5.41 (1H, m), 5.92 (1H, s), 6.98-7.03 (2H, m), 7.73-7.76 (2H, m), 8.45 (1H, s), 8.83 (1H, s).	ESI-MS m/z: 490 [M+H]+
194 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.58 (3H, s), 2.96 (1H, d, J=17.0 Hz), 3.26 (1H, dd, J=16.0, 3.8 Hz), 3.88-3.96 (4H, m), 4.16 (1H, t, J=8.0 Hz), 4.27-4.34 (3H, m), 4.67 (1H, s), 5.41 (1H, s), 5.92 (1H, s), 6.99 (1H, d, J=8.1 Hz), 7.02 (1H, d, J=8.1 Hz), 7.73-7.76 (2H, m), 8.45 (1H, s), 8.83 (1H, s).	ESI-MS m/z: 490 [M+H]+

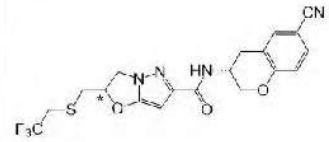
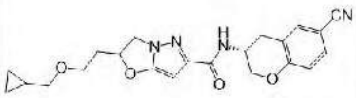
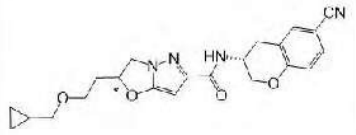
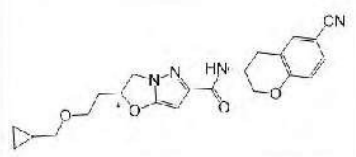
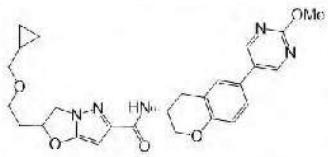
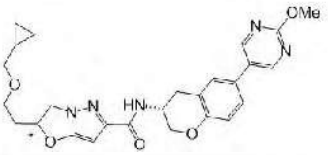
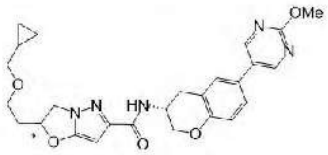
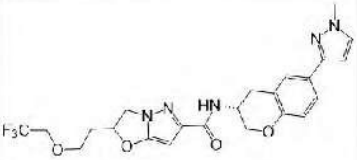
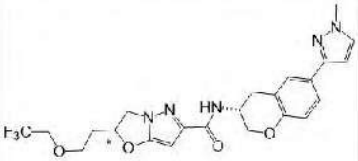
[0904]

[Table 27]

Example	Structural formula	NMR	MS
194 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.58 (3H, s), 2.96 (1H, d, J=17.0 Hz), 3.26 (1H, dd, J=16.0, 3.8 Hz), 3.88-3.96 (4H, m), 4.16 (1H, t, J=8.0 Hz), 4.27-4.34 (3H, m), 4.67 (1H, s), 5.41 (1H, s), 5.92 (1H, s), 6.99 (1H, d, J=8.1 Hz), 7.02 (1H, d, J=8.1 Hz), 7.73-7.76 (2H, m), 8.45 (1H, s), 8.83 (1H, s).	ESI-MS m/z: 490 [M+H]+
195		1H-NMR ($CDCl_3$) δ : 2.87 (1H, dd, J = 16.9, 3.7 Hz), 3.18 (1H, dd, J = 16.7, 5.2 Hz), 3.82 (2H, q, J = 8.7 Hz), 4.14-4.32 (5H, m), 4.38 (1H, dt, J = 4.2, 14.2 Hz), 4.57 (2H, s), 4.63 (1H, m), 5.48 (1H, s), 5.94 (1H, s), 6.87 (1H, d, J = 8.3 Hz), 7.00-7.05 (2H, m), 7.12 (1H, d, J = 8.4 Hz).	ESI-MS m/z: 496 [M+H]+
196 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.87 (1H, dd, J = 17.0, 3.8 Hz), 3.18 (1H, dd, J = 16.7, 5.4 Hz), 3.82 (2H, q, J = 8.7 Hz), 4.15-4.32 (5H, m), 4.39 (1H, t, J = 9.4 Hz), 4.57 (2H, s), 4.63 (1H, m), 5.49 (1H, m), 5.95 (1H, s), 6.87 (1H, d, J=8.3 Hz), 7.00-7.05 (2H, m), 7.12 (1H, dd, J = 8.3, 1.9 Hz).	ESI-MS m/z: 496 [M+H]+
196 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.87 (1H, dd, J = 16.6, 4.1 Hz), 3.18 (1H, dd, J = 16.8, 5.4 Hz), 3.82 (2H, q, J = 8.7 Hz), 4.14-4.31 (5H, m), 4.40 (1H, dd, J = 10.0, 9.0 Hz), 4.57 (2H, s), 4.63 (1H, m), 5.49 (1H, m), 5.95 (1H, s), 6.87 (1H, d, J=8.3 Hz), 7.00-7.05 (2H, m), 7.12 (1H, dd, J = 8.3, 2.0 Hz).	ESI-MS m/z: 496 [M+H]+
197		1H-NMR ($CDCl_3$) δ : 2.85 (1H, dd, J = 16.8, 3.6 Hz), 3.04 (2H, dt, J = 17.4, 4.3 Hz), 3.17 (1H, dd, J = 16.7, 5.2 Hz), 4.11-4.32 (5H, m), 4.40 (1H, dt, J = 9.5, 4.1 Hz), 4.62 (1H, m), 5.48 (1H, m), 5.81 (1H, tt, J = 84.9, 4.5 Hz), 5.95 (1H, s), 6.84 (1H, d, J = 8.4 Hz), 6.94 (1H, s), 7.01 (2H, d, J = 7.8 Hz).	ESI-MS m/z: 448 [M+H]+
198 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.85 (1H, m), 3.04 (2H, dt, J = 17.4, 4.5 Hz), 3.17 (1H, dd, J = 16.7, 5.4 Hz), 4.15-4.31 (5H, m), 4.40 (1H, m), 4.62 (1H, m), 5.49 (1H, m), 5.81 (1H, tt, J = 85.0, 4.5 Hz), 5.95 (1H, s), 6.84 (1H, d, J = 8.3 Hz), 6.94 (1H, s), 7.00-7.02 (2H, m).	ESI-MS m/z: 448 [M+H]+
198 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.85 (1H, dd, J = 17.1, 4.0 Hz), 3.04 (2H, dt, J = 17.4, 4.5 Hz), 3.17 (1H, dd, J = 16.9, 5.4 Hz), 4.16-4.32 (5H, m), 4.39 (1H, t, J = 9.4 Hz), 4.62 (1H, m), 5.48 (1H, m), 5.81 (1H, tt, J = 85.1, 4.6 Hz), 5.95 (1H, s), 6.84 (1H, d, J = 8.4 Hz), 6.94 (1H, s), 7.01 (2H, d, J = 7.9 Hz).	ESI-MS m/z: 448 [M+H]+
199		1H-NMR ($CDCl_3$) δ : 2.90 (1H, dd, J = 16.6, 4.6 Hz), 3.08-3.24 (5H, m), 4.12 (1H, m), 4.28 (2H, m), 4.36-4.41 (1H, m), 4.64 (1H, m), 5.51 (1H, m), 5.93 (1H, s), 6.91-6.94 (2H, m), 7.39 (1H, s), 7.43 (1H, d, J = 8.5 Hz).	ESI-MS m/z: 439 [M+H]+
200 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.90 (1H, m), 3.08-3.24 (5H, m), 4.12 (1H, m), 4.28 (2H, s), 4.39 (1H, t, J = 9.2 Hz), 4.64 (1H, m), 5.51 (1H, m), 5.93 (1H, s), 6.91-6.94 (2H, m), 7.38 (1H, s), 7.42 (1H, d, J = 8.6 Hz).	ESI-MS m/z: 439 [M+H]+

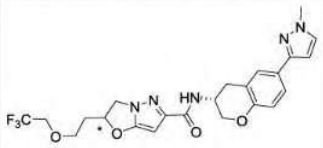
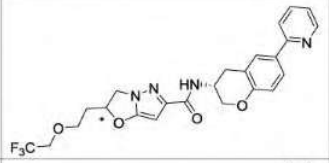
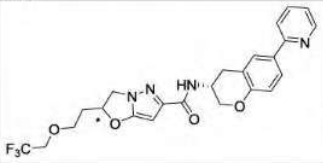
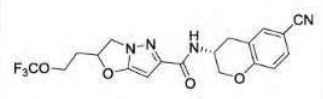
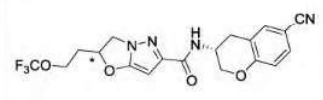
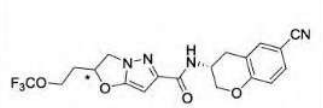
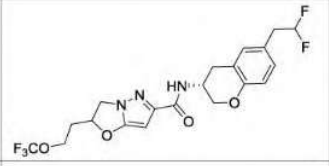
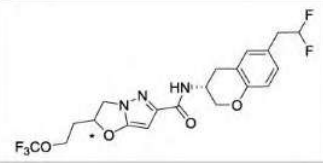
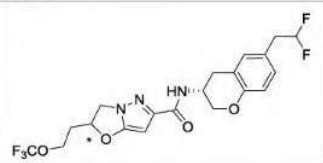
[0905]

[Table 28]

Example	Structural formula	NMR	MS
200 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.90 (1H, dd, J = 17.1, 3.8 Hz), 3.08-3.24 (5H, m), 4.13 (1H, m), 4.28 (2H, s), 4.39 (1H, t, J = 9.1 Hz), 4.64 (1H, m), 5.51 (1H, m), 5.93 (1H, s), 6.90-6.94 (2H, m), 7.38 (1H, s), 7.42 (1H, d, J = 8.8 Hz).	ESI-MS m/z: 439 [M+H]+
201		1H-NMR ($CDCl_3$) δ : 0.18 (2H, m), 0.53 (2H, m), 1.02 (1H, m), 2.18 (2H, m), 2.90 (1H, dd, J=16.6, 4.2 Hz), 3.17 (1H, dd, J=16.6, 5.0 Hz), 3.24-3.27 (2H, m), 3.63 (2H, t, J=4.8 Hz), 4.01 (1H, t, J=8.8 Hz), 4.23-4.36 (3H, m), 4.64 (1H, m), 5.45 (1H, m), 5.89 (1H, s), 6.92 (2H, d, J=8.4 Hz), 7.38 (1H, s), 7.42 (1H, d, J=8.7 Hz).	ESI-MS m/z: 409 [M+H]+
202 (isomer A)		1H-NMR ($CDCl_3$) δ : 0.18 (2H, m), 0.52 (2H, m), 1.01 (1H, m), 2.10-2.19 (2H, m), 2.90 (1H, dd, J=17.2, 4.6 Hz), 3.17 (1H, dd, J=16.4, 4.9 Hz), 3.26 (2H, dd, J=6.8, 2.9 Hz), 3.62 (2H, t, J=4.9 Hz), 4.01 (1H, t, J=8.0 Hz), 4.24-4.36 (3H, m), 4.64 (1H, m), 5.45 (1H, m), 5.89 (1H, s), 6.92 (2H, d, J=8.5 Hz), 7.38 (1H, s), 7.42 (1H, d, J=8.6 Hz).	ESI-MS m/z: 409 [M+H]+
202 (isomer B)		1H-NMR ($CDCl_3$) δ : 0.18 (2H, m), 0.52 (2H, m), 1.01 (1H, m), 2.10-2.19 (2H, m), 2.90 (1H, dd, J=17.2, 4.6 Hz), 3.17 (1H, dd, J=16.4, 4.9 Hz), 3.26 (2H, dd, J=6.8, 2.9 Hz), 3.62 (2H, t, J=4.9 Hz), 4.01 (1H, t, J=8.0 Hz), 4.24-4.36 (3H, m), 4.64 (1H, m), 5.45 (1H, m), 5.89 (1H, s), 6.92 (2H, d, J=8.5 Hz), 7.38 (1H, s), 7.42 (1H, d, J=8.6 Hz).	ESI-MS m/z: 409 [M+H]+
203		1H-NMR ($CDCl_3$) δ : 0.18 (2H, m), 0.52 (2H, m), 1.02 (1H, m), 2.16 (2H, m), 2.94 (1H, dd, J=16.6, 4.3 Hz), 3.22-3.27 (3H, m), 3.62 (2H, m), 4.01 (1H, m), 4.05 (3H, s), 4.25 (2H, m), 4.33 (1H, m), 4.66 (1H, m), 5.45 (1H, m), 5.90 (1H, s), 6.98 (1H, d, J=8.5 Hz), 7.03 (1H, d, J=7.7 Hz), 7.19 (1H, s), 7.28 (1H, m), 8.65 (2H, s).	ESI-MS m/z: 492 [M+H]+
204 (isomer A)		1H-NMR ($CDCl_3$) δ : 0.21 (2H, m), 0.54 (2H, m), 1.03 (1H, m), 2.17 (2H, m), 2.95 (1H, dd, J=16.8, 4.0 Hz), 3.23 (1H, d, J=5.1 Hz), 3.27 (2H, d, J=6.5 Hz), 3.63 (2H, dd, J=4.9, 1.6 Hz), 4.02 (1H, dd, J=9.9, 1.9 Hz), 4.05 (3H, s), 4.26 (2H, d, J=2.4 Hz), 4.33 (1H, dd, J=9.8, 1.4 Hz), 4.67 (1H, m), 5.45 (1H, m), 5.91 (1H, s), 6.98 (1H, d, J=8.4 Hz), 7.04 (1H, d, J=8.0 Hz), 7.20 (1H, s), 7.28 (1H, m), 8.66 (2H, s).	ESI-MS m/z: 492 [M+H]+
204 (isomer B)		1H NMR ($CDCl_3$) δ : 0.21 (2H, m), 0.54 (2H, m), 1.03 (1H, m), 2.17 (2H, m), 2.95 (1H, dd, J=16.8, 4.0 Hz), 3.23 (1H, d, J=5.1 Hz), 3.27 (2H, d, J=6.5 Hz), 3.63 (2H, dd, J=4.9, 1.6 Hz), 4.02 (1H, dd, J=9.9, 1.9 Hz), 4.05 (3H, s), 4.26 (2H, d, J=2.4 Hz), 4.33 (1H, dd, J=9.8, 1.4 Hz), 4.67 (1H, m), 5.45 (1H, m), 5.91 (1H, s), 6.98 (1H, d, J=8.4 Hz), 7.04 (1H, d, J=8.0 Hz), 7.20 (1H, s), 7.28 (1H, m), 8.66 (2H, s).	ESI-MS m/z: 492 [M+H]+
205		1H-NMR ($CDCl_3$) δ : 2.19 (2H, m), 2.90 (1H, m), 3.22 (1H, m), 3.80-3.86 (4H, m), 3.93-3.95 (4H, m), 4.22 (2H, s), 4.34 (1H, m), 4.64 (1H, m), 5.43 (1H, m), 5.89 (1H, s), 6.44 (1H, d, J=2.2 Hz), 6.89 (1H, d, J=8.2 Hz), 7.02 (1H, m), 7.35 (1H, d, J=2.2 Hz), 7.51-7.54 (2H, m).	ESI-MS m/z: 492 [M+H]+
206 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.18 (2H, m), 2.90 (1H, dd, J=16.5, 3.9 Hz), 3.21 (1H, dd, J=16.5, 5.2 Hz), 3.79-3.86 (4H, m), 3.92-3.96 (4H, m), 4.22 (2H, m), 4.34 (1H, t, J=8.4 Hz), 4.64 (1H, m), 5.43 (1H, m), 5.89 (1H, s), 6.44 (1H, d, J=2.2 Hz), 6.89 (1H, d, J=8.4 Hz), 7.02 (1H, d, J=8.1 Hz), 7.35 (1H, d, J=2.2 Hz), 7.51 (1H, s), 7.54 (1H, d, J=2.0 Hz).	ESI-MS m/z: 492 [M+H]+

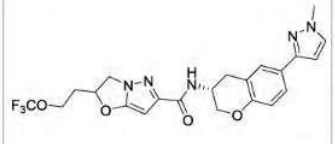
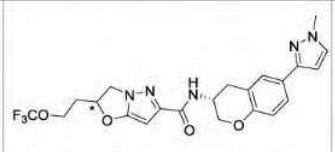
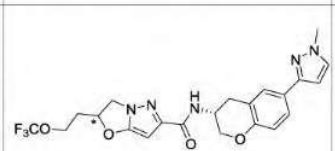
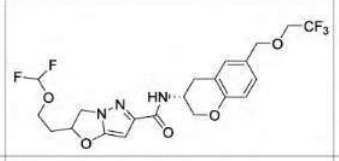
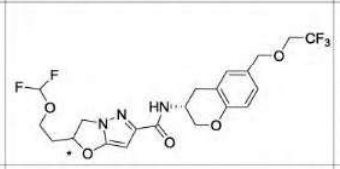
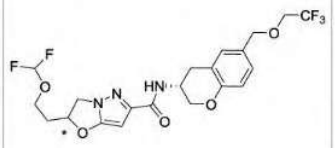
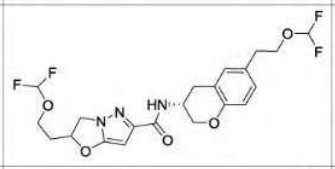
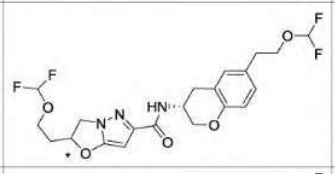
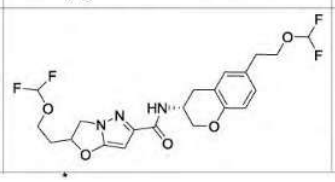
[0906]

[Table 29]

Example	Structural formula	NMR	MS
206 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.18 (2H, m), 2.90 (1H, dd, J=16.5, 3.9 Hz), 3.21 (1H, dd, J=16.5, 5.2 Hz), 3.79-3.86 (4H, m), 3.92-3.96 (4H, m), 4.22 (2H, m), 4.34 (1H, t, J=8.4 Hz), 4.64 (1H, m), 5.43 (1H, m), 5.89 (1H, s), 6.44 (1H, d, J=2.2 Hz), 6.89 (1H, d, J=8.4 Hz), 7.02 (1H, d, J=8.1 Hz), 7.35 (1H, d, J=2.2 Hz), 7.51 (1H, s), 7.54 (1H, d, J=2.0 Hz).	ESI-MS m/z: 492 [M+H]+
207 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.18 (2H, m), 2.95 (1H, d, J=17.4 Hz), 3.26 (1H, dd, J=17.0, 4.2 Hz), 3.80-3.86 (4H, m), 3.96 (1H, t, J=8.2 Hz), 4.26 (2H, s), 4.33 (1H, t, J=9.1 Hz), 4.66 (1H, m), 5.42 (1H, m), 5.89 (1H, s), 6.96 (1H, d, J=8.0 Hz), 7.02 (1H, d, J=7.6 Hz), 7.18 (1H, t, J=5.4 Hz), 7.65 (1H, d, J=7.6 Hz), 7.70-7.75 (3H, m), 8.65 (1H, s).	ESI-MS m/z: 489 [M+H]+
207 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.18 (2H, m), 2.95 (1H, d, J=17.4 Hz), 3.26 (1H, dd, J=17.0, 4.2 Hz), 3.80-3.86 (4H, m), 3.96 (1H, t, J=8.2 Hz), 4.26 (2H, s), 4.33 (1H, t, J=9.1 Hz), 4.66 (1H, m), 5.42 (1H, m), 5.89 (1H, s), 6.96 (1H, d, J=8.0 Hz), 7.02 (1H, d, J=7.6 Hz), 7.18 (1H, t, J=5.4 Hz), 7.65 (1H, d, J=7.6 Hz), 7.70-7.75 (3H, m), 8.65 (1H, s).	ESI-MS m/z: 489 [M+H]+
208		1H-NMR ($CDCl_3$) δ : 2.27 (2H, m), 2.90 (1H, dd, J=4.5, 16.7 Hz), 3.17 (1H, dd, J=16.7, 5.0 Hz), 3.95 (1H, m), 4.15-4.28 (4H, m), 4.40 (1H, m), 4.63 (1H, m), 5.44 (1H, m), 5.92 (1H, s), 6.93 (2H, d, J=8.4 Hz), 7.38 (1H, s), 7.42 (1H, dd, J=8.5, 1.7 Hz).	ESI-MS m/z: 423 [M+H]+
209 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.26 (2H, m), 2.90 (1H, dd, J=16.5, 4.4 Hz), 3.17 (1H, dd, J=16.6, 5.0 Hz), 3.95 (1H, dd, J=9.9, 7.6 Hz), 4.15-4.25 (3H, s), 4.28 (1H, m), 4.40 (1H, t, J=8.4 Hz), 4.64 (1H, m), 5.45 (1H, m), 5.92 (1H, s), 6.91 (1H, s), 6.93 (1H, d, J=8.4 Hz), 7.38 (1H, s), 7.42 (1H, d, J=8.5 Hz).	ESI-MS m/z: 423 [M+H]+
209 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.26 (2H, m), 2.90 (1H, dd, J=16.5, 4.4 Hz), 3.17 (1H, dd, J=16.6, 5.0 Hz), 3.95 (1H, dd, J=9.9, 7.6 Hz), 4.15-4.25 (3H, s), 4.28 (1H, m), 4.40 (1H, t, J=8.4 Hz), 4.64 (1H, m), 5.45 (1H, m), 5.92 (1H, s), 6.91 (1H, s), 6.93 (1H, d, J=8.4 Hz), 7.38 (1H, s), 7.42 (1H, d, J=8.5 Hz).	ESI-MS m/z: 423 [M+H]+
210		1H-NMR ($CDCl_3$) δ : 2.26 (2H, m), 2.85 (1H, dd, J=16.7, 3.9 Hz), 3.04 (3H, dt, J=17.4, 4.6 Hz), 3.17 (1H, dd, J=16.8, 5.4 Hz), 3.94 (1H, m), 4.12-4.26 (3H, m), 4.39 (1H, m), 4.62 (1H, m), 5.43 (1H, m), 5.88 (1H, m), 5.92 (1H, s), 6.81 (1H, q, J=8.5 Hz), 6.93 (1H, s), 6.97-7.02 (2H, m).	ESI-MS m/z: 462 [M+H]+
211 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.26 (2H, m), 2.85 (1H, dd, J=17.1, 3.4 Hz), 3.04 (2H, td, J=17.4, 4.4 Hz), 3.17 (1H, dd, J=16.4, 5.0 Hz), 3.94 (1H, t, J=7.7 Hz), 4.15-4.26 (4H, m), 4.40 (1H, t, J=9.1 Hz), 4.62 (1H, m), 5.44 (1H, m), 5.88 (1H, m), 5.92 (1H, s), 6.84 (1H, d, J=8.3 Hz), 6.93 (1H, s), 7.01 (2H, d, J=8.2 Hz).	ESI-MS m/z: 462 [M+H]+
211 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.26 (2H, m), 2.85 (1H, dd, J=17.1, 3.4 Hz), 3.04 (2H, td, J=17.4, 4.4 Hz), 3.17 (1H, dd, J=16.4, 5.0 Hz), 3.94 (1H, t, J=7.7 Hz), 4.15-4.26 (4H, m), 4.40 (1H, t, J=9.1 Hz), 4.62 (1H, m), 5.44 (1H, m), 5.88 (1H, m), 5.92 (1H, s), 6.84 (1H, d, J=8.3 Hz), 6.93 (1H, s), 7.01 (2H, d, J=8.2 Hz).	ESI-MS m/z: 462 [M+H]+

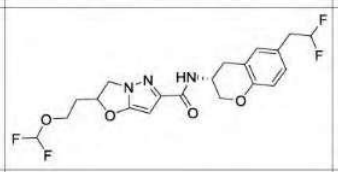
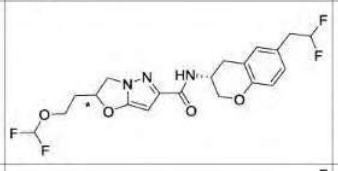
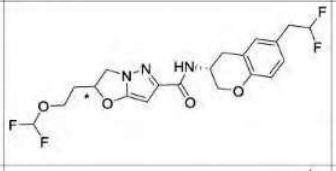
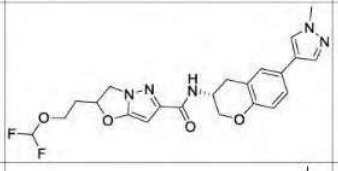
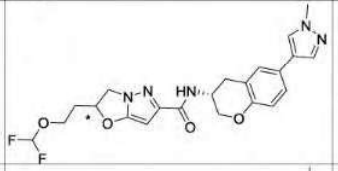
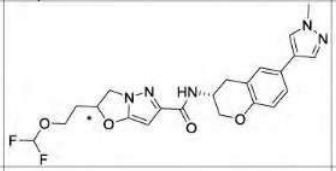
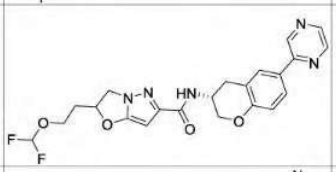
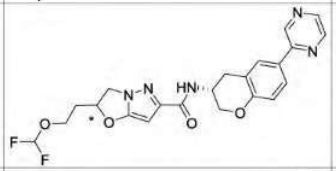
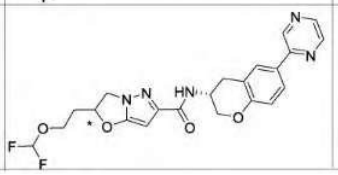
[0907]

[Table 30]

Example	Structural formula	NMR	MS
212		1H-NMR ($CDCl_3$) δ : 2.25 (2H, m), 2.90 (1H, m), 3.22 (1H, m), 3.93 (4H, m), 4.15-4.23 (4H, m), 4.38 (1H, m), 4.64 (1H, m), 5.42 (1H, m), 5.91 (1H, s), 6.44 (1H, d, J=1.9 Hz), 6.89 (1H, d, J=7.6 Hz), 7.02 (1H, m), 7.35 (1H, d, J=2.0 Hz), 7.52-7.54 (2H, m).	ESI-MS m/z: 478 [M+H]+
213 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.25 (2H, m), 2.90 (1H, dd, J=16.4, 3.6 Hz), 3.22 (1H, dd, J=16.8, 5.0 Hz), 3.90-3.94 (4H, m), 4.14-4.25 (4H, m), 4.39 (1H, dd, J=8.3, 1.6 Hz), 4.64 (1H, m), 5.43 (1H, m), 5.91 (1H, s), 6.44 (1H, d, J=2.2 Hz), 6.89 (1H, d, J=8.0 Hz), 7.02 (1H, d, J=8.2 Hz), 7.35 (1H, d, J=2.2 Hz), 7.51 (1H, s), 7.54 (1H, d, J=2.1 Hz).	ESI-MS m/z: 478 [M+H]+
213 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.25 (2H, m), 2.90 (1H, dd, J=3.6, 16.4 Hz), 3.22 (1H, dd, J=16.8, 5.0 Hz), 3.90-3.94 (4H, m), 4.14-4.25 (4H, m), 4.39 (1H, dd, J=8.3, 1.6 Hz), 4.64 (1H, m), 5.43 (1H, m), 5.91 (1H, s), 6.44 (1H, d, J=2.2 Hz), 6.89 (1H, d, J=8.0 Hz), 7.02 (1H, d, J=8.2 Hz), 7.35 (1H, d, J=2.2 Hz), 7.51 (1H, s), 7.54 (1H, d, J=2.1 Hz).	ESI-MS m/z: 478 [M+H]+
214		1H-NMR ($CDCl_3$) δ : 2.12-2.32 (2H, m), 2.87 (1H, dd, J= 16.8, 4.2 Hz), 3.18 (1H, dd, J=16.8, 6.0 Hz), 3.80 (1H, d, J=8.2 Hz), 3.84 (1H, d, J=8.2 Hz), 3.94 (1H, dd, J= 10.8, 7.9 Hz), 4.03-4.13 (2H, m), 4.20 (2H, m), 4.38 (1H, dd, J=9.5. 8.6 Hz), 4.56 (2H, s), 4.63 (1H, m), 5.43 (1H, m), 5.91 (1H, s), 6.22 (1H, t, J= 73.9 Hz), 6.87 (1H, d, J=8.5 Hz), 7.01 (1H, d, J=7.8 Hz), 7.04 (1H, s), 7.11 (1H, dd, J = 8.5, 1.5 Hz)	ESI-MS m/z: 492 [M+H]+
215 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.12-2.32 (2H, m), 2.87 (1H, dd, J= 16.8, 4.2 Hz), 3.18 (1H, dd, J=16.8, 6.0 Hz), 3.80 (1H, d, J=8.2 Hz), 3.84 (1H, d, J=8.2 Hz), 3.94 (1H, dd, J= 10.8, 7.9 Hz), 4.03-4.13 (2H, m), 4.20 (2H, m), 4.38 (1H, dd, J=9.5. 8.6 Hz), 4.56 (2H, s), 4.63 (1H, m), 5.43 (1H, m), 5.91 (1H, s), 6.22 (1H, t, J= 73.9 Hz), 6.87 (1H, d, J=8.5 Hz), 7.01 (1H, d, J=7.8 Hz), 7.04 (1H, s), 7.11 (1H, dd, J = 8.5, 1.5 Hz).	ESI-MS m/z: 492 [M+H]+
215 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.12-2.32 (2H, m), 2.87 (1H, dd, J= 16.8, 4.2 Hz), 3.18 (1H, dd, J=16.8, 6.0 Hz), 3.80 (1H, d, J=8.2 Hz), 3.84 (1H, d, J=8.2 Hz), 3.94 (1H, dd, J= 10.8, 7.9 Hz), 4.03-4.13 (2H, m), 4.20 (2H, m), 4.38 (1H, dd, J=9.5. 8.6 Hz), 4.56 (2H, s), 4.63 (1H, m), 5.43 (1H, m), 5.91 (1H, s), 6.22 (1H, t, J= 73.9 Hz), 6.87 (1H, d, J=8.5 Hz), 7.01 (1H, d, J=7.8 Hz), 7.04 (1H, s), 7.11 (1H, dd, J = 8.5, 1.5 Hz).	ESI-MS m/z: 492 [M+H]+
216		1H-NMR ($CDCl_3$) δ : 2.13-2.31 (2H, m), 2.80-2.90 (3H, m), 3.16 (1H, dd, J=16.8. 5.6 Hz), 3.92-4.14 (5H, m), 4.18 (2H, m), 4.37 (1H, t, J=9.2 Hz), 4.61 (1H, m), 5.42 (1H, m), 5.91 (1H, s), 6.19 (1H, t, J=72.3 Hz), 6.22 (1H, t, J=72.3 Hz), 6.81 (1H, d, J=8.0 Hz), 6.91 (1H, s), 6.95-7.05 (2H, m).	ESI-MS m/z: 474 [M+H]+
217 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.13-2.31 (2H, m), 2.80-2.90 (3H, m), 3.16 (1H, dd, J=16.8. 5.6 Hz), 3.92-4.14 (5H, m), 4.18 (2H, m), 4.37 (1H, t, J=9.2 Hz), 4.61 (1H, m), 5.42 (1H, m), 5.91 (1H, s), 6.19 (1H, t, J=72.3 Hz), 6.22 (1H, t, J=72.3 Hz), 6.81 (1H, d, J=8.0 Hz), 6.91 (1H, s), 6.95-7.05 (2H, m),	ESI-MS m/z: 474 [M+H]+
217 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.13-2.31 (2H, m), 2.80-2.90 (3H, m), 3.16 (1H, dd, J=16.8. 5.6 Hz), 3.92-4.14 (5H, m), 4.18 (2H, m), 4.37 (1H, t, J=9.2 Hz), 4.61 (1H, m), 5.42 (1H, m), 5.91 (1H, s), 6.19 (1H, t, J=72.3 Hz), 6.22 (1H, t, J=72.3 Hz), 6.81 (1H, d, J=8.0 Hz), 6.91 (1H, s), 6.95-7.05 (2H, m)	ESI-MS m/z: 474 [M+H]+

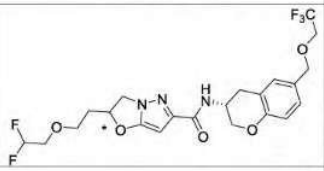
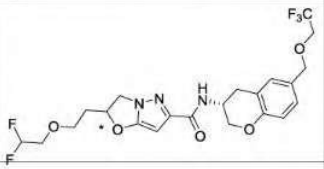
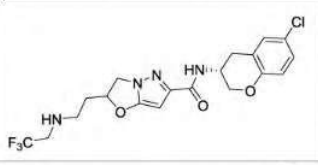
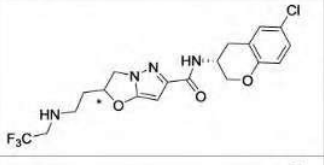
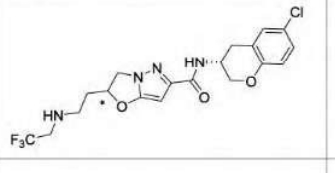
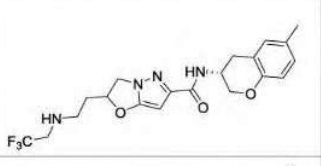
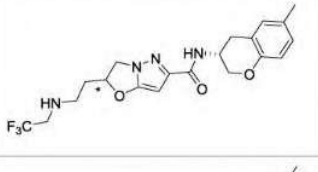
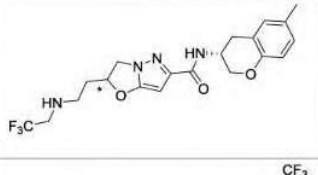
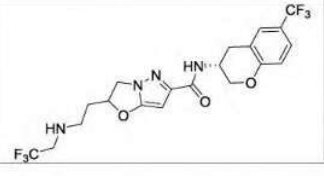
[0908]

[Table 31]

Example	Structural formula	NMR	MS
218		1H-NMR ($CDCl_3$) δ : 2.11-2.31 (2H, m), 2.85 (1H, dd, J=17.0, 4.0 Hz), 3.04 (2H, td, J=17.2, 5.0 Hz), 3.17 (1H, dd, J=16.8, 5.2 Hz), 3.95 (1H, dd, J=10.9. 8.5 Hz), 4.03-4.14 (2H, m), 4.18 (2H, m), 4.38 (1H, dd, J=10.2, 8.3 Hz), 4.62 (1H, m), 5.39-5.47 (1H, m), 5.88 (1H, tt, J= 56.8, 4.3 Hz), 5.91 (1H, s), 6.22 (1H, t, J=74.2 Hz), 6.84 (1H, d, J=8.6 Hz), 6.93 (1H, s), 6.98-7.04 (2H, m).	ESI-MS m/z: 444 [M+H]+
219 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.11-2.31 (2H, m), 2.85 (1H, dd, J=17.0, 4.0 Hz), 3.04 (2H, td, J=17.2, 5.0 Hz), 3.17 (1H, dd, J=16.8, 5.2 Hz), 3.95 (1H, dd, J=10.9. 8.5 Hz), 4.03-4.14 (2H, m), 4.18 (2H, m), 4.38 (1H, dd, J=10.2, 8.3 Hz), 4.62 (1H, m), 5.39-5.47 (1H, m), 5.88 (1H, tt, J= 56.8, 4.3 Hz), 5.91 (1H, s), 6.22 (1H, t, J=74.2 Hz), 6.84 (1H, d, J=8.6 Hz), 6.93 (1H, s), 6.98-7.04 (2H, m).	ESI-MS m/z: 444 [M+H]+
219 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.11-2.31 (2H, m), 2.85 (1H, dd, J=17.0, 4.0 Hz), 3.04 (2H, td, J=17.2, 5.0 Hz), 3.17 (1H, dd, J=16.8, 5.2 Hz), 3.95 (1H, dd, J=10.9. 8.5 Hz), 4.03-4.14 (2H, m), 4.18 (2H, m), 4.38 (1H, dd, J=10.2, 8.3 Hz), 4.62 (1H, m), 5.39-5.47 (1H, m), 5.88 (1H, tt, J= 56.8, 4.3 Hz), 5.91 (1H, s), 6.22 (1H, t, J=74.2 Hz), 6.84 (1H, d, J=8.6 Hz), 6.93 (1H, s), 6.98-7.04 (2H, m).	ESI-MS m/z: 444 [M+H]+
220		1H-NMR ($CDCl_3$) δ : 2.12-2.31 (2H, m), 2.88 (1H, dd, J=17.2, 3.3 Hz), 3.20 (1H, dd, J=17.1. 4.7 Hz), 3.90-3.98 (4H, m), 4.04-4.13 (2H, m), 4.21 (2H, m), 4.36 (1H, t, J=9.4 Hz), 4.64 (1H, m), 5.42 (1H, m), 5.91 (1H, s), 6.22 (1H, t, J=74.5 Hz), 6.87 (1H, d, J=8.0 Hz), 7.04 (1H, d, J=8.8 Hz), 7.15 (1H, s), 7.23 (1H, d, J=8.4 Hz), 7.51 (1H, s), 7.67 (1H, s).	ESI-MS m/z: 460 [M+H]+
221 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.12-2.31 (2H, m), 2.88 (1H, dd, J=17.2, 3.3 Hz), 3.20 (1H, dd, J=17.1. 4.7 Hz), 3.90-3.98 (4H, m), 4.04-4.13 (2H, m), 4.21 (2H, m), 4.36 (1H, t, J=9.4 Hz), 4.64 (1H, m), 5.42 (1H, m), 5.91 (1H, s), 6.22 (1H, t, J=74.5 Hz), 6.87 (1H, d, J=8.0 Hz), 7.04 (1H, d, J=8.8 Hz), 7.15 (1H, s), 7.23 (1H, d, J=8.4 Hz), 7.51 (1H, s), 7.67 (1H, s)	ESI-MS m/z: 460 [M+H]+
221 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.12-2.31 (2H, m), 2.88 (1H, dd, J=17.2, 3.3 Hz), 3.20 (1H, dd, J=17.1. 4.7 Hz), 3.90-3.98 (4H, m), 4.04-4.13 (2H, m), 4.21 (2H, m), 4.36 (1H, t, J=9.4 Hz), 4.64 (1H, m), 5.42 (1H, m), 5.91 (1H, s), 6.22 (1H, t, J=74.5 Hz), 6.87 (1H, d, J=8.0 Hz), 7.04 (1H, d, J=8.8 Hz), 7.15 (1H, s), 7.23 (1H, d, J=8.4 Hz), 7.51 (1H, s), 7.67 (1H, s).	ESI-MS m/z: 460 [M+H]+
222		1H-NMR ($CDCl_3$) δ : 2.13-2.30 (2H, m), 2.97 (1H, dd, J=17.2, 3.4 Hz), 3.27 (1H, dd, J=16.0. 3.4 Hz), 3.93 (1H, dd, J=9.6. 8.2 Hz), 4.01-4.14 (2H, m), 4.28 (2H, m), 4.37 (1H, t, J=9.3 Hz), 4.68 (1H, m), 5.43 (1H, m), 5.91 (1H, s), 6.22 (1H, t, J=73.8 Hz), 6.98-7.04 (2H, m), 7.75-7.82 (2H, m), 8.45 (1H, s), 8.58 (1H, s), 8.96 (1H, s)	ESI-MS m/z: 458 [M+H]+
223 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.13-2.30 (2H, m), 2.97 (1H, dd, J=17.2, 3.4 Hz), 3.27 (1H, dd, J=16.0. 3.4 Hz), 3.93 (1H, dd, J=9.6. 8.2 Hz), 4.01-4.14 (2H, m), 4.28 (2H, m), 4.37 (1H, t, J=9.3 Hz), 4.68 (1H, m), 5.43 (1H, m), 5.91 (1H, s), 6.22 (1H, t, J=73.8 Hz), 6.98-7.04 (2H, m), 7.75-7.82 (2H, m), 8.45 (1H, s), 8.58 (1H, s), 8.96 (1H, s),	ESI-MS m/z: 458 [M+H]+
223 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.13-2.30 (2H, m), 2.97 (1H, dd, J=17.2, 3.4 Hz), 3.27 (1H, dd, J=16.0. 3.4 Hz), 3.93 (1H, dd, J=9.6. 8.2 Hz), 4.01-4.14 (2H, m), 4.28 (2H, m), 4.37 (1H, t, J=9.3 Hz), 4.68 (1H, m), 5.43 (1H, m), 5.91 (1H, s), 6.22 (1H, t, J=73.8 Hz), 6.98-7.04 (2H, m), 7.75-7.82 (2H, m), 8.45 (1H, s), 8.58 (1H, s), 8.96 (1H, s),	ESI-MS m/z: 458 [M+H]+

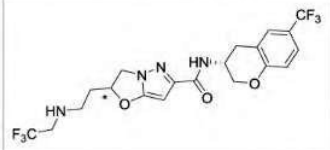
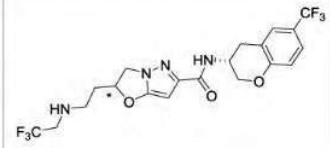
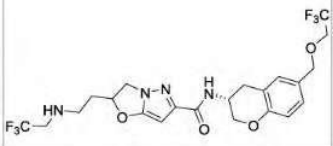
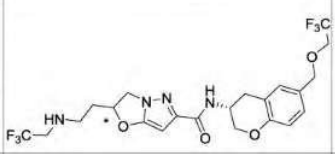
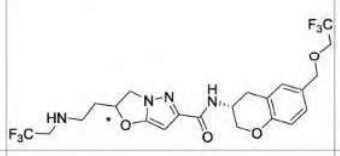
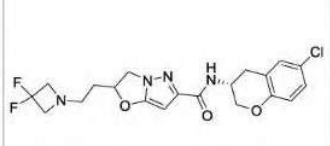
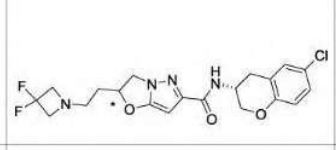
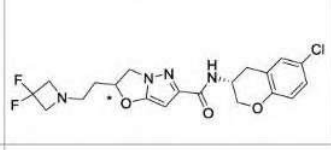
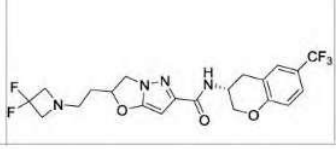
[0909]

[Table 32]

Example	Structural formula	NMR	MS
224 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.17 (2H, m), 2.87 (1H, d, J=15.7 Hz), 3.18 (1H, dd, J=16.4, 4.3 Hz), 3.63-3.85 (6H, m), 3.96 (1H, t, J=8.9 Hz), 4.20 (2H, s), 4.34 (1H, t, J=9.0 Hz), 4.56 (2H, s), 4.62 (1H, s), 5.44 (1H, t, J=7.1 Hz), 5.84 (1H, t, J=55.1 Hz), 5.89 (1H, s), 6.87 (1H, d, J=8.2 Hz), 7.01 (1H, d, J=8.2 Hz), 7.04 (1H, s), 7.11 (1H, d, J=8.2 Hz).	ESI-MS m/z: 506 [M+H]+
224 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.17 (2H, m), 2.87 (1H, d, J=15.7 Hz), 3.18 (1H, dd, J=16.4, 4.3 Hz), 3.63-3.85 (6H, m), 3.96 (1H, t, J=8.9 Hz), 4.20 (2H, s), 4.34 (1H, t, J=9.0 Hz), 4.56 (2H, s), 4.62 (1H, s), 5.44 (1H, t, J=7.1 Hz), 5.84 (1H, t, J=55.1 Hz), 5.89 (1H, s), 6.87 (1H, d, J=8.2 Hz), 7.01 (1H, d, J=8.2 Hz), 7.04 (1H, s), 7.11 (1H, d, J=8.2 Hz).	ESI-MS m/z: 506 [M+H]+
225		1H-NMR ($CDCl_3$) δ :1.96 (1H, m), 2.13 (1H, m), 2.84 (1H, dd, J=3.7, 16.9 Hz), 2.96 (2H, m), 3.14 (1H, m), 3.20 (2H, m), 3.93 (1H, m), 4.19 (2H, d, J=2.7 Hz), 4.35 (1H, m), 4.60 (1H, m), 5.43 (1H, m), 5.89 (1H, s), 6.80 (1H, d, J=8.7 Hz), 6.98 (1H, d, J=7.3 Hz), 7.03 (1H, s), 7.08 (1H, dd, J=8.7, 2.9 Hz).	ESI-MS m/z: 445 [M+H]+
226 (isomer A)		1H-NMR ($CDCl_3$) δ : 1.91-1.99 (1H, m), 2.08-2.17 (1H, m), 2.78-2.90 (1H, m), 2.93-3.02 (2H, m), 3.11-3.23 (3H, m), 3.93 (1H, t, J=9.1 Hz), 4.18 (2H, m), 4.36 (1H, t, J=9.1 Hz), 4.60 (1H, m), 5.44 (1H, m), 5.89 (1H, s), 6.80 (1H, d, J=8.8 Hz), 6.99 (1H, d, J=8.0 Hz), 7.03 (1H, s), 7.08 (1H, d, J=8.8 Hz).	ESI-MS m/z: 445 [M+H]+
226 (isomer B)		1H-NMR ($CDCl_3$) δ :1.91-1.99 (1H, m), 2.08-2.17 (1H, m), 2.81-2.86 (1H, m), 2.95-2.98 (2H, m), 3.12-3.21 (3H, m), 3.93 (1H, t, J=8.8 Hz), 4.18 (2H, s), 4.35 (1H, t, J=9.2 Hz), 4.61 (1H, m), 5.43 (1H, m), 5.89 (1H, s), 6.80 (1H, d, J=8.7 Hz), 6.98 (1H, d, J=7.8 Hz), 7.04 (1H, s), 7.08 (1H, d, J=8.7 Hz).	ESI-MS m/z: 445 [M+H]+
227		1H-NMR ($CDCl_3$) δ : 1.96 (1H, m), 2.11 (1H, m), 2.25 (3H, s), 2.82 (1H, m), 2.97 (2H, m), 3.12-3.23 (3H, m), 3.93 (1H, m), 4.16 (2H, d, J=2.7 Hz), 4.35 (1H, m), 4.60 (1H, m), 5.42 (1H, m), 5.89 (1H, s), 6.76 (1H, d, J=8.3 Hz), 6.86 (1H, s), 6.93 (1H, d, J=8.2 Hz), 7.03 (1H, d, J=8.0 Hz).	ESI-MS m/z: 425 [M+H]+
228 (isomer A)		1H-NMR ($CDCl_3$) δ :1.90-1.96 (1H, m), 2.05-2.09 (1H, m), 2.26 (3H, s), 2.80-2.94 (1H, m), 2.89-3.02 (2H, m),3.11-3.23 (3H, m), 3.91 (1H, t, J=8.9 Hz), 4.16 (2H, m), 4.35 (1H, t, J=9.1 Hz), 4.60 (1H, m), 5.43 (1H, m), 5.88 (1H, s), 6.77 (1H, d, J=8.3 Hz), 6.85 (1H, s) 6.93 (1H, d, J=8.3 Hz), 7.03 (1H, d, J=8.5 Hz).	ESI-MS m/z: 425 [M+H]+
228 (isomer B)		1H-NMR ($CDCl_3$) δ : 1.93-2.00 (1H, m), 2.07-2.25 (1H,m), 2.25 (3H, s), 2.78-2.94 (1H, m), 2.90-3.02 (1H, m), 3.12-3.23 (1H, m), 3.93(1H, t, J=8.9 Hz), 4.16 (2H, m), 4.34 (1H, t, J=9.1 Hz), 4.60 (1H, m), 5.42 (1H, m,), 5.89 (1H, s), 6.76 (1H, d, J=8.2 Hz), 6.86 (1H, s), 6.93 (1H, d, J=8.2 Hz), 7.02 (1H, d, J=8.3 Hz).	ESI-MS m/z: 425 [M+H]+
229		1H-NMR ($CDCl_3$) δ : 1.95 (1H, m), 2.11 (1H, m), 2.88-3.01 (3H, m), 3.16-3.23 (3H, m), 3.93 (1H, m), 4.25 (2H, d, J=2.6 Hz), 4.35 (1H, m), 4.65 (1H, m), 5.44 (1H, m), 5.90 (1H, s), 6.93-6.97 (2H, m), 7.33 (1H, s), 7.38 (1H, d, J=8.8 Hz).	ESI-MS m/z: 479 [M+H]+

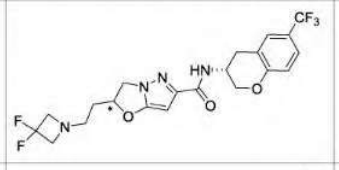
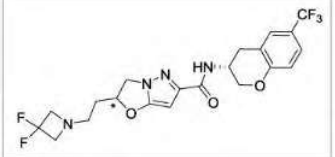
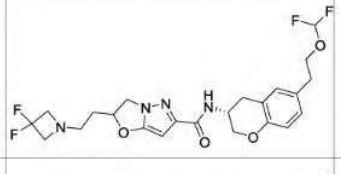
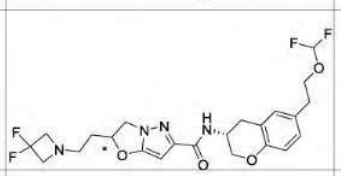
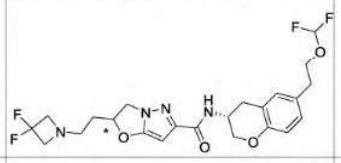
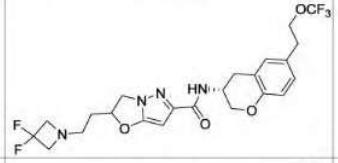
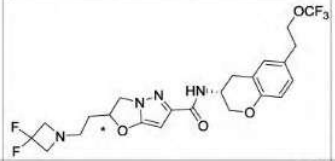
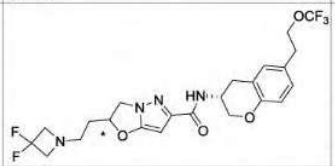
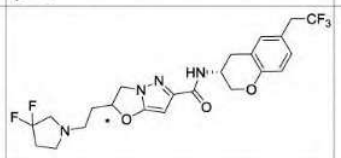
[0910]

[Table 33]

Example	Structural formula	NMR	MS
230 (isomer A)		1H-NMR ($CDCl_3$) δ : 1.91-1.99 (1H, m), 2.08-2.17 (1H, m), 2.88-3.00 (3H, m), 3.16-3.23 (3H, m), 3.90-3.92 (1H, m), 4.25 (2H, d, J=2.9 Hz), 4.33-4.37 (1H, m), 4.61-4.68 (1H, m), 5.44 (1H, m), 5.90 (1H, s), 6.93-7.00 (2H,m), 7.33 (1H, s), 7.38 (1H, d, J=8.7 Hz).	ESI-MS m/z: 479 [M+H]+
230 (isomer B)		1H-NMR ($CDCl_3$) δ : 1.91-1.99 (1H, m), 2.08-2.17 (1H, m), 2.92-3.02 (3H, m), 3.16-3.23 (3H, m), 3.90-3.92 (1H, m), 4.25 (2H, d, J=2.9 Hz), 4.33-4.37 (1H, m), 4.61-4.68 (1H, m), 5.44 (1H, m), 5.90 (1H, s), 6.93-7.00 (2H,m), 7.33 (1H, s), 7.38 (1H, d, J=8.7 Hz).	ESI-MS m/z: 479 [M+H]+
231		1H-NMR ($CDCl_3$) δ : 1.96 (1H, m), 2.13 (1H, m), 2.84-3.01 (3H, m), 3.15-3.24 (3H, m), 3.81 (2H, q, J=8.7 Hz), 3.93 (1H, m), 4.20 (2H, d, J=2.8 Hz), 4.35 (1H, m), 4.56 (2H, s), 4.62 (1H, m), 5.42 (1H, m), 5.89 (1H, s), 6.87 (1H, d, J=8.3 Hz), 7.00 (1H, d, J=8.6 Hz), 7.04 (1H, m), 7.11 (1H, dd, J=8.5, 2.0 Hz).	ESI-MS m/z: 523 [M+H]+
232 (isomer A)		1H-NMR ($CDCl_3$) δ : 1.97 (1H, m), 2.12 (1H, m), 2.84-3.03 (3H, m), 3.15-3.24 (3H, m), 3.81 (2H, q, J=8.7 Hz), 3.93 (1H, t, J=8.2 Hz), 4.20 (2H, s), 4.34 (1H, t, J=9.0 Hz), 4.57 (2H, s), 4.63 (1H, m), 5.43 (1H, m), 5.89 (1H, s), 6.87 (1H, d, J=8.3 Hz), 7.00 (1H, d, J=8.0 Hz), 7.04 (1H, s), 7.11 (1H, d, J=8.2 Hz).	ESI-MS m/z: 523 [M+H]+
232 (isomer B)		1H-NMR ($CDCl_3$) δ : 1.97 (1H, m), 2.12 (1H, m), 2.84-3.03 (3H, m), 3.15-3.24 (3H, m), 3.81 (2H, q, J=8.7 Hz), 3.93 (1H, t, J=8.2 Hz), 4.20 (2H, s), 4.34 (1H, t, J=9.0 Hz), 4.57 (2H, s), 4.63 (1H, m), 5.43 (1H, m), 5.89 (1H, s), 6.87 (1H, d, J=8.3 Hz), 7.00 (1H, d, J=8.0 Hz), 7.04 (1H, s), 7.11 (1H, d, J=8.2 Hz).	ESI-MS m/z: 523 [M+H]+
233		1H-NMR ($CDCl_3$) δ : 1.80-1.90 (1H, m), 1.98-2.08 (1H, m), 2.67-2.88 (3H, m), 3.12-3.18 (1H, m), 3.56-3.62 (4H, m), 3.89-3.94 (1H, m), 4.18 (2H, m), 4.33-4.38 (1H, m), 4.58-4.63 (1H, m), 5.35-5.42 (1H, m), 5.88 (1H, s), 6.80 (1H, d, J=8.7 Hz), 6.96-7.00 (1H, m), 7.03 (1H, d, J=1.8 Hz), 7.08 (1H, dd, J=18.6, 2.6 Hz).	ESI-MS m/z: 439 [M+H]+
234 (isomer A)		1H-NMR ($CDCl_3$) δ : 1.86 (1H, m), 1.99-2.04 (1H, m), 2.69-2.86 (3H, m), 3.15 (1H, dd, J=16.7, 5.1 Hz), 3.57-3.63 (4H, m), 3.91 (1H, t, J=9.0 Hz), 4.19 (2H, s), 4.36 (1H, t, J=9.1 Hz), 4.61 (1H, m), 5.37-5.40 (1H, m), 5.89 (1H, s), 6.80 (1H, d, J=8.8 Hz), 6.97-7.09 (3H, m).	ESI-MS m/z: 439 [M+H]+
234 (isomer B)		1H-NMR ($CDCl_3$) δ : 1.87 (1H, m), 2.02-2.08 (1H, m), 2.75-2.86 (3H, m), 3.15 (1H, dd, J=17.1, 5.3 Hz), 3.57-3.64 (4H, m), 3.92 (1H, t, J=8.8 Hz), 4.18 (2H, s), 4.35 (1H, t, J=9.1 Hz), 4.61 (1H, m), 5.35-5.42 (1H, m), 5.89 (1H, s), 6.80 (1H, d, J=8.8 Hz), 6.96-7.09 (3H, m).	ESI-MS m/z: 439 [M+H]+
235		1H-NMR ($CDCl_3$) δ : 1.85-1.87 (1H, m), 1.98-2.05 (1H, m), 2.73-2.93 (3H, m), 3.18-3.23 (1H, m), 3.55-3.63 (4H, m), 3.89-3.94 (1H, m), 4.25-4.26 (2H, m), 4.33-4.38 (1H, m), 4.64-4.66 (1H, m), 5.36-5.41 (1H, m), 5.89 (1H, s), 6.93-7.00 (2H, m), 7.33-7.39 (2H, m).	ESI-MS m/z: 473 [M+H]+

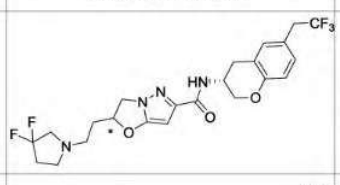
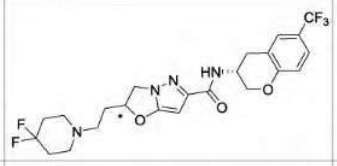
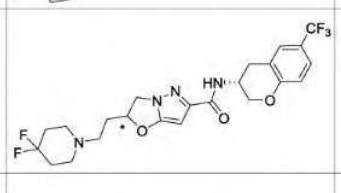
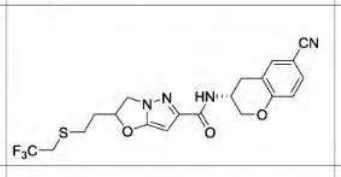
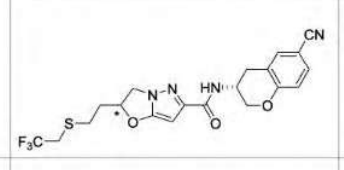
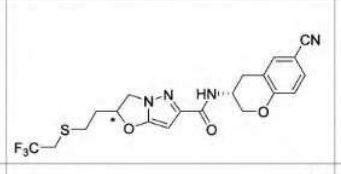
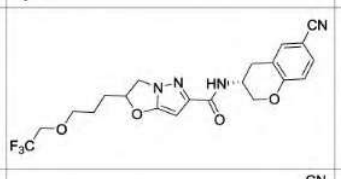
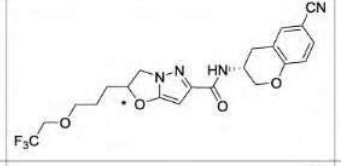
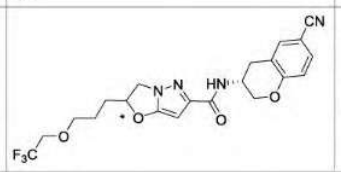
[0911]

[Table 34]

Example	Structural formula	NMR	MS
236 (isomer A)		1H-NMR ($CDCl_3$) δ : 1.87 (1H, m), 1.99-2.06 (1H, m), 2.75-2.93 (3H, m), 3.18-3.23 (1H, m), 3.60 (4H, m), 3.91 (1H, t, J=8.9 Hz), 4.26 (2H, s), 4.36 (1H, t, J=9.0 Hz), 4.65 (1H, m), 5.38-5.46 (1H, m), 5.89 (1H, s), 6.93-6.97 (2H, m), 7.33 (1H, s), 7.38 (1H, d, J=8.8 Hz).	ESI-MS m/z: 473 [M+H]+
236 (isomer B)		1H-NMR ($CDCl_3$) δ : 1.86 (1H, m), 1.98-2.08 (1H, m), 2.74-2.93 (3H, m), 3.18-3.23 (1H, m), 3.60 (4H, m), 3.92 (1H, t, J=8.8 Hz), 4.25 (2H, s), 4.35 (1H, t, J=9.0 Hz), 4.65 (1H, m), 5.35-5.44 (1H, m), 5.89 (1H, s), 6.93-6.95 (2H, m), 7.33 (1H, s), 7.38 (1H, d, J=9.2 Hz).	ESI-MS m/z: 473 [M+H]+
237		1H-NMR ($CDCl_3$) δ : 1.85-1.87 (1H, m), 2.02-2.05 (1H, m), 2.75-2.87 (5H, m), 3.12-3.19 (1H, m), 3.55-3.61 (3H, m), 3.88-3.94 (1H, m), 4.01 (2H, t, J=7.2 Hz), 4.11-4.18 (3H, m), 4.31-4.38 (1H, m), 4.60-4.61 (1H, m), 5.36-5.40 (1H, m), 5.89 (1H, s), 6.19 (1H, t, J=74.7 Hz), 6.81 (1H, dd, J=8.2, 2.1 Hz), 6.90 (1H, s), 6.97-7.01 (2H, m).	ESI-MS m/z: 499 [M+H]+
238 (isomer A)		1H-NMR ($CDCl_3$) δ : 1H-NMR (CDCl3) 1.81-1.86 (1H, m), 1.93-2.13 (1H, m), 2.69-2.94 (5H, m), 3.08-3.13 (2H, m), 3.58 (2H, t, J=11.9 Hz), 3.76 (1H, t, J=11.9 Hz), 3.91 (1H, m), 4.01 (2H, t, J=7.1 Hz), 4.18 (2H, s), 4.35 (1H, m), 4.61 (1H, s), 5.41 (1H, m,), 5.89 (1H, s), 6.19 (1H, t, J=74.8 Hz), 6.81 (1H, d, J=8.2 Hz), 6.90 (1H, s), 6.97-7.02 (2H, m).	ESI-MS m/z: 499 [M+H]+
238 (isomer B)		1H-NMR ($CDCl_3$) δ : 1.81-1.86 (1H, m), 2.13-1.93 (1H, m), 2.81-2.93 (5H, m), 3.08-3.13 (2H, m), 3.59 (2H, t, J=11.9 Hz), 3.77 (1H, t, J=11.9 Hz), 3.92 (1H, m), 4.01 (2H, t, J=7.1 Hz), 4.18 (2H, s), 4.34 (1H, m), 4.61 (1H, s), 5.40 (1H, m), 5.89 (1H, s), 6.19 (1H, t, J=74.7 Hz), 6.81 (1H, d, J=8.6 Hz), 6.90 (1H, s), 6.97-7.02 (2H, m)	ESI-MS m/z: 499 [M+H]+
239		1H-NMR ($CDCl_3$) δ : 1.86-1.87 (1H, m), 2.01-2.06 (1H, m), 2.73-2.92 (5H, m), 3.14-3.19 (1H, m), 3.55-3.63 (4H, m), 3.87-3.99 (1H, m), 4.10 (2H, t, J=7.3 Hz), 4.18 (2H, s), 4.32-4.38 (1H, m), 4.61-4.62 (1H, m), 5.37-5.39 (1H, m), 5.89 (1H, s), 6.82 (1H, d, J=8.3 Hz), 6.89 (1H, s), 6.96-7.01 (2H, m).	ESI-MS m/z: 517 [M+H]+
240 (isomer A)		1H-NMR ($CDCl_3$) δ : 1.86-1.87 (1H, m), 2.01-2.04 (1H, m), 2.79-2.03 (5H, m), 3.08-3.13 (1H, m), 3.59 (4H, t, J=11.5 Hz), 3.91 (1H, t, J=8.7 Hz), 4.10 (2H, t, J=9.1 Hz), 4.18 (2H, s), 4.35 (1H, t, J=9.1 Hz), 4.61 (1H, m), 5.38 (1H, m), 5.89 (1H, s), 6.82 (1H, d, J=8.1 Hz), 6.89 (1H, s), 6.96-7.01 (2H, m).	ESI-MS m/z: 517 [M+H]+
240 (isomer B)		1H-NMR ($CDCl_3$) δ : 1.86-1.87 (1H, m), 2.01-2.04 (1H, m), 2.70-2.96 (5H, m), 3.08-3.16 (1H, m), 3.59 (4H, t, J=11.9 Hz), 3.91 (1H, t, J=8.7 Hz), 4.10 (1H, t, J=7.26 Hz), 4.18 (2H, s), 4.34 (1H, t, J=9.1 Hz), 4.61 (1H, m), 5.37 (1H, m), 5.89 (1H, s), 6.82 (1H, d, J=8.3 Hz), 6.90 (1H, s), 6.90-7.10 (2H, m).	ESI-MS m/z: 517 [M+H]+
241 (isomer A)		1H-NMR ($CDCl_3$) δ : 1.98 (1H, m), 2.10 (1H, m), 2.22-2.32 (2H, m), 2.60-2.76 (4H, m), 2.83-2.94 (3H, m), 3.15-3.30 (3H, m), 3.93 (1H, t, J = 8.9 Hz), 4.20 (2H, s), 4.36 (1H, t, J = 8.9 Hz), 4.62 (1H, m), 5.40 (1H, m), 5.89 (1H, s), 6.85 (1H, d, J = 8.2 Hz), 6.97-7.06 (3H, m).	ESI-MS m/z: 501 [M+H]+

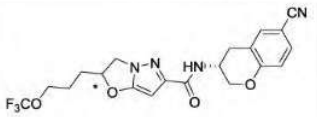
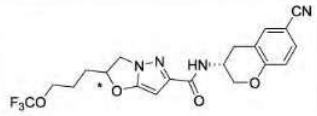
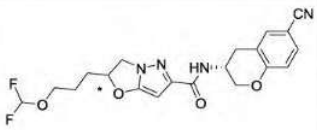
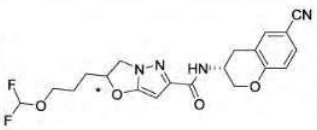
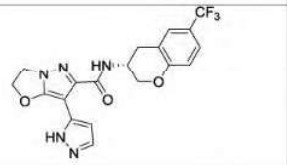
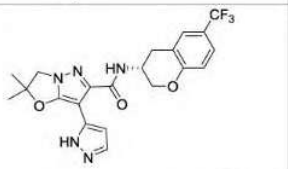
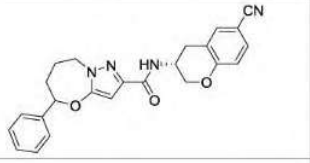
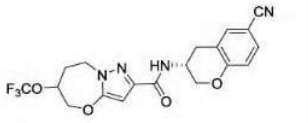
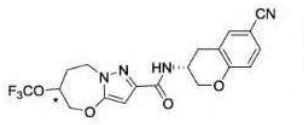
[0912]

[Table 35]

Example	Structural formula	NMR	MS
241 (isomer B)		1H-NMR ($CDCl_3$) δ : 1.99 (1H, m), 2.11 (1H, m), 2.22-2.33 (2H, m), 2.63 (1H, m), 2.69-2.77 (3H, m), 2.83-2.98 (3H, m), 3.15-3.30 (3H, m), 3.94 (1H, t, J = 8.8 Hz), 4.20 (2H, s), 4.35 (1H, t, J = 9.0 Hz), 4.62 (1H, m), 5.39 (1H, m), 5.89 (1H, s), 6.85 (1H, d, J = 8.3 Hz), 6.97-7.06 (3H, m).	ESI-MS m/z: 501 [M+H]+
242 (isomer A)		1H-NMR ($CDCl_3$) δ :1.92-2.14 (6H, m), 2.55-2.64 (6H, m), 2.91 (1H, m), 3.20 (1H, m), 3.94 (1H, t, J = 8.8 Hz), 4.25 (2H, d, J = 2.8 Hz), 4.35 (1H, t, J = 9.1 Hz), 4.65 (1H, m), 5.39 (1H, m), 5.89 (1H, s), 6.93-6.97 (2H, m), 7.33 (1H, s), 7.38 (1H, d, J = 8.4 Hz).	ESI-MS m/z: 501 [M+H]+
242 (isomer B)		1H-NMR ($CDCl_3$) δ : 1.93-2.17 (6H, m), 2.56-2.61 (6H, m), 2.91 (1H, dd, J = 16.9, 4.1 Hz), 3.21 (1H, dd, J = 17.0, 5.2 Hz), 3.95 (1H, t, J = 8.9 Hz), 4.25 (2H, d, J = 2.6 Hz), 4.34 (1H, t, J = 9.0 Hz), 4.65 (1H, m), 5.38 (1H, m), 5.89 (1H, s), 6.93-7.00 (2H, m), 7.33 (1H, s), 7.38 (1H, d, J = 9.0 Hz).	ESI-MS m/z: 501 [M+H]+
243		1H-NMR ($CDCl_3$) δ : 2.07 (1H, m), 2.26 (1H, m), 2.82-2.94 (3H, m), 3.08-3.20 (3H, m), 3.91 (1H, m), 4.28 (2H, s), 4.38 (1H, m), 4.64 (1H, m), 5.44 (1H, m), 5.91 (1H, s), 6.93 (2H, d, J=8.5 Hz), 7.38 (1H, s), 7.42 (1H, m).	ESI-MS m/z: 453 [M+H]+
244 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.07 (1H, m), 2.25 (1H, m), 2.81-2.95 (3H, m), 3.07-3.20 (3H, m), 3.91 (1H, dd, J=9.9, 7.6 Hz), 4.28 (2H, m), 4.38 (1H, t, J=8.5 Hz), 4.64 (1H, m), 5.44 (1H, m), 5.91 (1H, s), 6.90 (1H, s), 6.93 (1H, d, J=8.4 Hz), 7.38 (1H, s), 7.42 (1H, d, J=8.7 Hz).	ESI-MS m/z: 453 [M+H]+
244 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.07 (1H, m), 2.25 (1H, m), 2.81-2.95 (3H, m), 3.07-3.20 (3H, m), 3.91 (1H, dd, J=9.9, 7.6 Hz), 4.28 (2H, m), 4.38 (1H, t, J=8.5 Hz), 4.64 (1H, m), 5.44 (1H, m), 5.91 (1H, s), 6.90 (1H, s), 6.93 (1H, d, J=8.4 Hz), 7.38 (1H, s), 7.42 (1H, d, J=8.7 Hz).	ESI-MS m/z: 453 [M+H]+
245		1H-NMR ($CDCl_3$) δ : 1.69-1.92 (2H, m),1.92-2.09 (2H, m), 2.89 (1H, dd, J=17.3. 5.7 Hz) 3.18 (1H, dd, J=14.3 ,5.2 Hz), 3.68 (2H, m), 3.77-3.93 (3H, m), 4.22-4.29 (2H, m), 4.34 (1H, t, J=8.7 Hz), 4.64 (1H, m), 5.34 (1H, m), 5.89 (1H, s), 6.88-6.94 (2H, m), 7.38 (1H, s), 7.42 (1H, d, J=8.7 Hz),	ESI-MS m/z: 451 [M+H]+
246 (isomer A)		1H-NMR ($CDCl_3$) δ : 1.69-1.92 (2H, m),1.92-2.09 (2H, m), 2.89 (1H, dd, J=17.3. 5.7 Hz) 3.18 (1H, dd, J=14.3 ,5.2 Hz), 3.68 (2H, m), 3.77-3.93 (3H, m), 4.22-4.29 (2H, m), 4.34 (1H, t, J=8.7 Hz), 4.64 (1H, m), 5.34 (1H,m), 5.89 (1H, s), 6.88-6.94 (2H, m), 7.38 (1H, s), 7.42 (1H, d, J=8.7 Hz),	ESI-MS m/z: 451 [M+H]+
246 (isomer B)		1H-NMR ($CDCl_3$) δ : 1.69-1.92 (2H, m),1.92-2.09 (2H, m), 2.89 (1H, dd, J=17.3. 5.7 Hz) 3.18 (1H, dd, J=14.3 ,5.2 Hz), 3.68 (2H, m), 3.77-3.93 (3H, m), 4.22-4.29 (2H, m), 4.34 (1H, t, J=8.7 Hz), 4.64 (1H, m), 5.34 (1H,m), 5.89 (1H, s), 6.88-6.94 (2H, m), 7.38 (1H, s), 7.42 (1H, d, J=8.7 Hz)	ESI-MS m/z: 451 [M+H]+

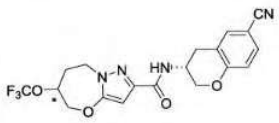
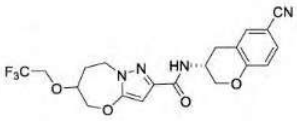
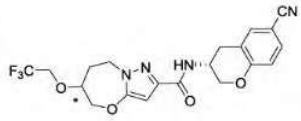
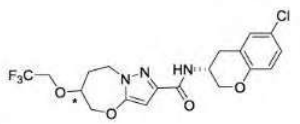
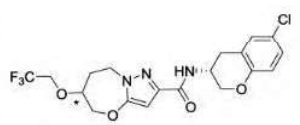
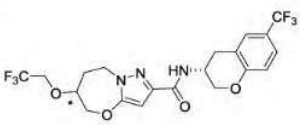
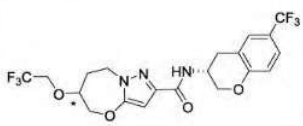
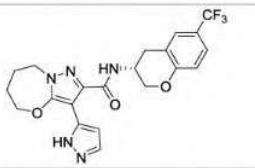
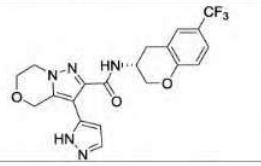
[0913]

[Table 36]

Example	Structural formula	NMR	MS
247 (isomer A)		1H-NMR ($CDCl_3$) δ : 1.81-2.06 (4H, m), 2.89 (1H, dd, J=17.0 ,5.7 Hz), 3.18 (1H, dd, J=17.3. 5.4 Hz), 3.90 (1H, dd, J=9.9 ,7.5 Hz), 3.98-4.09 (2H, m), 4.28 (2H, m), 4.36 (1H, dd, J=10.3, 7.4 Hz), 4.59-4.68 (1H, m), 5.28-5.37 (1H, m), 5.90 (1H, s), 6.89 (1H, m), 6.93 (1H, d, J=8.0 Hz), 7.38 (1H, s), 7.42 (1H, dd, J=8.7, 1.8 Hz),	ESI-MS m/z: 437 [M+H]+
247 (isomer B)		1H-NMR ($CDCl_3$) δ : 1.81-2.06 (4H, m), 2.89 (1H, dd, J=17.0 ,5.7 Hz), 3.18 (1H, dd, J=17.3. 5.4 Hz), 3.90 (1H, dd, J=9.9 ,7.5 Hz), 3.98-4.09 (2H, m), 4.28 (2H, m), 4.36 (1H, dd, J=10.3, 7.4 Hz), 4.59-4.68 (1H, m), 5.28-5.37 (1H, m), 5.90 (1H, s), 6.89 (1H, m), 6.93 (1H, d, J=8.0 Hz), 7.38 (1H, s), 7.42 (1H, dd, J=8.7, 1.8 Hz)	ESI-MS m/z: 437 [M+H]+
248 (isomer A)		1H-NMR ($CDCl_3$) δ : 1.73-2.10 (4H, m), 2.89 (1H, dd, J=16.7 ,4.3 Hz), 3.17 (1H, dd, J=17.4. 5.8 Hz), 3.86-3.99 (3H, m), 4.22-4.32 (2H, m), 4.34 (1H, t, J=8.7 Hz), 4.68 (1H, m), 5.32 (1H, m), 5.90 (1H, s), 6.21 (1H, t, J=75.0 Hz), 6.88-6.95 (1H, m), 6.89 (1H, m), 7.38 (1H, s), 7.42 (1H, dd, J=8.7, 1.8 Hz),	ESI-MS m/z: 419 [M+H]+
248 (isomer B)		1H-NMR ($CDCl_3$) δ : 1.73-2.10 (4H, m), 2.89 (1H, dd, J=16.7 ,4.3 Hz), 3.17 (1H, dd, J=17.4. 5.8 Hz), 3.86-3.99 (3H, m), 4.22-4.32 (2H, m), 4.34 (1H, t, J=8.7 Hz), 4.68 (1H, m), 5.32 (1H, m), 5.90 (1H, s), 6.21 (1H, t, J=75.0 Hz), 6.88-6.95 (1H, m), 6.89 (1H, m), 7.38 (1H, s), 7.42 (1H, dd, J=8.7, 1.8 Hz)	ESI-MS m/z: 419 [M+H]+
249		1H-NMR ($CDCl_3$) δ : 2.94-2.98 (1H,m), 3.23-3.26 (1H, m), 4.09-4.38 (4H, m), 4.72 (1H, m), 5.21 (2H, t, J=8.2 Hz), 6.41 (1H, m), 6.97 (1H, m), 7.22-7.42 (2H, m), 7.57-7.77 (2H, m).	ESI-MS m/z: 420 [M+H]+
250		1H-NMR ($CDCl_3$) δ : 1.69-1.71 (6H, m), 2.80 (1H,s), 2.99-3.03 (1H, m), 3.22-3.27 (1H, m), 4.07 (2H, m), 4.23-4.41 (2H, m), 4.70 (1H, s), 6.43 (1H, s), 6.92-6.99 (1H, m), 7.31-7.40 (3H, m), 7.58 (1H, s).	ESI-MS m/z: 448 [M+H]+
251		1H-NMR ($CDCl_3$) δ : 1.86 (1H, m), 2.11-2.29 (3H, m), 2.92 (1H, d, J=16.9 Hz), 3.18 (1H, dd, J=16.6, 5.2 Hz), 4.15 (1H, t, J=13.2 Hz), 4.24-4.32 (2H, m), 4.39 (1H, d, J=14.6 Hz), 4.62-4.69 (2H, m), 6.27 (1H, s), 6.93-6.96 (2H, m), 7.34-7.44 (7H, m).	ESI-MS m/z: 415 [M+H]+
252		1H-NMR ($CDCl_3$) δ : 2.13-2.26 (2H, m), 2.89-2.96 (1H, m), 3.15-3.20 (1H, m), 4.02-4.06 (1H, m), 4.11-4.18 (1H, m), 4.23-4.28 (3H, m), 4.41-4.47 (1H, m), 4.64-4.66 (2H, m), 6.30 (1H, s), 6.89-7.00 (2H, m), 7.39-7.44 (2H, m).	ESI-MS m/z: 423 [M+H]+
253 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.10-2.26 (2H, m), 2.88-2.93 (1H, m), 3.18 (1H, dd, J=16.8, 5.1 Hz), 4.05 (1H, d, J=12.4 Hz), 4.13-4.18 (1H, m), 4.23-4.31 (3H, m), 4.41-4.47 (1H, m), 4.64 (2H, m), 6.30 (1H, s), 6.90 (1H, d, J=7.3 Hz), 6.94 (1H, d, J=8.5 Hz), 7.40 (1H, s), 7.43 (1H, d, J=8.6 Hz).	ESI-MS m/z: 423 [M+H]+

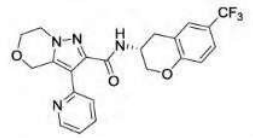
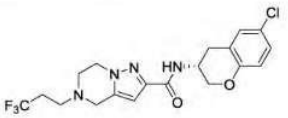
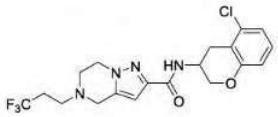
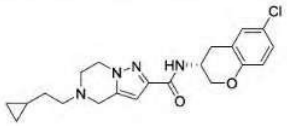
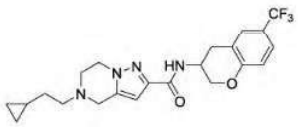
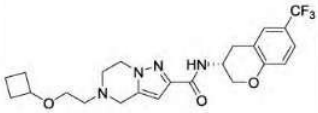
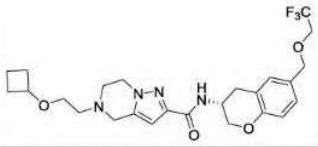
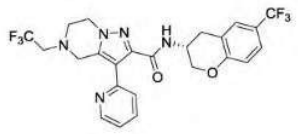
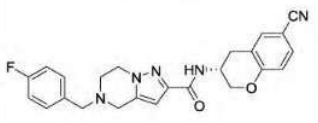
[0914]

[Table 37]

Example	Structural formula	NMR	MS
253 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.09-2.26 (2H, m), 2.88-2.94 (1H, m), 3.17 (1H, dd, J=16.7, 5.2 Hz), 4.03 (1H, d, J=11.0 Hz), 4.13-4.19 (1H, m), 4.24-4.32 (3H, m), 4.41-4.48 (1H, m), 4.64 (2H, m), 6.30 (1H, s), 6.92-6.96 (2H, m), 7.39 (1H, s), 7.43 (1H, dd, J=8.5, 2.0 Hz).	ESI-MS m/z: 423 [M+H]+
254		1H-NMR ($CDCl_3$) δ : 2.05-2.07 (2H, m), 2.90 (1H, m), 3.18 (1H, m), 3.92-4.18 (6H, m), 4.24-4.31 (2H, m), 4.41-4.44 (1H, m), 4.63 (1H, m), 6.27 (1H, s), 6.89-6.95 (2H, m), 7.38-7.44 (2H, m).	ESI-MS m/z: 437 [M+H]+
255 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.06-2.07 (2H, m), 2.90 (1H, dd, J=4.8, 16.9 Hz), 3.18 (1H, dd, J=16.8, 5.3 Hz), 3.92-4.17 (6H, m), 4.24-4.31 (2H, m), 4.40-4.46 (1H, m), 4.63 (1H, m), 6.27 (1H, s), 6.90 (1H, d, J=7.9 Hz), 6.93 (1H, d, J=8.4 Hz), 7.39 (1H, s), 7.43 (1H, d, J=8.5 Hz).	ESI-MS m/z: 437 [M+H]+
256 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.05-2.07 (2H, m), 2.85 (1H, d, J=17.1 Hz), 3.14 (1H, dd, J=17.3, 5.0 Hz), 3.89-4.01 (4H, m), 4.09-4.19 (4H, m), 4.41-4.46 (1H, m), 4.61 (1H, m), 6.26 (1H, s), 6.82 (1H, d, J=8.7 Hz), 6.99-7.10 (3H, m).	ESI-MS m/z: 446 [M+H]+
256 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.06-2.07 (2H, m), 2.82-2.87 (1H, m), 3.15 (1H, dd, J=16.8, 4.7 Hz), 3.88-4.19 (8H, m), 4.39-4.46 (1H, m), 4.61 (1H, m), 6.26 (1H, s), 6.81 (1H, d, J=8.5 Hz), 6.97-6.99 (1H, m), 7.05 (1H, s), 7.09 (1H, d, J=8.6 Hz).	ESI-MS m/z: 446 [M+H]+
257 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.06-2.07 (2H, m), 2.84-2.94 (1H, m), 3.15-3.24 (1H, m), 3.91-4.19 (6H, m), 4.25-4.27 (2H, m), 4.41-4.46 (1H, m), 4.64 (1H, s), 6.27 (1H, s), 6.95 (2H, d, J=8.2 Hz), 7.34 (1H, s), 7.39 (1H, d, J=8.9 Hz).	ESI-MS m/z: 480 [M+H]+
257 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.05-2.07 (2H, m), 2.90-2.95 (1H, m), 3.20 (1H, dd, J=16.1, 5.2 Hz), 3.91-4.18 (6H, m), 4.26 (2H, m), 4.40-4.46 (1H, m), 4.65 (1H, m), 6.26 (1H, s), 6.94-6.98 (2H, m), 7.33 (1H, s), 7.39 (1H, d, J=8.2 Hz).	ESI-MS m/z: 480 [M+H]+
258		1H-NMR ($CDCl_3$) δ : 1.86-1.94 (2H, m), 2.11-2.20 (2H, m), 2.97 (1H, m), 3.26 (1H, dd, J=16.8, 5.5 Hz), 4.18-4.30 (7H, m), 4.70 (1H, m), 6.65 (1H, s), 6.98 (1H, d, J=8.4 Hz), 7.36-7.46 (3H, m), 7.60 (1H, s).	ESI-MS m/z: 448 [M+H]+
259		1H-NMR ($CDCl_3$) δ : 3.01-3.18 (1H, m), 3.18-3.29 (1H, m), 4.09-4.46 (6H, m), 4.71 (1H, m), 4.97 (2H, m), 6.06 (1H, s), 6.98 (1H, d, J=8.8 Hz), 7.33-7.61 (3H, m), 7.62 (1H, s).	ESI-MS m/z: 434 [M+H]+

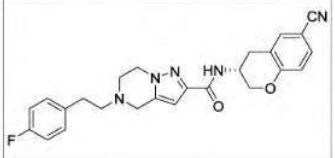
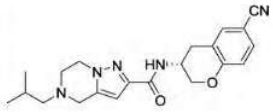
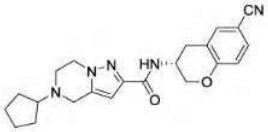
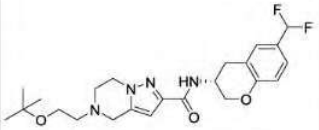
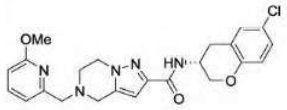
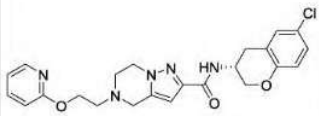
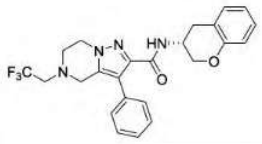
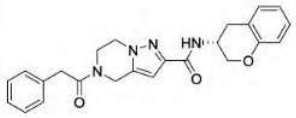
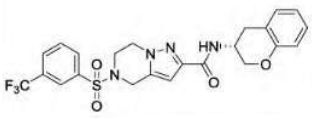
[0915]

[Table 38]

Example	Structural formula	NMR	MS
260		1H-NMR ($CDCl_3$) δ : 2.92-2.96 (1H, m), 3.19-3.26 (1H, m), 4.07-4.35 (6H, m), 4.71 (1H, m), 4.99 (2H, s), 6.96 (1H, m), 7.10 (1H, m), 7.31-7.43 (2H,m), 7.67-7.74 (2H, m), 8.21 (1H, m), 8.98 (1H, m).	ESI-MS m/z: 445 [M+H]+
261		1H-NMR ($CDCl_3$) δ : 2.35-2.41 (2H, m), 2.80-2.88 (3H, m), 2.96 (2H, t, J=5.6 Hz), 3.15 (1H, dd, J=17.0, 5.2 Hz), 3.72 (2H, s), 4.14 (2H, t, J=5.4 Hz), 4.19 (2H, d, J=2.9 Hz), 4.59-4.67 (1H, m), 6.53 (1H, s), 6.81 (1H, d, J=8.6 Hz), 6.99-7.13 (3H, m).	ESI-MS m/z: 429 [M+H]+
262		1H-NMR ($CDCl_3$) δ : 2.32-2.45 (2H, m), 2.81-2.97 (5H, m), 3.13 (1H, dd, J=17.4, 5.8 Hz), 3.73 (2H, s), 4.11-4.18 (4H, m), 4.65-4.73 (1H, m), 6.54 (1H, s), 6.81 (1H, dd, J=8.1, 1.1 Hz), 6.95-7.10 (3H, m).	ESI-MS m/z: 429 [M+H]+
263		1H-NMR ($CDCl_3$) δ : 0.04-0.10 (2H, m), 0.43-0.49 (2H, m), 0.65-0.75 (1H, m), 1.45 (2H, q, J=8.0 Hz), 2.64 (2H, t, J=7.7 Hz), 2.81-2.96 (3H, m), 3.15 (1H, dd, J=16.8, 5.1 Hz), 3.68 (2H, s), 4.13 (2H, t, J=5.5 Hz), 4.17-4.20 (2H, m), 4.59-4.65 (1H, m), 6.50 (1H, s), 6.78-6.84 (1H, m), 6.97-7.14 (3H, m).	ESI-MS m/z: 401 [M+H]+
264		1H-NMR ($CDCl_3$) δ : 0.08 (2H, q, J=5.7 Hz), 0.46 (2H, q, J=6.6 Hz), 0.66-0.73 (1H, m), 1.42-1.49 (2H, m), 2.64 (2H, t, J=7.6 Hz), 2.90-2.94 (3H, m), 3.15-3.25 (1H, m), 3.68 (2H, s), 4.13 (2H, t, J=8.6 Hz), 4.22-4.28 (2H, m), 4.61-4.67 (1H, m), 6.51 (1H, s), 6.93-7.02 (2H, m), 7.33-7.41 (2H, m).	ESI-MS m/z: 435 [M+H]+
265		1H-NMR ($CDCl_3$) δ : 1.47-1.71 (2H, m), 1.88-1.98 (2H, m), 2.18-2.23 (2H, m), 2.77 (2H, t, J=5.3 Hz), 2.90-2.96 (1H, m), 3.00-3.03 (2H, m), 3.18-3.23 (1H, m), 3.52 (2H, t, J=5.3 Hz), 3.76 (2H, s), 3.89-3.96 (1H, m), 4.14 (2H, t, J=5.6 Hz), 4.21-4.29 (2H, m), 4.66 (1H, m), 6.51 (1H, s), 6.94-7.00 (2H, m), 7.33 (1H, s), 7.38 (1H, d, J=9.7 Hz).	ESI-MS m/z: 465 [M+H]+
266		1H-NMR ($CDCl_3$) δ :1.47-1.76 (2H, m), 1.90-1.95 (2H, m), 2.19-2.21 (2H, m), 2.77 (2H, t, J=5.4 Hz), 2.86-2.91 (1H, m), 3.01 (2H, t, J=5.6 Hz), 3.16-3.21 (1H, m), 3.52 (2H, t, J=5.3 Hz), 3.76 (2H, s), 3.82 (2H, q, J=8.3 Hz), 3.93 (1H, m), 4.12-4.21 (4H, m), 4.57 (2H, s), 4.63 (1H, m), 6.51 (1H, s), 6.87 (1H, d, J=8.4 Hz), 7.02-7.13 (3H, m).	ESI-MS m/z: 509 [M+H]+
267		1H-NMR ($CDCl_3$) δ : 2.03 (1H, m), 2.87-3.05 (2H, m), 3.11-3.24 (4H, m), 4.03-3.08 (2H,m), 4.21-4.30 (3H, m), 4.66 (1H, m), 6.90-9.85 (1H, m), 7.06-7.09 (1H, m), 7.21 (1H, s), 7.31 (1H, m), 7.44-7.77 (2H, m), 8.18 (1H, m), 9.00 (1H,m).	ESI-MS m/z: 526 [M+H]+
268		1H-NMR ($CDCl_3$) δ : 2.92 (3H, m), 3.17 (1H, dd, J=16.8, 5.0 Hz), 3.67 (4H, m), 4.12 (2H, m), 4.23-4.32 (2H, m), 4.64 (1H, m), 6.49 (1H, s), 6.92-6.97 (2H, m), 7.03 (2H, t, J=8.1 Hz), 7.31 (2H, t, J=6.3 Hz), 7.38 (1H, s), 7.42 (1H, d, J=8.6 Hz).	ESI-MS m/z: 432 [M+H]+

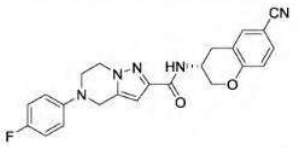
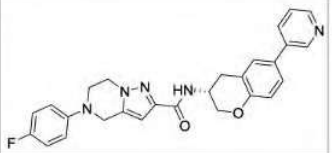
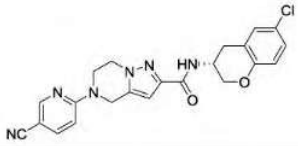
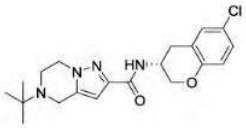
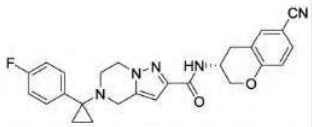
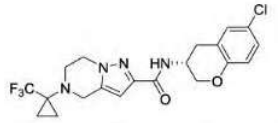
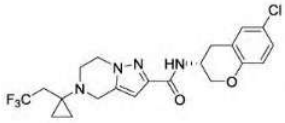
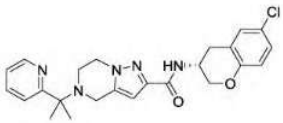
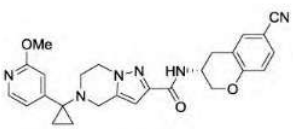
[0916]

[Table 39]

Example	Structural formula	NMR	MS
269		1H-NMR ($CDCl_3$) δ : 2.81 (4H, m), 2.89-2.99 (3H, m), 3.18 (1H, dd, J=16.8, 4.9 Hz), 3.75 (2H, s), 4.14 (2H, t, J=5.5 Hz), 4.24-4.32 (2H, m), 4.65 (1H, m), 6.53 (1H, s), 6.92-7.00 (4H, m), 7.16 (2H, m), 7.39 (1H, s), 7.42 (1H, d, J=8.4 Hz).	ESI-MS m/z: 446 [M+H]+
270		1H-NMR ($CDCl_3$) δ : 0.93 (6H, d, J=6.6 Hz), 1.82 (1H, m), 2.29 (2H, d, J=7.4 Hz), 2.86-2.96 (3H, m), 3.17 (1H, dd, J=16.5, 5.2, Hz), 3.63 (2H, s), 4.12 (2H, t, J=5.6 Hz), 4.23-4.32 (2H, m), 4.64 (1H, m), 6.51 (1H, s), 6.92-6.96 (2H, m), 7.38-7.43 (2H, m).	ESI-MS m/z: 380 [M+H]+
271		1H-NMR ($CDCl_3$) δ :1.45-1.62 (4H, m), 1.74 (2H, m), 1.93 (2H, m), 2.75 (1H, t, J=7.5 Hz), 2.89-2.98 (3H, m), 3.17 (1H, dd, J=16.7, 4.9 Hz), 3.73 (2H, m), 4.13 (2H, t, J=5.6 Hz), 4.25-4.33 (2H, m), 4.64 (1H, m), 6.51 (1H, s), 6.92-6.95 (2H, m), 7.38 (1H, s), 7.42 (1H, dd, J=8.4, 1.9 Hz).	ESI-MS m/z: 392 [M+H]+
272		1H-NMR ($CDCl_3$) δ : 1.20 (9H, s), 2.75 (2H, t, J=5.8 Hz), 2.91 (1H, dd, J=17.6, 5.7 Hz), 3.03 (2H, t, J=5.3 Hz), 3.20 (1H, dd, J=16.5, 5.6 Hz), 3.55 (2H, t, J=5.8 Hz), 3.77 (2H, s), 4.13 (2H, t, J=5.5 Hz), 4.20-4.27 (2H, m), 4.65 (1H, m), 6.50 (1H, s), 6.56 (1H, t, J=56.8 Hz), 6.93 (1H, d, J=8.4 Hz), 7.01 (1H, d, J=7.6 Hz), 7.22 (1H, s), 7.29 (1H, s).	ESI-MS m/z: 449 [M+H]+
273		1H-NMR ($CDCl_3$) δ : 2.85 (1H, dd, J=16.8, 4.3 Hz), 3.05 (2H, t, J=4.8 Hz), 3.15 (1H, dd, J=16.8, 5.3 Hz), 3.80 (4H, d, J=3.1 Hz), 3.92 (3H, s), 4.13-4.22 (4H, m), 4.61 (1H, m), 6.50 (1H, s), 6.65 (1H, d, J=8.2 Hz), 6.80 (1H, d, J=8.6 Hz), 6.98 (1H, d, J=7.2 Hz), 7.02-7.04 (2H, m), 7.08 (1H, dd, J=8.7, 2.5 Hz), 7.56 (1H, t, J=7.8 Hz).	ESI-MS m/z: 454 [M+H]+
274		1H-NMR ($CDCl_3$) δ : 2.85 (1H, dd, J=16.8, 4.2 Hz), 3.00 (2H, t, J=5.5 Hz), 3.07 (2H, m), 3.15 (1H, dd, J=16.8, 5.2 Hz), 3.84 (2H, s), 4.15 (2H, t, J=5.5 Hz), 4.19 (2H, dd, J=4.4,1.8 Hz), 4.51 (2H, t, J=5.5 Hz), 4.61 (1H, m), 6.51 (1H, m), 6.76 (1H, d, J=8.4 Hz), 6.81 (1H, d, J=8.7 Hz), 6.88 (1H, m), 7.01-7.04 (2H, m), 7.08 (1H, dd, J=8.7, 2.6 Hz), 7.58 (1H, m), 8.14 (1H, ddd, J=5.0, 2.0, 0.7 Hz).	ESI-MS m/z: 454 [M+H]+
275		1H-NMR ($CDCl_3$) δ :2.79-2.84 (1H, m), 3.10-3.23 (5H, m), 3.86 (2H, s), 4.15 (2H, d, J=2.7 Hz), 4.19-4.23 (2H, m), 4.55-4.61 (1H, m), 6.83-7.04 (4H, m), 7.10-7.15 (1H, m), 7.27-7.35 (5H, m).	ESI-MS m/z: 457 [M+H]+
276		1H-NMR ($CDCl_3$) δ : 2.84-2.89 (1H, m), 3.19 (1H, dd, J=17.3, 5.2 Hz), 3.80-3.85 (4H, m), 4.08-4.13 (2H, m), 4.20 (2H, m), 4.62-4.64 (1H, m), 4.69 (1H, s), 4.83 (1H, s), 6.52-6.60 (1H, m), 6.86-6.92 (2H, m), 6.99-7.07 (2H, m), 7.14 (1H, t, J=7.0 Hz), 7.21-7.35 (5H, m).	ESI-MS m/z: 417 [M+H]+
277		1H-NMR ($CDCl_3$) δ : 2.86 (1H, dd, J=16.9, 4.0 Hz), 3.19 (1H, dd, J=17.0, 5.8 Hz), 3.65 (2H, t, J=5.6 Hz), 4.18-4.20 (4H, m), 4.40 (2H, s), 4.60-4.65 (1H, m), 6.59 (1H, s), 6.87-6.92 (2H, m), 7.02-7.07 (2H, m), 7.14 (1H, t, J=8.9 Hz), 7.73 (1H, t, J=7.9 Hz), 7.90 (1H, d, J=8.2 Hz), 8.01 (1H, d, J=7.9 Hz), 8.08 (1H, s).	ESI-MS m/z: 507 [M+H]+

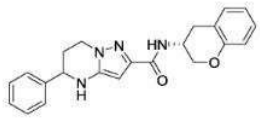
[0917]

[Table 40]

Example	Structural formula	NMR	MS
278		1H-NMR ($CDCl_3$) δ : 2.93 (1H, dd, J=16.6, 5.0 Hz), 3.19 (1H, dd, J=16.8, 5.1 Hz), 3.65 (2H, t, J=6.0 Hz), 4.22 (2H, t, J=5.4 Hz), 4.24-4.33 (2H, m), 4.36 (2H, s), 4.64-4.68 (1H, m), 6.63 (1H, s), 6.92-7.03 (6H, m), 7.39-7.44 (2H, m).	
279		1H-NMR ($CDCl_3$) δ : 2.95-3.03 (1H, m), 3.24-3.31 (1H, m), 3.64 (2H, t, J=6.1 Hz), 4.23 (2H, t, J=5.1 Hz), 4.27-4.32 (2H, m), 4.36 (2H, s), 4.67-4.72 (1H, m), 6.64 (1H, s), 6.93-7.11 (6H, m), 7.29-7.38 (3H, m), 7.81 (1H, td, J=8.0, 1.9 Hz), 8.55 (1H, dd, J=4.8, 1.5 Hz), 8.79 (1H, d, J=2.0 Hz).	
280		1H-NMR ($CDCl_3$) δ : 2.86 (1H, dd, J=16.8, 3.9 Hz), 3.16 (1H, dd, J=16.8, 5.3 Hz), 4.21 (2H, m), 4.25 (4H, m), 4.63 (1H, m), 4.82 (2H, s), 6.68 (1H, s), 6.70 (1H, d, J=9.0 Hz), 6.81 (1H, d, J=8.7 Hz), 7.04-7.10 (3H, m), 7.73 (1H, dd, J=9.0, 2.3 Hz), 8.47 (1H, d, J=2.1 Hz).	ESI-MS m/z: 435 [M+H]+
281		1H-NMR ($CDCl_3$) δ : 1.16 (9H, m), 2.85 (1H, dd, J=16.5, 4.0 Hz), 2.97 (2H, td, J=5.7, 2.1 Hz), 3.15 (1H, dd, J=16.7, 5.5 Hz), 3.81 (2H, s), 4.10 (2H, t, J=5.4 Hz), 4.17-4.22 (2H, m), 4.59-4.63 (1H, m), 6.50 (1H, s), 6.79-6.81 (1H, m), 6.98-7.09 (3H, m).	ESI-MS m/z: 389 [M+H]+
282		1H-NMR ($CDCl_3$) δ : 0.91 (2H, m), 1.05 (2H, m), 2.89 (1H, dd, J=16.7, 5.0 Hz), 2.98 (2H, t, J=5.5 Hz), 3.15 (1H, dd, J=16.6, 5.2 Hz), 3.71 (2H, s), 4.05 (2H, t, J=5.5 Hz), 4.20-4.31 (2H, m), 4.62 (1H, m), 6.47 (1H, s), 6.89-6.92 (2H, m), 7.04 (2H, t, J=8.6 Hz), 7.30 (2H, m), 7.37 (1H, s), 7.40 (1H, d, J=8.7 Hz).	ESI-MS m/z: 458 [M+H]+
283		1H-NMR ($CDCl_3$) δ : 0.84 (1H, m), 0.94 (1H, m), 1.06 (1H, m), 1.15 (2H, m), 1.26 (1H, m), 2.87 (1H, m), 3.15 (1H, dt, J=16.7, 5.6 Hz), 3.37 (1H, t, J=5.2 Hz), 4.04 (2H, m), 4.13 (1H, s), 4.19 (2H, m), 4.62 (1H, m), 6.81 (1H, m), 6.97-7.10 (4H, m).	ESI-MS m/z: 441 [M+H]+
284		1H-NMR ($CDCl_3$) δ : 0.77 (2H, m), 0.84 (2H, m), 2.34 (2H, m), 2.85 (1H, dd, J=16.9, 3.9 Hz), 3.12-3.17 (3H, m), 3.88 (2H, s), 4.03 (2H, t, J=5.4 Hz), 4.19 (2H, m), 4.61 (1H, m), 6.50 (1H, s), 6.80 (1H, d, J=8.7 Hz), 6.99-7.09 (3H, m).	ESI-MS m/z: 455 [M+H]+
285		1H-NMR ($CDCl_3$) δ : 1.50 (6H, s), 2.82-2.88 (3H, m), 3.15 (1H, dd, J=11.4, 5.5 Hz), 3.86 (2H, s), 4.04 (2H, t, J=5.5 Hz), 4.19 (2H, m), 4.62 (1H, m), 6.50 (1H, s), 6.80 (1H, d, J=8.7 Hz), 7.00-7.09 (3H, m), 7.17 (1H, m), 7.65-7.67 (2H, m), 8.57 (1H, dt, J=4.6,1.3 Hz).	ESI-MS m/z: 452 [M+H]+
286		1H-NMR ($CDCl_3$) δ : 0.88-1.09 (5H, m), 2.87-2.97 (1H, m), 3.04 (1H, t, J=5.5 Hz), 3.17 (1H, m), 3.76-3.81 (2H, m), 3.94 (3H, s), 4.06 (1H, t, J=5.4 Hz), 4.11 (1H, m), 4.21-4.34 (2H, m), 4.63 (1H, m), 6.67-6.73 (2H, m), 6.93 (2H, t, J=9.1 Hz), 7.04-7.11 (1H, m), 7.37-7.44 (2H, m), 8.07-8.14 (1H, m).	ESI-MS m/z: 471 [M+H]+

[0918]

[Table 41]

Example	Structural formula	NMR	MS
287		1H-NMR ($CDCl_3$) δ : 1.24-1.28 (1H, m), 2.24-2.28 (1H, m), 2.87-2.91 (1H, m), 3.16-3.22 (1H, dd, J=16.7, 5.5 Hz), 4.05-4.31 (4H, m), 4.48-4.64 (2H, m), 5.92 (1H, s), 6.87-7.15 (6H, m), 7.32-7.37 (4H, m).	ESI-MS m/z: 375 [M+H]+

[0919]

The compound of Example 291 was synthesized from the compound of Example 9 by a method similar to Step 1 in Reference Example 3.

[0920]

The compound of Example 292 was synthesized from the compound of Example 9 by a method similar to Step 1 to Step 3 in Reference Example 3.

[0921]

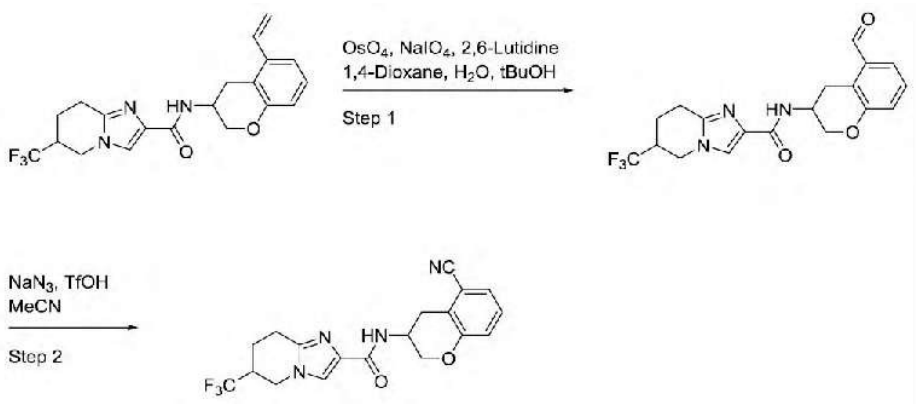
The compound of Example 293 was synthesized from the compound of Example 9 by a method similar to Step 1 in Reference Example 3.

[0922]

The compound of Example 294 was synthesized from the compound of Example 293 under the scheme depicted in the figure below.

[0923]

[Chem 234]



[0924]

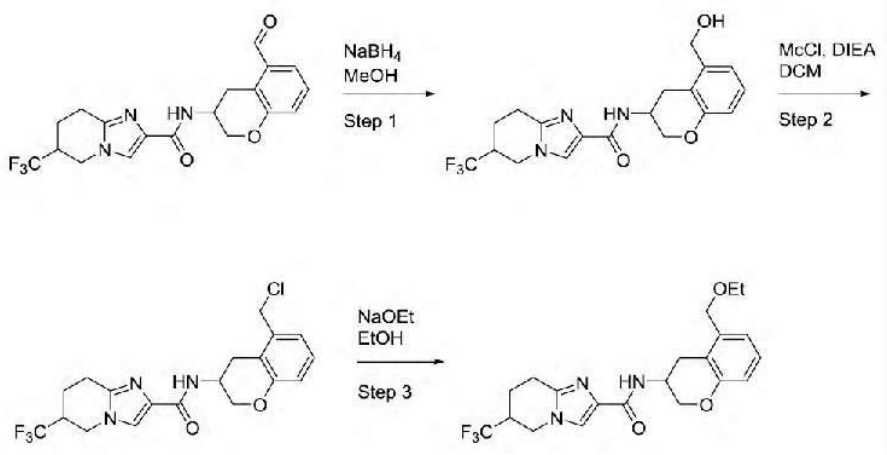
The compound of Example 295 was synthesized by a method similar to Example 11.

[0925]

The compound of Example 296 was synthesized from the compound synthesized in Step 1 in Example 294 under the scheme depicted in the figure below.

[0926]

[Chem 235]

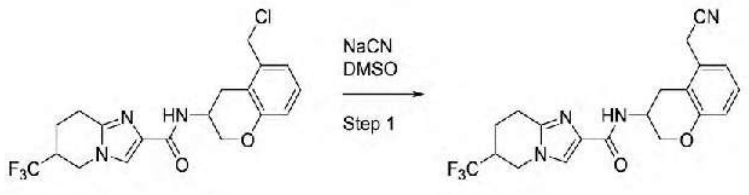


[0927]

The compound of Example 297 was synthesized form the compound synthesized in Step 2 in Example 296 under the scheme depicted in the figure below.

[0928]

[Chem 236]



[0929]

The compound of Example 298 was synthesized by methods similar to those described in Example 1 and Example 3.

[0930]

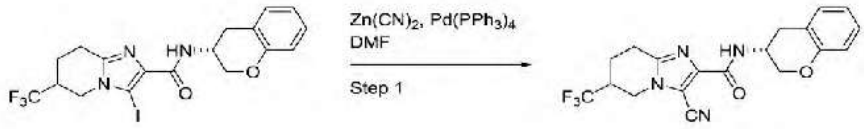
The compound of Example 299 was synthesized by a method similar to Example 15.

[0931]

The compound of Example 300 was synthesized from the compound synthesized in Example 14 under the scheme depicted in the figure below.

[0932]

[Chem 237]



[0933]

The compound of Example 301 was synthesized from the compound synthesized in Example 14 by a method similar to Example 29.

[0934]

The compound of Example 302 was synthesized from the compound synthesized in Example 14 by a method similar to Step 2 in Reference Example 3.

[0935]

The compound of Example 303 was synthesized by a method similar to Example 16.

[0936]

The compound of Example 304 was synthesized by a method similar to Example 16.

[0937]

The compound of Example 305 was synthesized by methods similar to those described

in Example 18 and Reference Example 43.

[0938]

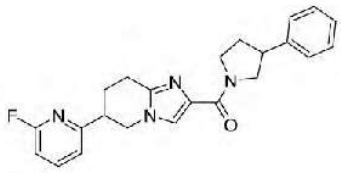
The compound of Example 306 was synthesized by methods similar to those described in Example 18 and Reference Example 65.

[0939]

The compound of Reference Example 75 (shown in the figure below.) was synthesized by a method similar to Example 26.

[0940]

[Chem 238]

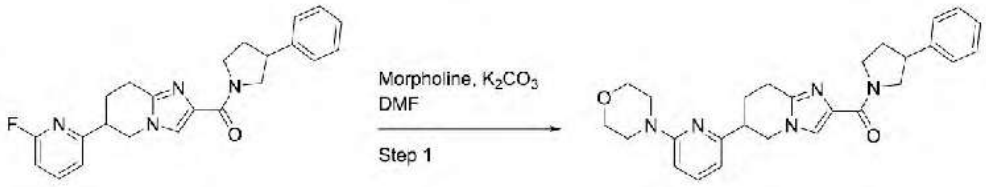


[0941]

The compound of Example 307 was synthesized from the compound synthesized in Reference Example 75 under the scheme depicted in the figure below.

[0942]

[Chem 239]



[0943]

The compound of Example 308 was synthesized by a method similar to Example 307.

[0944]

The compound of Example 309 was synthesized by a method similar to Example 307.

[0945]

The compound of Example 310 was synthesized by a method similar to Example 307.

[0946]

The compound of Example 311 was synthesized by a method similar to Example 307.

[0947]

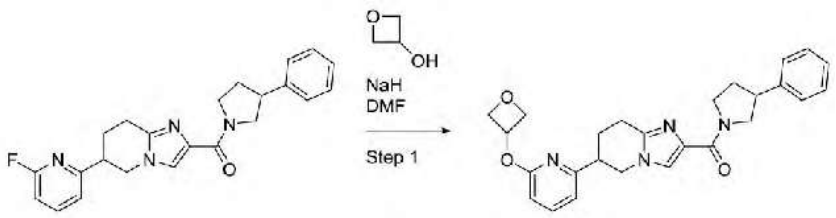
The compound of Example 312 was synthesized by methods similar to those described in Example 307 and Example 102.

[0948]

The compound of Example 313 was synthesized from the compound synthesized in Reference Example 75 under the scheme depicted in the figure below.

[0949]

[Chem 240]



[0950]

The compound of Example 314 was synthesized by a method similar to Example 27.

[0951]

The compound of Example 315 was synthesized by a method similar to Example 26.

[0952]

The compound of Example 316 was synthesized by a method similar to Example 26.

[0953]

The compound of Example 317 was synthesized by a method similar to Example 29.

[0954]

The compound of Example 318 was synthesized by a method similar to Example 30.

[0955]

The compound of Example 319 was synthesized by methods similar to those described in Example 41, Example 168 and Example 157.

[0956]

The compound of Example 320 was synthesized by methods similar to those described in Example 29 and Example 157.

[0957]

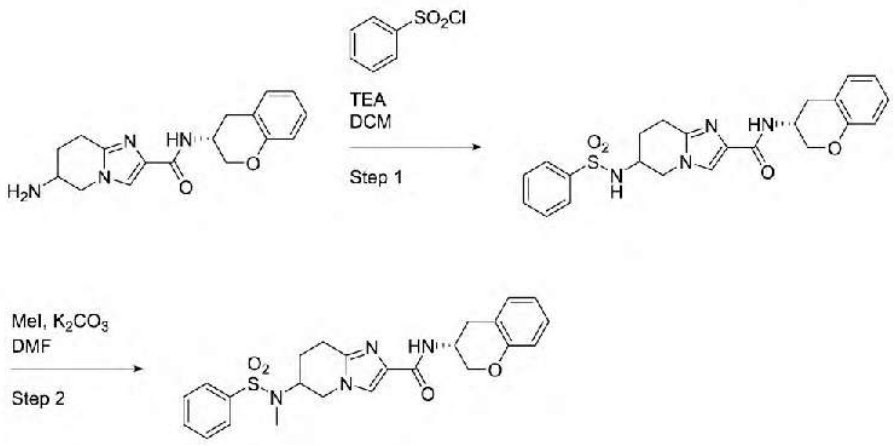
The compound of Example 321 was synthesized by a method similar to Example 41.

[0958]

The compound of Example 322 was synthesized from the compound synthesized in Step 1 in Example 42 under the scheme depicted in the figure below.

[0959]

[Chem 241]



[0960]

The compound of Example 323 was synthesized by a method similar to Example 62.

[0961]

The compound of Example 324 was synthesized by a method similar to Example 43.

[0962]

The compound of Example 325 was synthesized by methods similar to those described in Example 62 and Step 3 in Example 41.

[0963]

The compound of Example 326 was synthesized by methods similar to those described in Example 43 and Example 45.

[0964]

The compound of Example 327 was synthesized by a method similar to Example 325.

[0965]

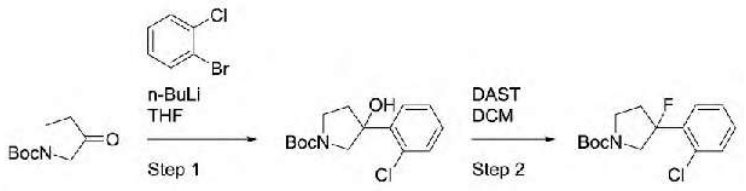
The compound of Example 328 was synthesized by a method similar to Example 49.

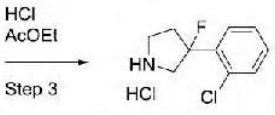
[0966]

The compound of Reference Example 76 (3-(2-chlorophenyl)-3-fluoropyrrolidine hydrochloride) was synthesized under the scheme depicted in the figure below.

[0967]

[Chem 242]





[0968]

The compound of Example 329 was synthesized from the compound of Reference Example 21 and the compound of Reference Example 76 by a method similar to Step 3 in Example 56.

[0969]

The compound of Example 330 was synthesized by a method similar to Example 62.

[0970]

The compound of Example 331 was synthesized by a method similar to Example 62.

[0971]

The compound of Example 332 was synthesized by methods similar to those described in Reference Example 18, Example 58 and Example 3.

[0972]

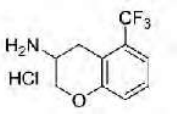
The compound of Example 333 was synthesized by methods similar to those described in Example 59 and Example 45.

[0973]

The compound of Reference Example 77 (shown in the figure below.) was synthesized by a method similar to Reference Example 4.

[0974]

[Chem 243]



[0975]

The compound of Example 334 was synthesized from the compound of Reference Example 21 and the compound of Reference Example 77 by a method similar to Step 3 in Example 100.

[0976]

The compound of Example 335 was synthesized by methods similar to those described in Example 43 and Example 45.

[0977]

The compound of Example 336 was synthesized by a method similar to Example 43.

[0978]

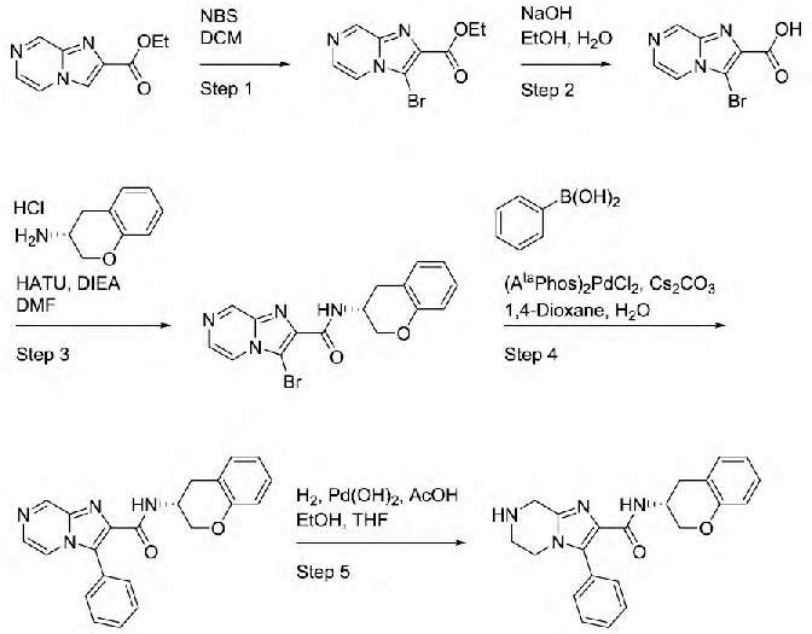
The compound of Example 337 was synthesized by a method similar to Example 43.

[0979]

Compound of Reference Example 78 ((R)-N-(Chroman-3-yl)-3-phenyl-5,6,7,8-tetrahydroimidazo[1,2-a]pyrazine-2-carboxamide) was synthesized under the scheme depicted in the figure below.

[0980]

[Chem 244]



[0981]

The compound of Example 338 was synthesized from the compound of Reference Example 78 by a method similar to Reference Example 69.

[0982]

The compound of Example 339 was synthesized from the compound of Reference Example 78 by a method similar to Step 1 in Reference Example 1.

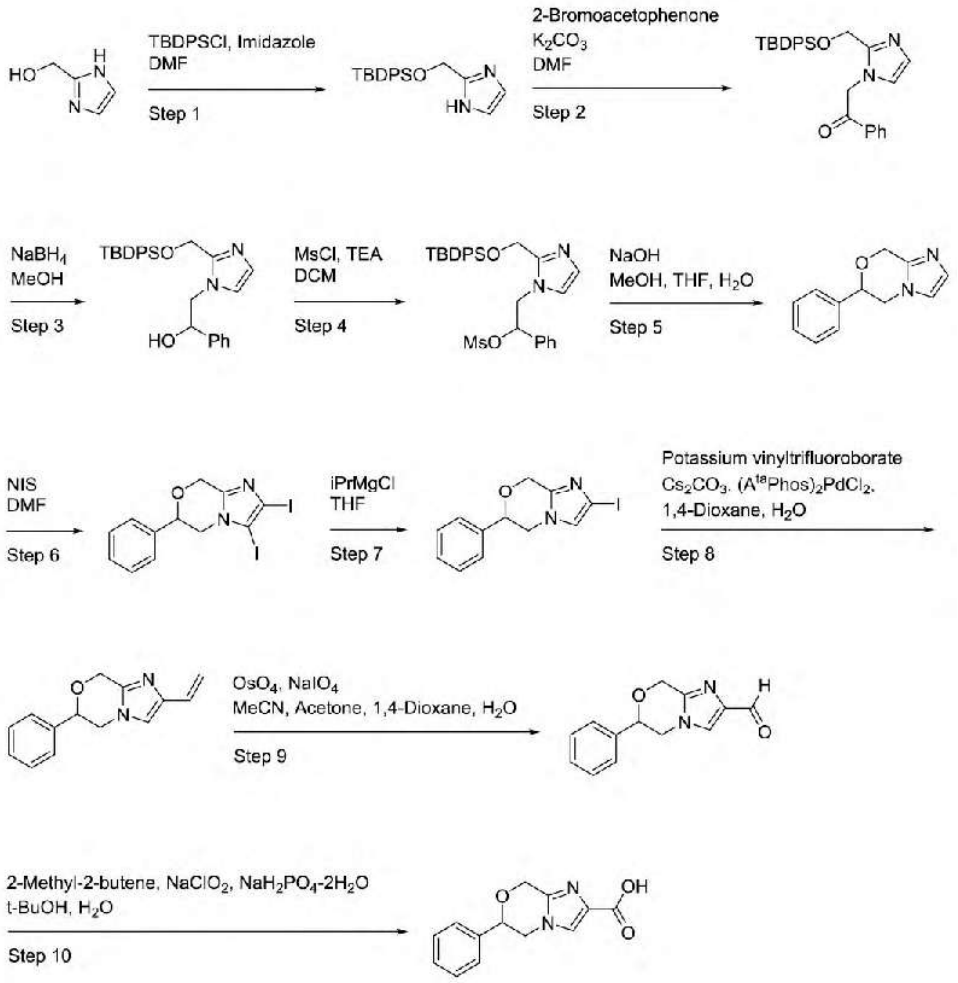
[0983]

The compound of Reference Example 79 (6-phenyl-5, 6-dihydro-8H-imidazo[2, 1-

c][1,4]oxazine-2-carboxylic acid) was synthesized under the scheme depicted in the figure below.

[0984]

[Chem 245]



The compound of Example 340 was synthesized from the compound of Reference Example 79 by a method similar to Step 3 in Example 100.

[0985]

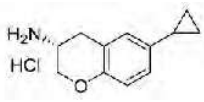
The compound of Example 341 was synthesized by a method similar to Example 64 and Reference Example 24.

[0986]

The compound of Reference Example 80 (shown in the figure below.) was synthesized by a method similar to Step 1 and Step 4 in Reference Example 3.

[0987]

[Chem 246]



[0988]

The compound of Example 342 was synthesized by methods similar to those described in Example 66 and Reference Example 80.

[0989]

The compound of Example 343 was synthesized by methods similar to those described in Example 66 and Reference Example 52.

[0990]

The compound of Example 344 was synthesized by methods similar to those described in Example 64 and Reference Example 1.

[0991]

The compound of Example 345 was synthesized by methods similar to those described in Example 64 and Reference Example 43.

[0992]

The compound of Example 346 was synthesized by methods similar to those described in Example 64 and Reference Example 43.

[0993]

The compound of Example 347 was synthesized by a method similar to Example 69.

[0994]

The compound of Example 348 was synthesized by methods similar to those described in Example 69 and Reference Example 1.

[0995]

The compound of Example 349 was synthesized by a method similar to Example 70.

[0996]

The compound of Example 350 was synthesized by a method similar to Example 70.

[0997]

The compound of Example 351 was synthesized by a method similar to Example 70.

[0998]

The compound of Example 352 was synthesized by a method similar to Example 70.

[0999]

The compound of Example 353 was synthesized by a method similar to Example 70.

[1000]

The compound of Example 354 was synthesized by a method similar to Example 70.

[1001]

The compound of Example 355 was synthesized by a method similar to Example 70.

[1002]

The compound of Example 356 was synthesized by a method similar to Example 70.

[1003]

The compound of Example 357 was synthesized from the compound of Example 71 by a method similar to Step 1 in Reference Example 27.

[1004]

The compound of Example 358 was synthesized by methods similar to those described in Example 70 and Reference Example 1.

[1005]

The compounds of Example 359 and Example 360 were obtained by separating the compound of Example 70.

[1006]

The compound of Example 361 was synthesized from the compound of Example 82 by a method similar to Step 2 to Step 3 in Example 296.

[1007]

The compound of Example 362 was synthesized by methods similar to those described in Example 70 and Reference Example 1.

[1008]

The compound of Example 363 was synthesized by a method similar to Example 70.

[1009]

The compound of Example 364 was synthesized by methods similar to those described in Example 70 and Reference Example 24.

[1010]

The compound of Example 365 was synthesized by a method similar to Example 361.

[1011]

The compound of Example 366 was synthesized by methods similar to those described in Example 70 and Reference Example 24.

[1012]

The compound of Example 367 was synthesized by methods similar to those described in Example 70 and Reference Example 1.

[1013]

The compound of Example 368 was synthesized from the compound of Example 82 by methods similar to Step 2 in Example 296 and Step 1 in Example 122.

[1014]

The compound of Example 369 was synthesized from the compound of Example 82 by a method similar to Step 2 to Step 3 in Example 296.

[1015]

The compound of Example 370 was synthesized from the compound of Example 82 by a method similar to Step 2 to Step 3 in Example 296.

[1016]

The compound of Example 371 was synthesized by methods similar to those described in Example 70 and Reference Example 1.

[1017]

The compound of Example 372 was synthesized by methods similar to those described in Example 70 and Reference Example 24.

[1018]

The compound of Example 373 was synthesized by methods similar to those described in Example 169 and Reference Example 24.

[1019]

The compounds of Example 374 were obtained by separating the compound of Example 373.

[1020]

The compound of Example 375 was synthesized by a methods similar to those described in Example 169 and Reference Example 73.

[1021]

The compound of Example 376 was synthesized by a methods similar to those described in Example 169 and Reference Example 23.

[1022]

The compound of Example 377 was synthesized from the compound of Example 171 by a method similar to Step 1 in Reference Example 27.

[1023]

The compound of Example 378 was synthesized from the compound of Example 171 by a method similar to Step 1 in Reference Example 27.

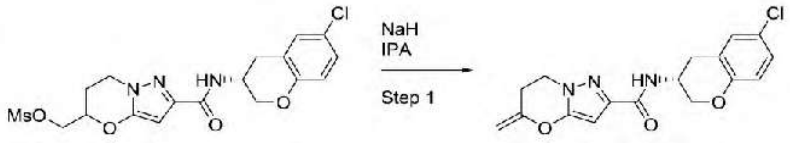
[1024]

The compound of Example 379 was synthesized from the compound synthesized in step

1 in Example 120 under the scheme depicted in the figure below.

[1025]

[Chem 247]



[1026]

The compound of Example 380 was synthesized from the compound of Example 171 by a method similar to Step 1 in Reference Example 27.

[1027]

The compound of Example 381 was synthesized from the compound synthesized in Step 1 in Example 117 by a method similar to Example 157.

[1028]

The compound of Example 382 was synthesized from the compound of Example 171 by a method similar to Step 1 in Reference Example 27.

[1029]

The compound of Example 383 was synthesized by methods similar to those described in Example 177 and Reference Example 28.

[1030]

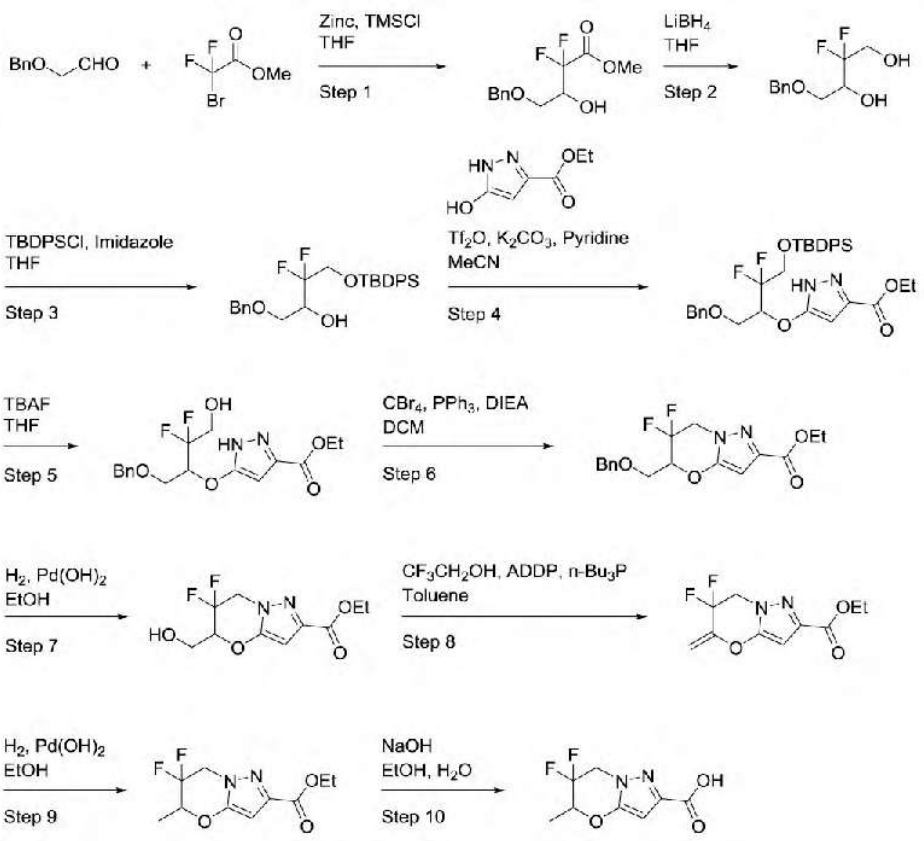
The compound of Example 384 was synthesized by methods similar to those described in Reference Example 34, Example 85 and Reference Example 24.

[1031]

The compound of Reference Example 81 (6,6-difluoro5-methyl-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylic acid) was synthesized under the scheme depicted in the figure below.

[1032]

[Chem 248]



[1033]

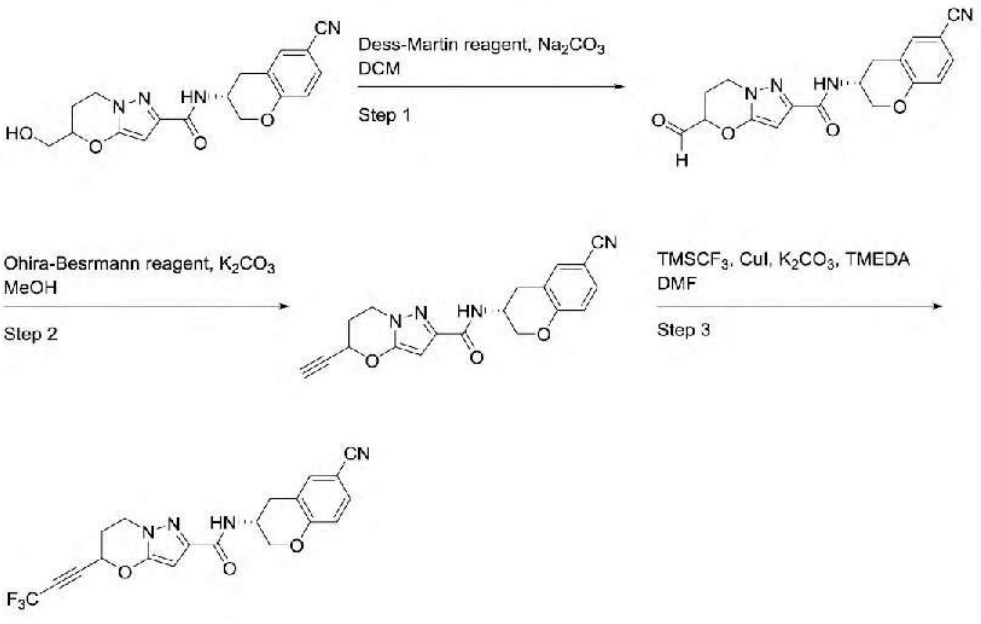
The compound of Example 385 was synthesized from the compound of Reference Example 81 and the compound of Reference Example 1 by a method similar to Step 3 in Example 100.

[1034]

The compound of Example 386 was synthesized from the compound synthesized in Step 3 in Example 100 under the scheme depicted in the figure below.

[1035]

[Chem 249]

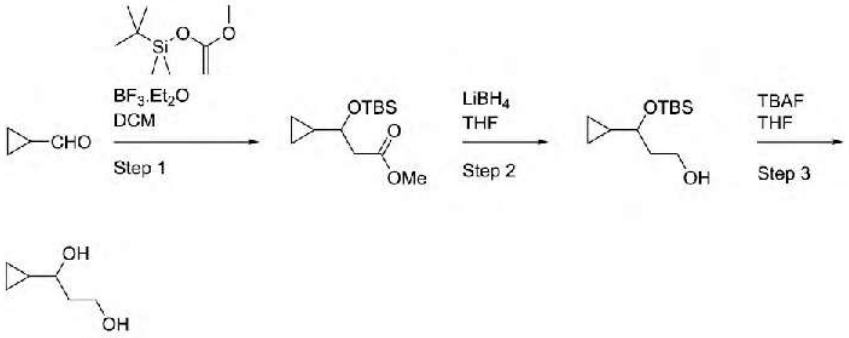


[1036]

The compound of Reference Example 82 (1-cyclopropylpropane-1,3-diol) was synthesized under the scheme depicted in the figure below.

[1037]

[Chem 250]



[1038]

The compound of Example 387 was synthesized from the compound of Reference Example 82 by methods similar to those described in Example 159 and Reference Example 1.

[1039]

The compound of Example 388 was synthesized by methods similar to those described in Reference Example 82, Example 159 and Reference Example 24.

[1040]

The compound of Example 389 was synthesized by a method similar to Example 85.

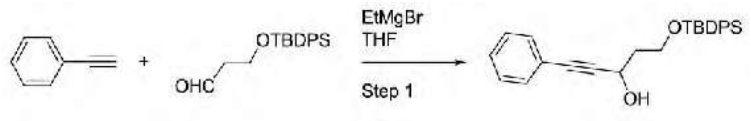
[1041]

The compound of Reference Example 83 (5-((tert-butyldiphenylsilyl)oxy)-1-

phenylpent-1-yn-3-ol) was synthesized under the scheme depicted in the figure below.

[1042]

[Chem 251]



[1043]

The compound of Example 390 was synthesized from the compound of Reference Example 83 by methods similar to those described in Example 85 and Reference Example 24.

[1044]

The compound of Example 391 was synthesized from the compound of Example 171 by methods similar to those described in Example 82 and Example 83.

[1045]

The compound of Example 392 was synthesized from the compound of Example 171 by a method similar to Step 2 in Example 117.

[1046]

The compound of Example 393 was synthesized by methods similar to those described in Example 85 and Reference Example 24.

[1047]

The compound of Example 394 was synthesized by methods similar to those described in Reference Example 83, Example 85 and Reference Example 24.

[1048]

The compound of Example 395 was synthesized by methods similar to those described in Reference Example 82, Example 159 and Reference Example 1.

[1049]

The compound of Example 396 was synthesized from the compound of Example 171 by a method similar to Step 1 in Reference Example 3.

[1050]

The compound of Example 397 was synthesized from the compound of Example 396 by methods similar to those described in Step 1 in Reference Example 45 and Step 2 in Reference Example 44.

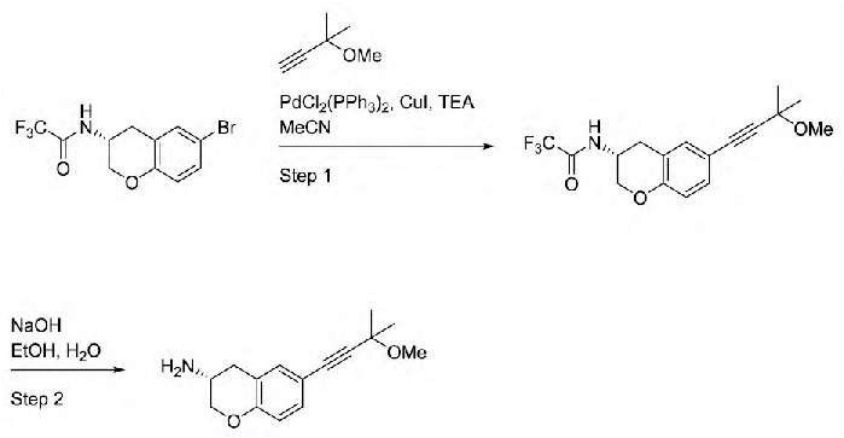
[1051]

The compound of Reference Example 84 ((R)-6-(3-methoxy-3-ethylbut-1-yn-1-yl)chroman-3-amine) was synthesized from the compound synthesized in Step 1 in Reference

Example 2 under the scheme depicted in the figure below.

[1052]

[Chem 252]



[1053]

The compound of Example 398 was synthesized by methods similar to those described in Example 169 and Reference Example 84.

[1054]

The compound of Example 399 was synthesized by a method similar to Example 391.

[1055]

The compound of Example 400 was synthesized from the compound of Example 398 by a method similar to Step 2 in Example 1.

[1056]

The compound of Example 401 was synthesized by methods similar to those described in Example 169, Reference Example 45 and Example 122.

[1057]

The compound of Example 402 was synthesized by methods similar to those described in Reference Example 83, Example 85 and Reference Example 43.

[1058]

The compound of Example 403 was synthesized by methods similar to those described in Example 177 and Reference Example 65.

[1059]

The compound of Example 404 was synthesized by methods similar to those described in Reference Example 83, Example 85, Reference Example 3 and Reference Example 1.

[1060]

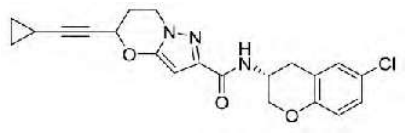
The compound of Example 405 was synthesized from the compound synthesized in

Step 6 in Example 159 and the compound of Reference Example 80 by a method similar to Step 8 in Example 70.

[1061]

The compound of Reference Example 85 was synthesized by methods similar to those described in Reference Example 83, Example 85 and Reference Example 1.

[Chem 253]



[1062]

The compounds of Example 406 and Example 407 were obtained by separating the compound of Reference Example 85.

[1063]

The compound of Example 408 was synthesized by methods similar to those described in Example 85 and Reference Example 24.

[1064]

The compound of Example 409 was synthesized by a method similar to Example 157.

[1065]

The compound of Example 410 was synthesized by a method similar to Example 100.

[1066]

The compound of Example 411 was synthesized by methods similar to those described in Example 117 and Reference Example 24.

[1067]

The compound of Example 412 was synthesized by a method similar to Example 114.

[1068]

The compound of Example 413 was synthesized by methods similar to those described in Example 100 and Reference Example 1.

[1069]

The compound of Example 414 was synthesized by methods similar to those described in Example 100 and Reference Example 28.

[1070]

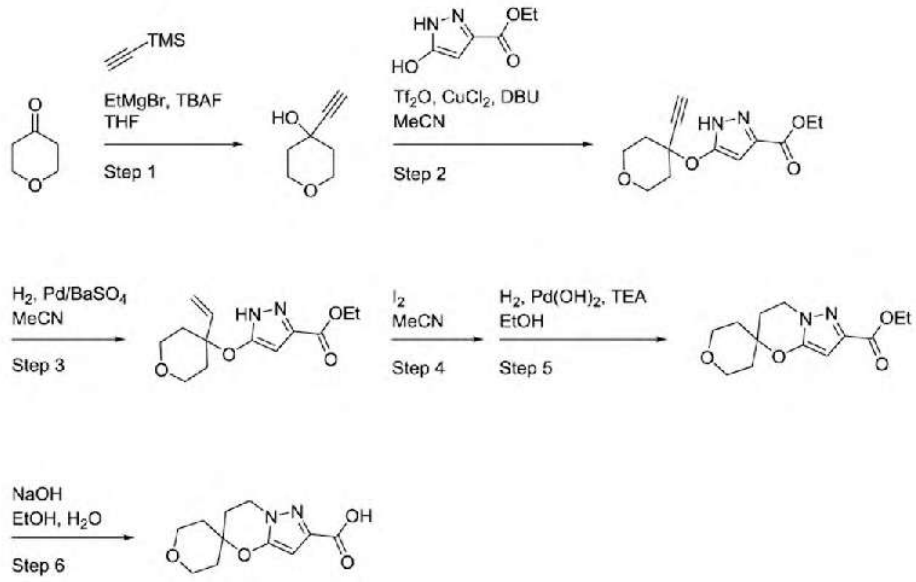
The compound of Example 415 was synthesized from the compound synthesized in Step 1 in Example 117 by a method similar to Step 1 to Step 2 in Example 122.

[1071]

The compound of Reference Example 86 (2,3,5,6,6',7'-hexahydrospiro [pyran-4,5'-pyrazolo[5,1-b][1,3]oxazine]-2'-carboxylic acid) was synthesized under the scheme below.

[1072]

[Chem 254]



[1073]

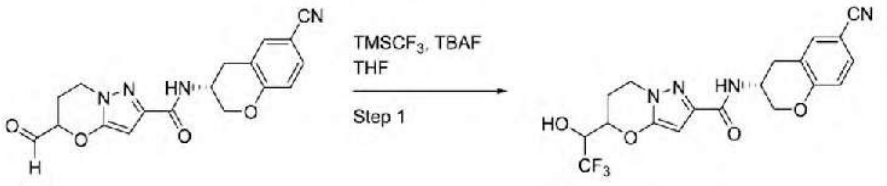
The compound of Example 416 was synthesized from the compound of Reference Example 86 and the compound of Reference Example 1 by a method similar to Step 8 in Example 70.

[1074]

The compound of Example 417 was synthesized from the compound synthesized in Step 1 in Example 386 under the scheme depicted in the figure below.

[1075]

[Chem 255]

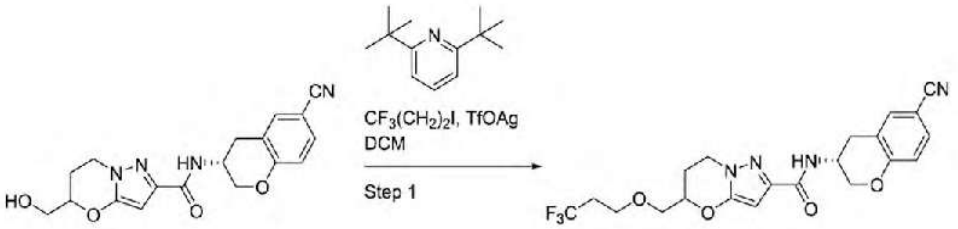


[1076]

The compound of Example 418 was synthesized from the compound synthesized in Step 3 in Example 100 under the scheme depicted in the figure below.

[1077]

[Chem 256]

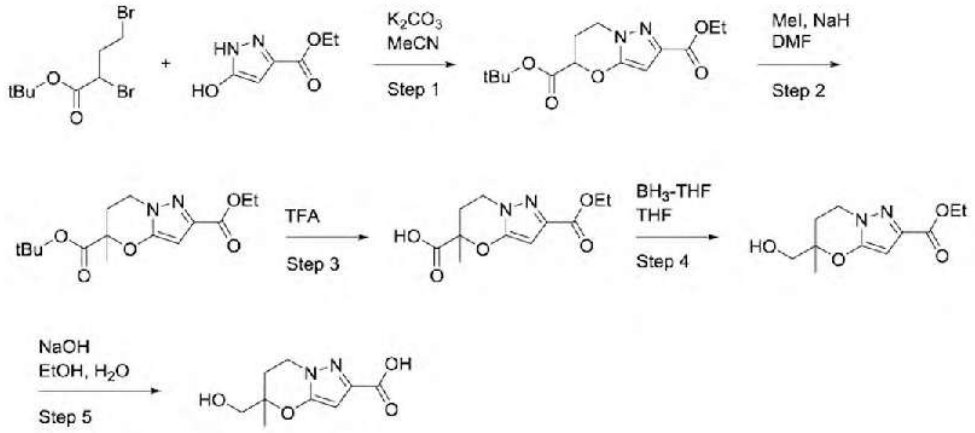


[1078]

The compound of Reference Example 87 (5-(hydroxymethyl)-5-methyl-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylic acid) was synthesized under the scheme depicted in the figure below.

[1079]

[Chem 257]



[1080]

The compound of Example 419 was synthesized from the compound of Reference Example 87 by methods similar to Step 3 to Step 4 in Example 100.

[1081]

The compound of Example 420 was synthesized from the compound of Reference Example 37 and the compound of Reference Example 1 by a method similar to Example 133.

[1082]

The compound of Example 421 was synthesized from the compound of Reference Example 37 and the compound of Reference Example 32 by a method similar to Example 133.

[1083]

The compound of Example 422 was synthesized by a method similar to Example 114.

[1084]

The compounds of Example 423 and Example 424 were obtained by separating the compound of Example 422.

[1085]

The compound of Example 425 was synthesized by methods similar to Example 100, Reference Example 2 and Step 1 in Reference Example 27.

[1086]

The compound of Example 426 was synthesized by a method similar to Example 425.

[1087]

The compound of Example 427 was synthesized by a method similar to Example 425.

[1088]

The compound of Example 428 was synthesized by a method similar to Example 425.

[1089]

The compound of Example 429 was synthesized by a method similar to Example 425.

[1090]

The compound of Example 430 was synthesized by a method similar to Example 425.

[1091]

The compound of Example 431 was synthesized by a method similar to Example 425.

[1092]

The compound of Example 432 was synthesized from the compound of Reference Example 36 and the compound of Reference Example 43 by a method similar to Step 5 to Step 6 in Example 85.

[1093]

The compound of Example 433 was synthesized from the compound of Reference Example 41 and the compound of Reference Example 43 by a method similar to Step 6 in Example 85.

[1094]

The compound of Example 434 was synthesized by methods similar to those described in Reference Example 49, Example 85 and Reference Example 24.

[1095]

The compound of Example 435 was synthesized by methods similar to those described in Example 434 and Reference Example 60.

[1096]

The compound of Example 436 was synthesized from the compound of Reference Example 36 by methods similar to those described in Reference Example 84 and Step 5 to Step 6 in Example 85.

[1097]

The compound of Example 437 was synthesized by methods similar to those described in Example 384 and Reference Example 48.

[1098]

The compound of Example 438 was synthesized by methods similar to those described in Example 384 and Reference Example 44.

[1099]

The compound of Example 439 was synthesized by methods similar to those described in Example 384, Example 157 and Reference Example 24.

[1100]

The compound of Example 440 was synthesized by methods similar to those described in Example 122 and Reference Example 44.

[1101]

The compound of Example 441 was synthesized from the compound of Reference Example 36 and the compound of Reference Example 52 by a method similar to Step 5 to Step 6 in Example 85.

[1102]

The compound of Example 442 was synthesized from the compound of Reference Example 36 and the compound of Reference Example 1 by a method similar to Step 5 to Step 6 in Example 85.

[1103]

The compound of Example 443 was synthesized by a method similar to Example 98.

[1104]

The compound of Example 444 was synthesized by a method similar to those described in Example 85 and Example 69.

[1105]

The compound of Example 445 was synthesized by methods similar to those described in Example 183 and Reference Example 2.

[1106]

The compound of Example 446 was synthesized from the compound synthesized in Reference Example 68 by methods similar to those described in Example 249 and Reference Example 1.

[1107]

The compound of Example 447 was synthesized by methods similar to those described in Example 183 and Reference Example 65.

[1108]

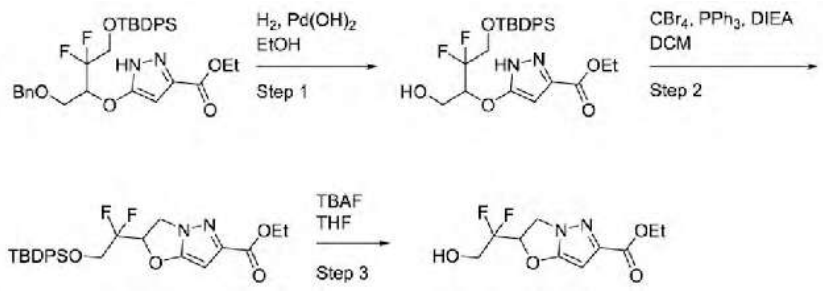
The compound of Example 448 was synthesized from the compound synthesized in Step 1 in Example 187 by a method similar to Example 225.

[1109]

The compound of Reference Example 88 (ethyl 2-(1,1-difluoro2-hydroxyethyl)-2,3-dihydropyrazolo[5,1-b]oxazole-6-carboxylate) was synthesized from the compound synthesized in Step 4 in Reference Example 81 under the scheme depicted in the figure below.

[1110]

[Chem 258]



[1111]

The compound of Example 449 was synthesized from the compound of Reference Example 88 by methods similar to those described in Reference Example 33 and Step 6 in Example 85.

[1112]

The compound of Example 450 was synthesized from the compound synthesized in Step 1 in Example 187 by methods similar to those described in Step 2 in Example 117 and Step 2 to Step 3 in Example 100.

[1113]

The compound of Example 451 was synthesized from the compound synthesized in Step 5 in Reference Example 55 by methods similar to those described in Reference Example 35 and Step 5 to Step 6 in Example 85.

[1114]

The compound of Example 452 was synthesized from the compound synthesized in Step 1 in Example 187 by methods similar to those described in Example 225 and Reference Example 24.

[1115]

The compound of Example 453 was synthesized from the compound synthesized in Step 1 in Reference Example 187 by methods similar to those described in in Reference Example 35 and Step 5 to Step 6 in Example 85.

[1116]

The compound of Example 454 was synthesized from the compound of Reference Example 50 by a method similar to Step 3 in Example 100.

[1117]

The compound of Example 455 was synthesized by methods similar to those described in Example 451 and Reference Example 24.

[1118]

The compound of Example 456 was synthesized from the compound of Reference Example 55 and the compound of Reference Example 60 by a method similar to Step 3 in Example 100.

[1119]

The compound of Example 457 was synthesized by methods similar to those described in Example 243 and Reference Example 56.

[1120]

The compound of Example 458 was synthesized from the compound synthesized in Step 1 in Example 187 by methods similar to Step 1 in Example 225, Reference Example 64, Reference Example 43 and Step 3 in Example 100.

[1121]

The compound of Example 459 was synthesized by methods similar to those described in Example 187 and Reference Example 48.

[1122]

The compound of Example 460 was synthesized by methods similar to those described in Example 203 and Reference Example 59.

[1123]

The compound of Example 461 was synthesized by methods similar to those described in Example 203 and Reference Example 56.

[1124]

The compound of Example 462 was synthesized by methods similar to those described in Reference Example 38, Reference Example 65 and Step 3 in Example 100.

[1125]

The compound of Example 463 was synthesized by methods similar to those described

in Example 185 and Reference Example 80.

[1126]

The compound of Example 464 was synthesized by methods similar to those described in Reference Example 49, Reference Example 50, Reference Example 24 and Step 3 in Example 100.

[1127]

The compound of Example 465 was synthesized by methods similar to those described in Reference Example 49, Example 85 and Reference Example 24.

[1128]

The compound of Example 466 was synthesized from the compound of Reference Example 55 and the compound of Reference Example 48 by a method similar to Step 3 in Example 100.

[1129]

The compound of Example 467 was synthesized by methods similar to those described in Example 465 and Reference Example 60.

[1130]

The compound of Example 468 was synthesized from the compound of Reference Example 50 and the compound of Reference Example 29 by a method similar to Step 3 in Example 100.

[1131]

The compound of Example 469 was synthesized from the compound of Reference Example 50 and the compound of Reference Example 1 by a method similar to Step 3 in Example 100.

[1132]

The compound of Example 470 was synthesized by methods similar to those described in Reference Example 49, Example 85 and Reference Example 24.

[1133]

The compound of Example 471 was synthesized by similar methods described in Reference Example 49, Example 85 and Reference Example 48.

[1134]

The compound of Example 472 was synthesized by similar methods described in Reference Example 49, Example 85 and Reference Example 44.

[1135]

The compound of Example 473 was synthesized by similar methods described in

Reference Example 49, Example 85 and Reference Example 59.

[1136]

The compound of Example 474 was synthesized by similar methods described in Reference Example 49, Example 85 and Reference Example 60.

[1137]

The compound of Example 475 was synthesized by similar methods described in Reference Example 49, Example 85 and Reference Example 53.

[1138]

The compounds of Example 476 and Example 477 were synthesized by similar methods described in Example 241 and Reference Example 43.

[1139]

The compound of Example 478 was synthesized by similar methods described in Step 1 in Example 224 and Reference Example 48.

[1140]

The compound of Example 479 was synthesized by similar methods described in Step 1 in Example 224 and Reference Example 52.

[1141]

The compound of Example 480 was synthesized by similar methods described in Example 251 and Reference Example 1.

[1142]

The compound of Example 481 was synthesized by similar methods described in Example 258 and Reference Example 1.

[1143]

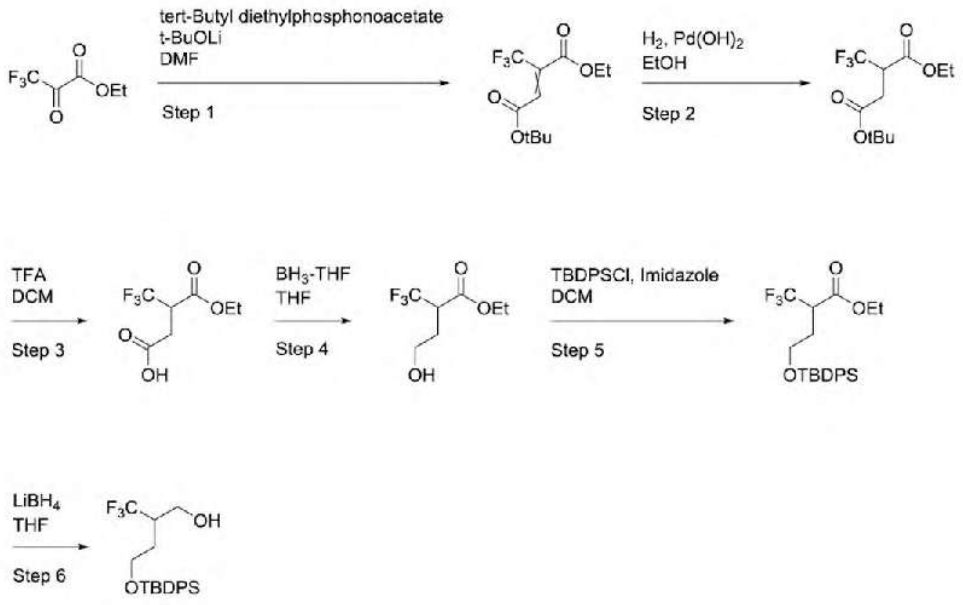
The compound of Example 482 was synthesized by methods similar to those described in Example 254 and Reference Example 44.

[1144]

The compound of Reference Example 89 (4-((tert-butyldiphenylsilyl)oxy)-2-(trifluoromethyl)butan-1-ol) was synthesized under the scheme depicted in the figure below.

[1145]

[Chem 259]



[1146]

The compound of Example 483 was synthesized from the compound of Reference Example 89 by methods similar to those described in Step 2 to Step 6 in Example 85 and Reference Example 24.

[1147]

The compound of Example 484 was synthesized by a method similar to Example 259.

[1148]

The compound of Example 485 was synthesized by a method similar to Example 259.

[1149]

The compound of Example 486 was synthesized by methods similar to those described in Example 16 and Reference Example 43.

[1150]

The compound of Example 487 was synthesized from the compound of Reference Example 72 by a method similar to Step 1 in Example 266.

[1151]

The compound of Example 488 was synthesized from the compound of Reference Example 72 by a method similar to Step 1 in Example 266.

[1152]

The compound of Example 489 was synthesized by methods similar to those described in Example 487 and Reference Example 24.

[1153]

The compound of Example 490 was synthesized from the compound of Reference Example 72 by a method similar to Step 1 in Example 266.

[1154]

The compound of Example 491 was synthesized by methods similar to those described in Example 263 and Reference Example 24.

[1155]

The compound of Example 492 was synthesized by methods similar to those described in Example 268 and Reference Example 3.

[1156]

The compound of Example 493 was synthesized from the compound of Reference Example 71 by a method similar to Step 1 in Example 266.

[1157]

The compound of Example 494 was synthesized from the compound of Reference Example 71 by methods similar to those described in Reference Example 69 and Example 157.

[1158]

The compound of Example 495 was synthesized by methods similar to those described in Reference Example 69, Example 157 and Step 2 to Step 3 in Example 261.

[1159]

The compound of Example 496 was synthesized by methods similar to those described in Reference Example 69 and Step 2 to Step 3 in Example 261.

[1160]

The compound of Example 497 was synthesized by a method similar to Example 268.

[1161]

The compound of Example 498 was synthesized by a method similar to Example 268.

[1162]

The compound of Example 499 was synthesized by a method similar to Example 269.

[1163]

The compound of Example 500 was synthesized by a method similar to Example 283.

[1164]

The compound of Example 501 was synthesized by a method similar to Example 283.

[1165]

The compound of Example 502 was synthesized by methods similar to those described in Example 283 and Reference Example 24.

[1166]

The compound of Example 503 was synthesized by methods similar to those described in Example 283 and Reference Example 24.

[1167]

The compound of Example 504 was synthesized from the compound of Reference Example 69 by methods similar to those described in Step 2 to Step 3 in Example 261 and Reference Example 48.

[1168]

The compound of Example 505 was synthesized from the compound of Reference Example 69 by methods similar to those described in Step 2 to Step 3 in Example 261 and Reference Example 44.

[1169]

The compound of Example 506 was synthesized by methods similar to those described in Example 261 and Reference Example 43.

[1170]

The compound of Example 507 was synthesized by methods similar to those described in Example 261 and Reference Example 44.

[1171]

The compound of Example 508 was synthesized by a method similar to Example 278.

[1172]

The compound of Example 509 was synthesized by methods similar to those described in Example 275 and Reference Example 1.

[1173]

The compound of Example 510 was synthesized by a method similar to Example 276.

[1174]

The compound of Example 511 was synthesized by a method similar to Example 277.

[1175]

The compound of Example 512 was synthesized by methods described in those similar to Example 64 and Reference Example 43.

[1176]

The compound of Example 513 was synthesized by a method similar to Example 259.

[1177]

The compound of Example 514 was synthesized by a method similar to Example 259.

[1178]

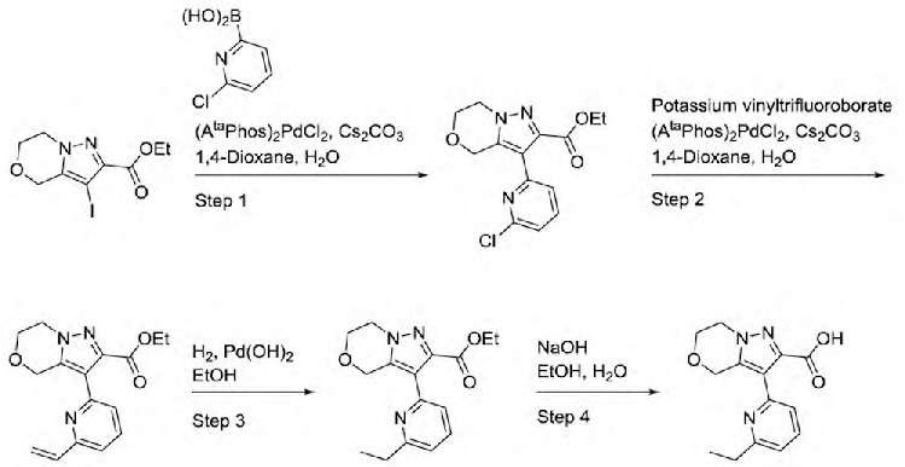
The compound of Example 515 was synthesized by methods similar to those described in Example 259 and Reference Example 1.

[1179]

The compound of Reference Example 90 (3-(6-ethylpyridin-2-yl)-6,7-dihydro-4H-pyrazolo[5,1-c][1,4]oxazine-2-carboxylic acid) was synthesized from the compound synthesized in Step 1 in Example 259 under the scheme depicted in the figure below.

[1180]

[Chem 260]



[1181]

The compound of Example 516 was synthesized from the compound of Reference Example 90 by a method similar to Step 3 in Example 100.

[1182]

The compound of Example 517 was synthesized by a method similar to Example 259.

[1183]

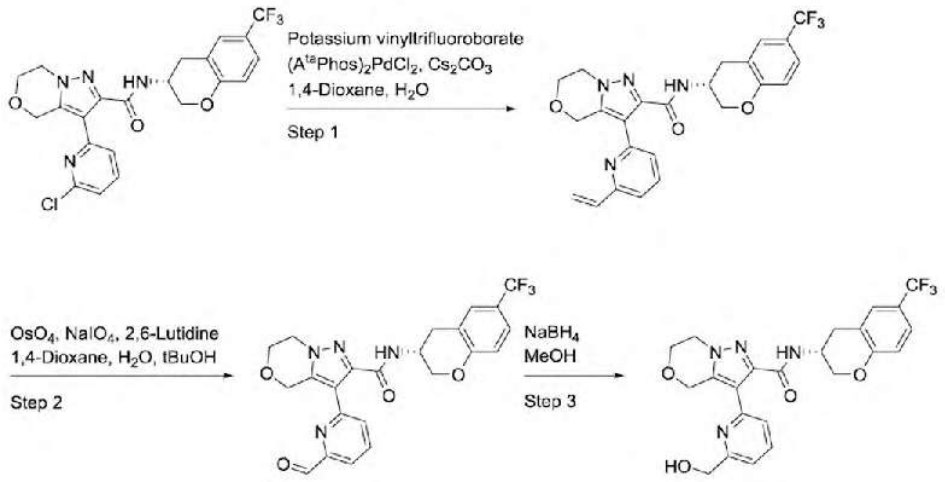
The compound of Example 518 was synthesized by a method similar to Example 259.

[1184]

The compound of Example 519 was synthesized from the compound of Example 514 under the scheme depicted in the figure below.

[1185]

[Chem 261]



[1186]

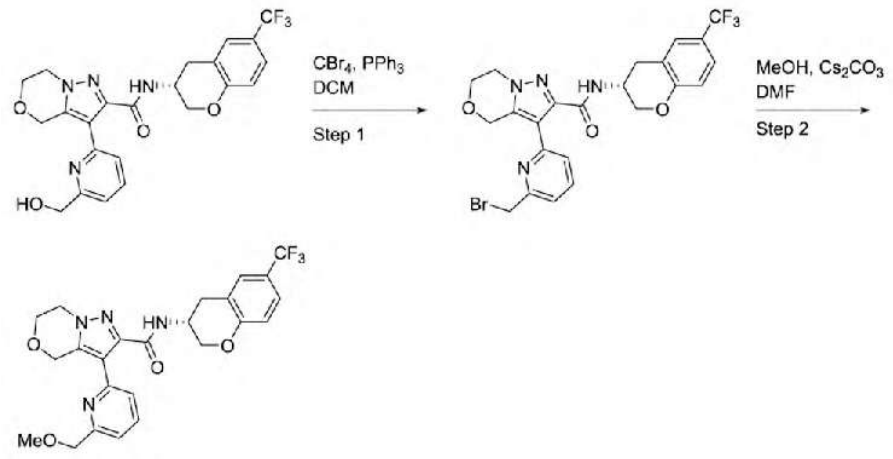
The compound of Example 520 was synthesized from the compound of Example 519 by a method similar to Example 114.

[1187]

The compound of Example 521 was synthesized from the compound of Example 519 under the scheme depicted in the figure below.

[1188]

[Chem 262]

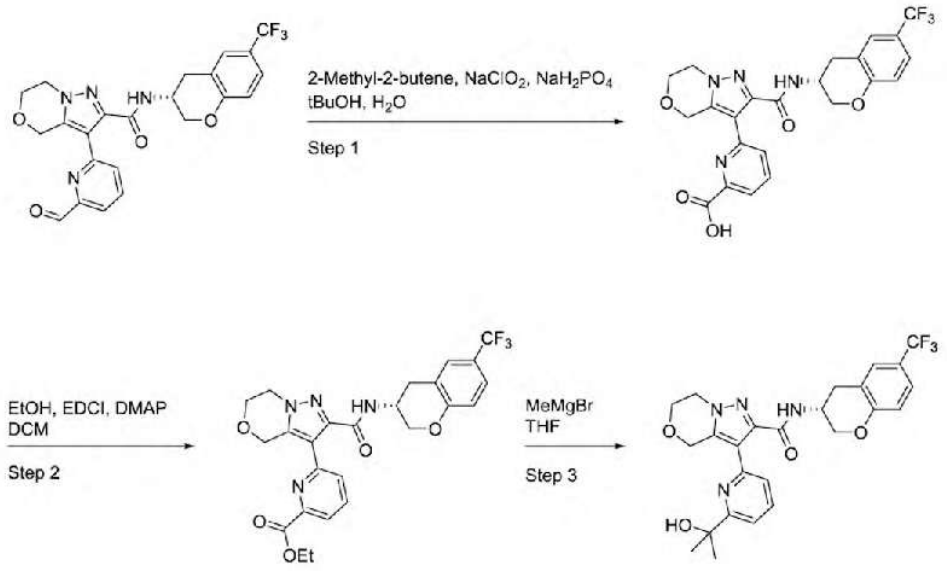


[1189]

The compound of Example 522 was synthesized from the compound synthesized in Step 2 in Example 519 under the scheme depicted in the figure below.

[1190]

[Chem 263]

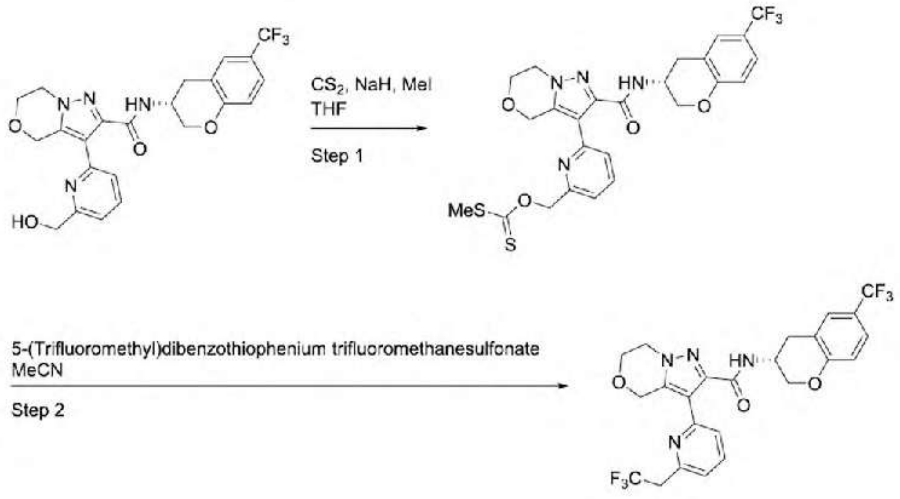


[1191]

The compound of Example 523 was synthesized from the compound of Example 519 under the scheme depicted in the figure below.

[1192]

[Chem 264]

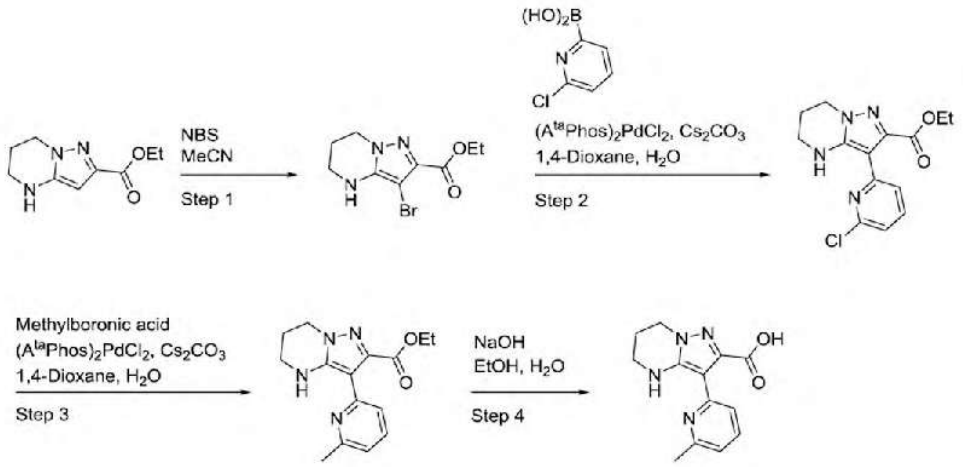


[1193]

The compound of Reference Example 91 (3-(6-methylpyridin-2-yl)-4,5,6,7-tetrahydropyrazolo[1, 5-a]pyrimidine-2-carboxylic acid) was synthesized under the scheme depicted in the figure below.

[1194]

[Chem 265]



[1195]

The compound of Example 524 was synthesized from the compound of Reference Example 91 and the compound of Reference Example 43 by a method similar to Step 3 in Example 100.

[1196]

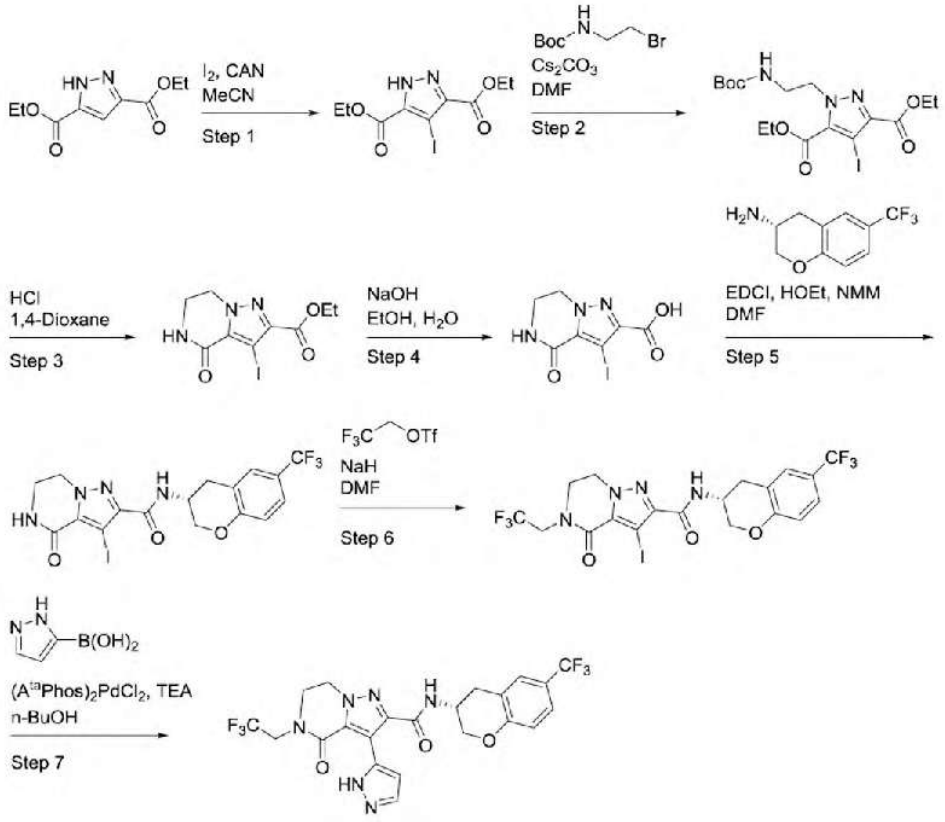
The compound of Example 525 was synthesized by methods similar to those described in Reference Example 91, Reference Example 44 and Step 3 in Example 100.

[1197]

The compound of Example 526 was synthesized under the scheme depicted in the figure below.

[1198]

[Chem 266]



[1199]

The compound of Example 527 was synthesized from the compound synthesized in Step 2 in Example 519 by a method similar to Step 1 in Reference Example 52.

[1200]

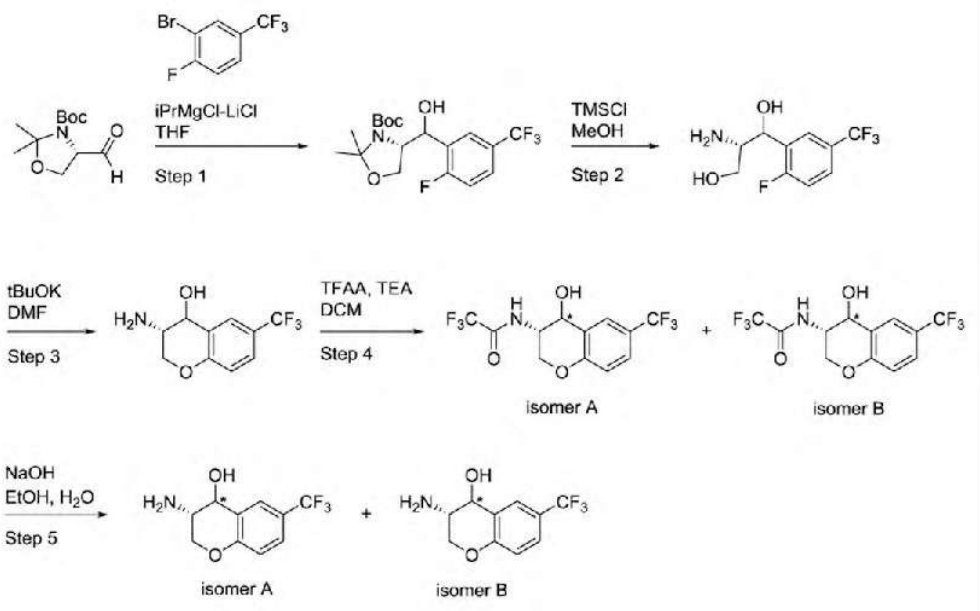
The compound of Example 528 was synthesized by methods similar to those described in Steps 1 to 3 in Example 259 and Example 260.

[1201]

The compounds of Reference Example 92 ((3S)-3-amino-6-(trifluoromethyl)chroman-4-ol (isomer A and isomer B)) were synthesized under the scheme depicted in the figure below.

[1202]

[Chem 267]



[1203]

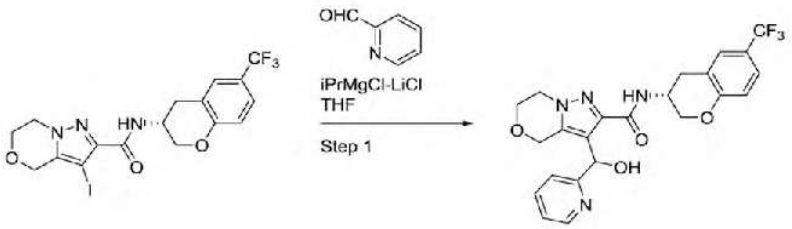
The compound of Example 529 was synthesized from the compound synthesized in Step 1 in Example 259 and the compound synthesized in Reference Example 92 (isomer A) by methods similar to those described in Step 2 to Step 4 in Example 259.

[1204]

The compound of Example 530 was synthesized from the compound synthesized in Step 3 in Example 259 under the scheme depicted in the figure below.

[1205]

[Chem 268]

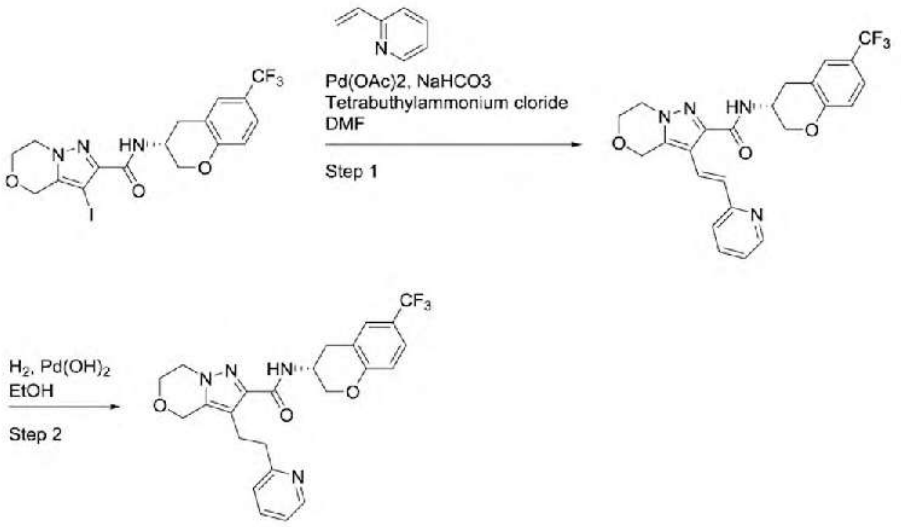


[1206]

The compound of Example 531was synthesized from the compound synthesized in Step 3 in Example 259 under the scheme depicted in the figure below.

[1207]

[Chem 269]



[1208]

The compound of Example 532 was synthesized by methods similar to those described in Reference Example 34, Example 85 and Reference Example 24.

[1209]

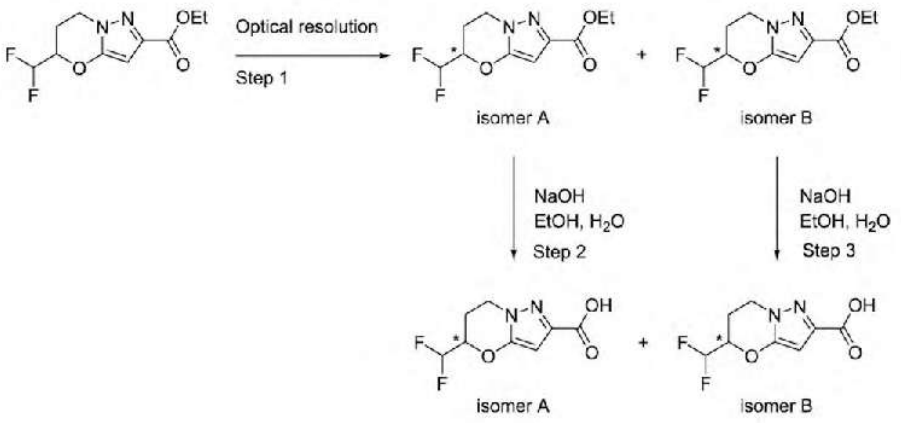
The compound of Example 533 was synthesized by methods similar to those described in Reference Example 34, Example 85 and Reference Example 43.

[1210]

The compounds of Reference Example 93 (5-(difluoromethyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylic acid (isomer A and isomer B)) were synthesized from the compound synthesized in Step 5 in Example 159 under the scheme depicted in the figure below.

[1211]

[Chem 270]



[1212]

The compounds of Example 534 (isomer A and isomer B) were synthesized from the

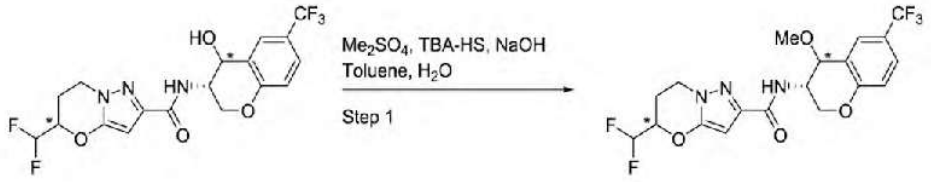
compound of Reference Example 93 (isomer A) and the compound of Reference Example 92 (isomer A) by a method similar to Step 6 in Example 85.

[1213]

The compound of Example 535 was synthesized from the compound of Example 534 (isomer A) under the scheme depicted in the figure below.

[1214]

[Chem 271]



[1215]

The compound of Example 536 was synthesized from the compound of Example 534 (isomer A) by a method similar to Example 114.

[1216]

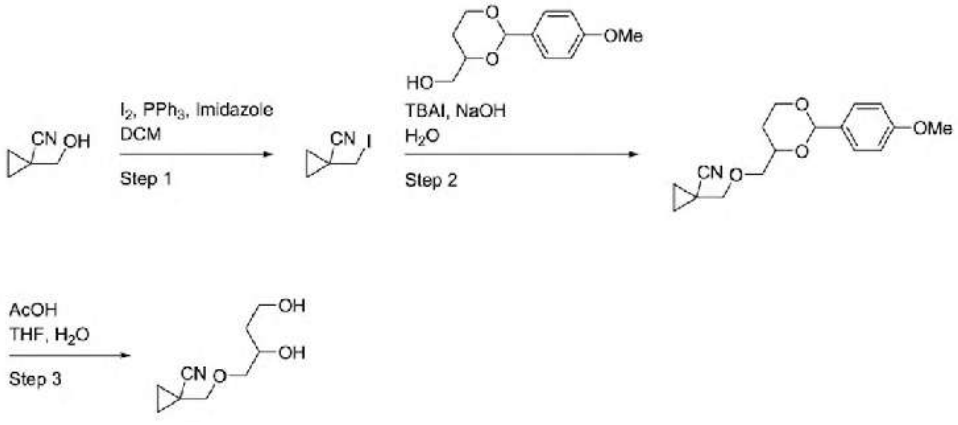
The compound of Example 537 was synthesized from the compound synthesized in Step 7 in Example 70 by a method similar to Step 3 in Example 100.

[1217]

The compound of Reference Example 94 (1-((2,4-dihydroxybutoxy)methyl)cyclopropane-1-carbonitrile) was synthesized under the scheme depicted in the figure below.

[1218]

[Chem 272]



[1219]

The compound of Example 538 was synthesized from the compound of Reference

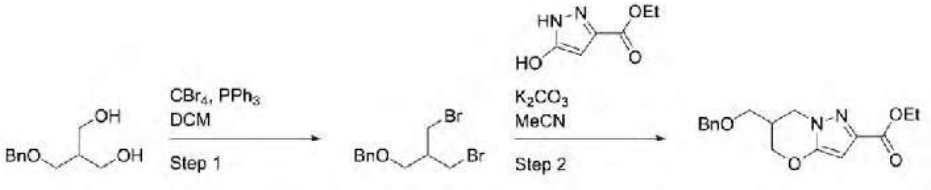
Example 94 by a method similar to Example 85.

[1220]

The compound of Reference Example 95 (ethyl 6-((bezyloxy)methyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylate) was synthesized under the scheme depicted in the figure below.

[1221]

[Chem 273]



[1222]

The compound of Example 539 was synthesized from the compound of Reference Example 95 by methods similar to those described in Example 100 and Reference Example 43.

[1223]

The compound of Example 540 was synthesized by methods similar to those described in Reference Example 34, Example 169 and Reference Example 24.

[1224]

The compound of Example 541 was synthesized by methods similar to those described in Example 449 and Reference Example 24.

[1225]

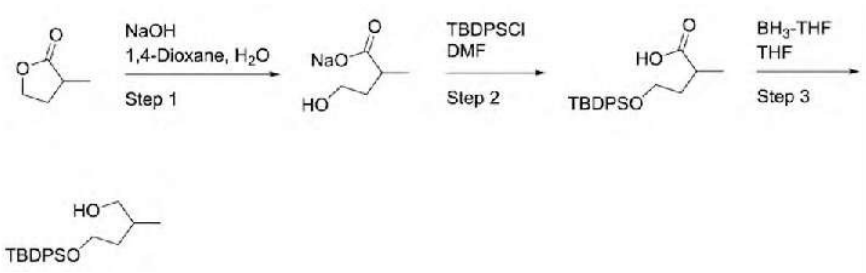
The compound of Example 542 was synthesized from the compound of Reference Example 37 by a method similar to Step 3 in Example 100.

[1226]

The compound of Reference Example 96 (4-((tert-butyldiphenylsilyl)oxy)-2-methylbutan-1-ol) was synthesized under the scheme depicted in the figure below.

[1227]

[Chem 274]



[1228]

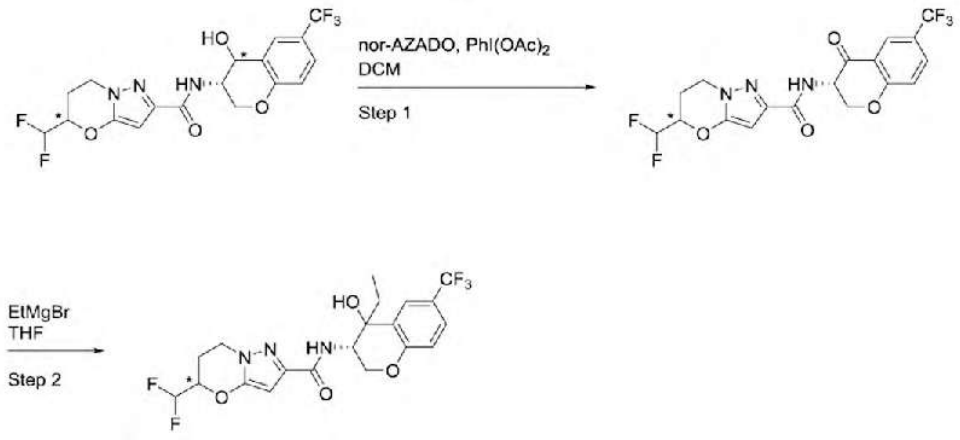
The compound of Example 543 was synthesized from the compound of Reference Example 96 by methods similar to those described in Example 85 and Reference Example 44.

[1229]

The compound of Example 544 was synthesized from the compound of Example 534 under the scheme depicted in the figure below.

[1230]

[Chem 275]



[1231]

The compound of Example 545 was synthesized by a method similar to Example 543.

[1232]

The compound of Example 546 was synthesized from the compound of Example 534 (isomer A) in a method similar to Step 1 in Reference Example 37.

[1233]

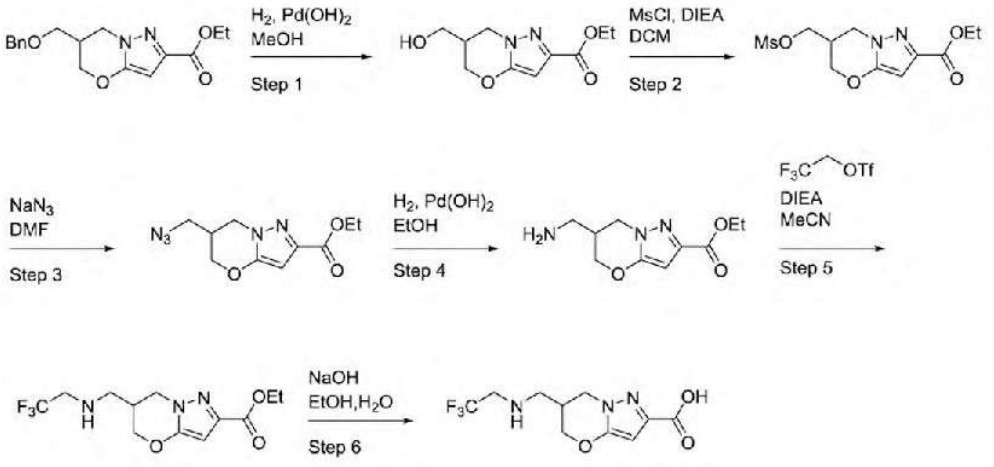
The compounds of Example 547 (isomer A and isomer B) were synthesized by separating the compound of Example 540.

[1234]

The compound of Reference Example 97 (6-(((2,2,2-trifluoroethyl)amino)methyl)-6,7-dihydro-5H-pyrazolo[5,1-b][1,3]oxazine-2-carboxylic acid) was synthesized from the compound of Reference Example 95 under the scheme depicted in the figure below.

[1235]

[Chem 276]



[1236]

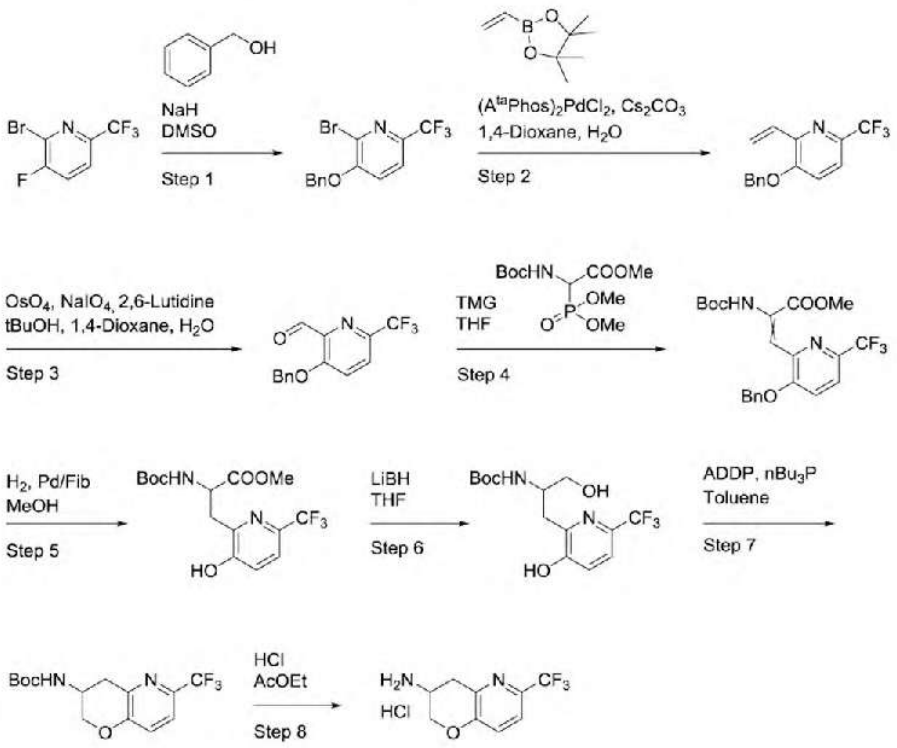
The compound of Example 548 was synthesized from the compound of Reference Example 95 by a method similar to Step 6 in Example 85.

[1237]

The compound of Reference Example 98 (6-(trifluoromethyl)-3,4-dihydro-2H-pyrano[3,2-b]pyridin-3-amine hydrochloride) was synthesized under the scheme depicted in the figure below.

[1238]

[Chem 277]



[1239]

The compound of Example 549 was synthesized by methods similar to those described in Example 90 and Reference Example 98.

[1240]

The compound of Example 550 was synthesized from the compound synthesized in Step 7 in Example 70 and the compound of Reference Example 98 by a method similar to Step 8 in Example 70.

[1241]

The compound of Example 551 was synthesized from the compound of Reference Example 93 (isomer A) by a method similar to Step 6 in Example 85.

[1242]

The compounds of Example 552 (isomer A and isomer B) were obtained by separating the compound of Example 532.

[1243]

The compound of Example 553 was synthesized by methods similar to those described in Example 538 and Reference Example 43.

[1244]

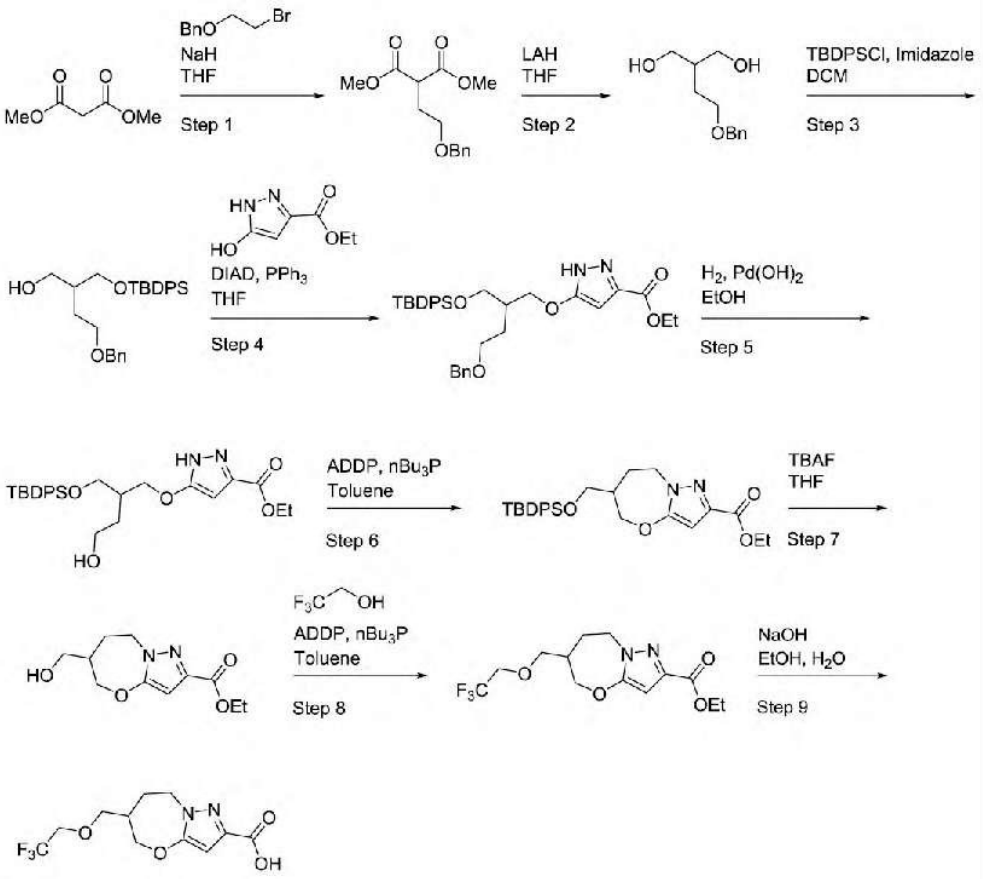
The compounds of Example 554 (isomer A and isomer B) were obtained by separating the compound of Example 553.

[1245]

The compound of Reference Example 99 (6-((2,2,2-trifluoroethoxy)methyl)-5,6,7,8-tetrahydropyrazolo[5,1-b][1,3]oxazepine-2-carboxylic acid) was synthesized under the scheme depicted in the figure below.

[1246]

[Chem 278]



[1247]

The compound of Example 555 was synthesized from the compound of Reference Example 99 by a method similar to Step 3 in Example 100.

[1248]

The compound of Example 556 was synthesized from the compound of Reference Example 99 and from the compound of Reference Example 43 by a method similar to Step 3 in Example 100.

[1249]

The compound of Example 557 was synthesized from the compound of Reference Example 99 and from the compound of Reference Example 48 by a method similar to Step 3 in Example 100.

[1250]

The compound of Example 558 was synthesized from the compound of Reference Example 33 and the compound of Reference Example 92 (isomer A) by a method similar to Step 8 in Example 70.

[1251]

The compound of Example 559 was synthesized from the compound of Reference

Example 33 and the compound of Reference Example 92 (isomer B) by a method similar to Step 8 in Example 70.

[1252]

The compound of Example 560 was synthesized from the compound of Reference Example 50 and the compound of Reference Example 92 (isomer A) by a method similar to Step 8 in Example 70.

[1253]

The compound of Example 561 was synthesized from the compound of Reference Example 36 and the compound of Reference Example 92 (isomer A) by a method similar to Step 7 to Step 8 in Example 70.

[1254]

The compounds of Example 562 were obtained by separating the compound synthesized by methods similar to those described in Step 3 to Step 5 in Reference Example 34, Example 169 and Reference Example 24.

[1255]

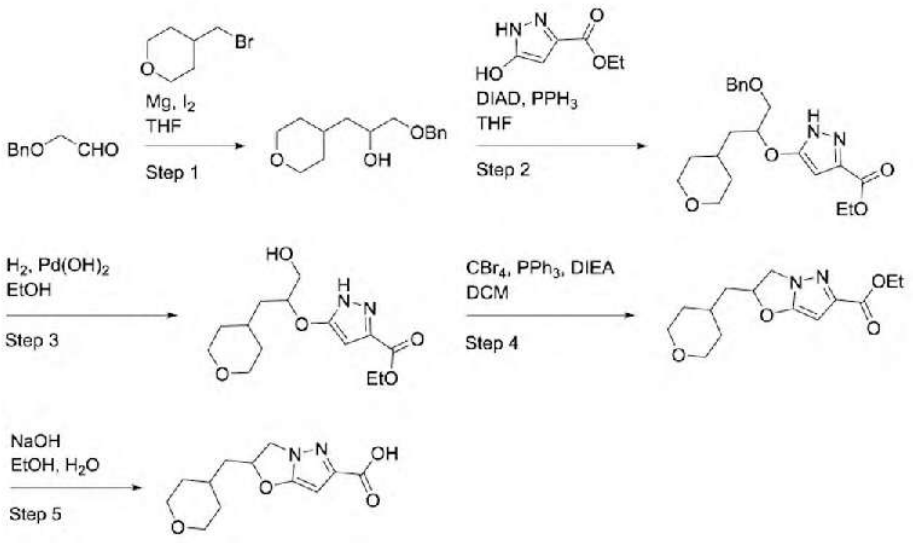
The compounds of Example 563 (isomer A and isomer B) were obtained by separating the compound of Example 538.

[1256]

The compound of Reference Example 100 (2-((tetrahydro-2H-pyran-4-yl)methyl)-2,3-dihydropyrazolo[5,1-b]oxazole-6-carboxylic acid) was synthesized under the scheme depicted in the figure below.

[1257]

[Chem 279]



[1258]

The compound of Example 564 was synthesized from the compound of Reference Example 100 and the compound of Reference Example 48 by a method similar to Step 8 in Example 70.

[1259]

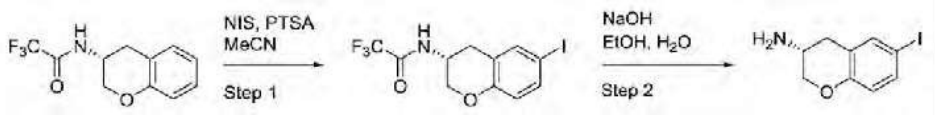
The compound of Example 565 was synthesized from the compound of Reference Example 100 and the compound of Reference Example 24 by a method similar to Step 8 in Example 70.

[1260]

The compound of Reference Example 101 ((R)-6-iodochroman-3-amine) was synthesized from the compound synthesized in Step 1 in Reference Example 1 under the scheme depicted in the figure below.

[1261]

[Chem 280]



[1262]

The compound of Example 566 was synthesized from the compound of Reference Example 93 (isomer A) and the compound of Reference Example 101 by a method similar to Step 8 in Example 70.

[1263]

The compound of Example 567 was synthesized by methods similar to those described in Reference Example 34, Example 85 and Reference Example 48.

[1264]

The compound of Example 568 was synthesized from the compound of Example 534 (isomer B) by a method similar to Example 535.

[1265]

The compound of Example 569 was synthesized from the compound synthesized in Step 3 in Example 187 and the compound of Reference Example 92 (isomer A) by methods similar to those described in Step 8 in Example 70 and Example 535.

[1266]

The compound of Example 570 was synthesized from the compound of Reference Example 36 and the compound of Reference Example 92 (isomer A) by methods similar to those

described instep 7 to Step 8 in Example 70 and Example 535.

[1267]

The compound of Example 571 was synthesized from the compound of Reference Example 33 by a method similar to Step 8 in Example 70.

[1268]

The compounds of Example 572 (isomer A and isomer B) were obtained by separating the compound of Example 555.

[1269]

The compound of Example 573 was synthesized by a method similar to Example 70.

[1270]

The compound of Example 574 was synthesized from the compound of Reference Example 36 and the compound of Reference Example 4 by a method similar to Step 5 to Step 6 in Example 85.

[1271]

The compounds of Example 575 (isomer A and isomer B) were obtained by separating the compound of Example 559.

[1272]

The compounds of Example 576 (isomer A and isomer B) were obtained by separating the compound of Example 560.

[1273]

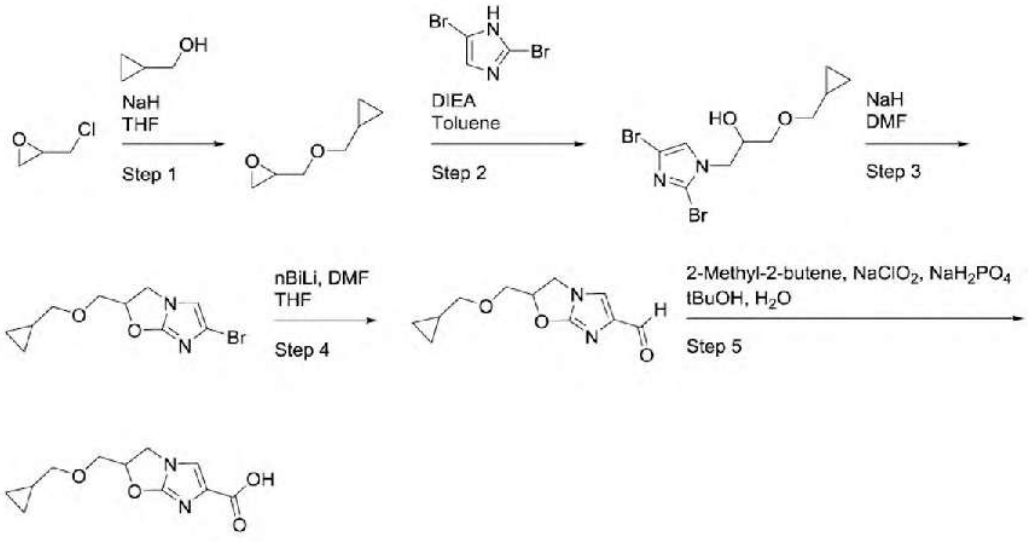
The compounds of Example 577 (isomer A and isomer B) were obtained by separating the compound of Example 565.

[1274]

The compound of Reference Example 102 (2-((cyclopropylmethoxy)methyl)-2,3-dihydroimidazo[2,1-b]oxazole-6-carboxylic acid) was synthesized under the scheme depicted in the figure below.

[1275]

[Chem 281]



[1276]

The compound of Example 578 was synthesized from the compound of Reference Example 102 and the compound of Reference Example 1 by a method similar to Step 8 in Example 70.

[1277]

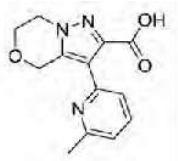
The compounds of Example 579 (isomer A and isomer B) were synthesized from the compound of Reference Example 93 (isomer A) and Reference Example 92 (isomer A) by methods similar to those described in Step 8 in Example 70 and Example 114.

[1278]

The compound of Reference Example 103 (shown in the figure below.) was synthesized from the compound synthesized in Step 1 in Example 259 by a method similar to Reference Example 91.

[1279]

[Chem 282]



[1280]

The compound of Example 580 was synthesized from the compound of Reference Example 103 and the compound of Reference Example 92 (isomer A) by a method similar to Step 3 in Example 100.

[1281]

The compound of Example 581 was synthesized from the compound of Reference

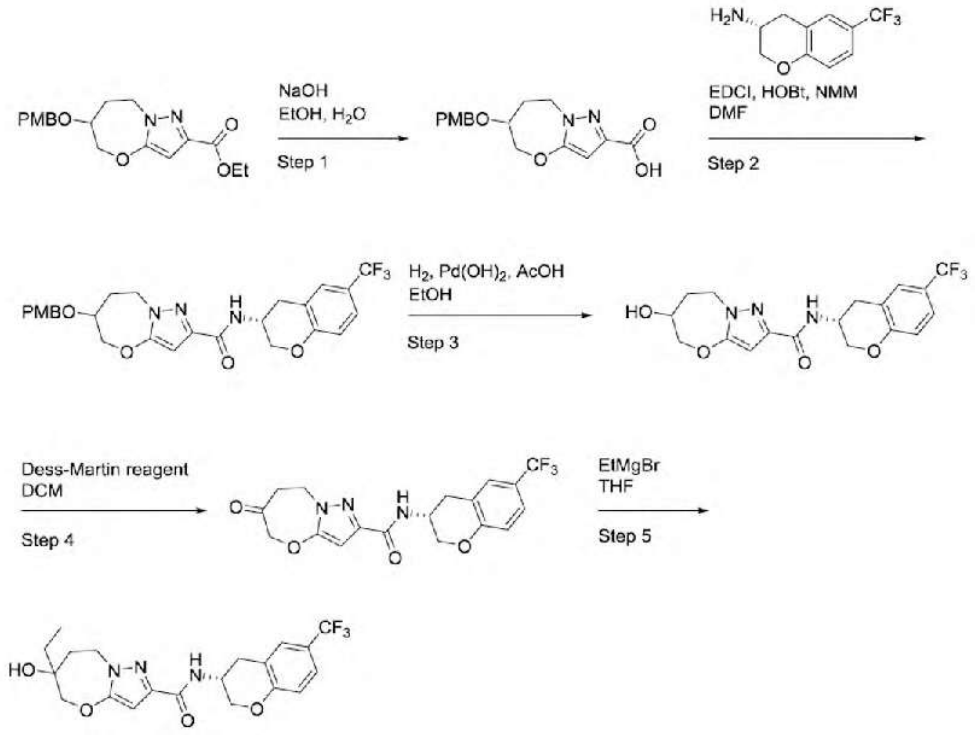
Example 90 and the compound of Reference Example 92 (isomer A) by a method similar to Step 3 in Example 100.

[1282]

The compound of Example 582 was synthesized from the compound synthesized in Step 8 in Example 252 under the scheme depicted in the figure below.

[1283]

[Chem 283]



[1284]

The compound of Example 583 was synthesized by methods similar to those described in Step 3 to Step 5 in Reference Example 34, Example 85 and Reference Example 43.

[1285]

The compound of Example 584 was synthesized by methods similar to those described in Step 3 to Step 5 in Reference Example 34, Example 85 and Reference Example 1.

[1286]

The compound of Example 585 was synthesized by methods similar to those described in Step 3 to Step 5 in Reference Example 34, Example 85 and Reference Example 24.

[1287]

The compound of Example 586 was synthesized by methods similar to those described in Step 3 to Step 5 in Reference Example 34, Example 85 and Reference Example 48.

[1288]

The compound of Example 587 was synthesized using the compound of Reference Example 92 (isomer A) by a method similar to one described in Example 199.

[1289]

The compound of Example 588 was synthesized from the compound of Reference Example 55 and the compound of Reference Example 92 (isomer A) by a method similar to Step 8 in Example 70.

[1290]

The compound of Example 589 was synthesized from the compound of Reference Example 55 and the compound of Reference Example 92 (isomer B) by a method similar to Step 8 in Example 70.

[1291]

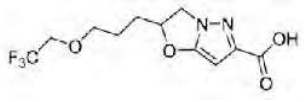
The compounds of Example 590 (isomer A and isomer B) were obtained by separating the compound of Example 564.

[1292]

The compound of Reference Example 104 (shown in the figure below.) was synthesized from the compound synthesized in Step 7 in Example 245 by methods similar to those described in Example 114 and Step 7 in Example 70.

[1293]

[Chem 284]



[1294]

The compound of Example 591 was synthesized from the compound of Reference Example 104 and the compound of Reference Example 92 (isomer A) by a method similar to Step 8 in Example 70.

[1295]

The compound of Example 592 was synthesized from the compound of Reference Example 104 and the compound of Reference Example 92 (isomer B) by a method similar to Step 8 in Example 70.

[1296]

The compound of Example 593 was synthesized from the compound of Reference Example 92 (isomer A) by a method similar to Example 268.

[1297]

The compound of Example 594 was synthesized from the compound of Reference Example 92 (isomer A) by methods similar to those described in Example 268 and Example 261.

[1298]

The compound of Example 595 was synthesized from the compound synthesized in Step 6 in Example 201 and the compound of Reference Example 92 (isomer A) by a method similar to Step 8 in Example 70.

[1299]

The compound of Example 596 was synthesized from the compound synthesized in Step 6 in Example 201 and the compound of Reference Example 92 (isomer B) by a method similar to Step 8 in Example 70.

[1300]

The compounds of Example 597 (isomer A and isomer B) were obtained by separating the compound of Example 569.

[1301]

The compounds of Example 598 (isomer A and isomer B) were obtained by separating the compound of Example 570.

[1302]

The compound of Example 599 was synthesized using the compound of Reference Example 92 (isomer B) by a method similar to Example 90.

[1303]

The compounds of Example 600 (isomer A and isomer B) were obtained by separating the compound of Example 588.

[1304]

The compounds of Example 601 (isomer A and isomer B) were obtained by separating the compound of Example 557.

[1305]

The compounds of Example 602 (isomer A and isomer B) were obtained by separating the compound synthesized from the compound of Reference Example 99 and Reference Example 44 by a method similar to Step 3 in Example 100.

[1306]

The compounds of Example 603 (isomer A and isomer B) were obtained by separating the compound of Example 591

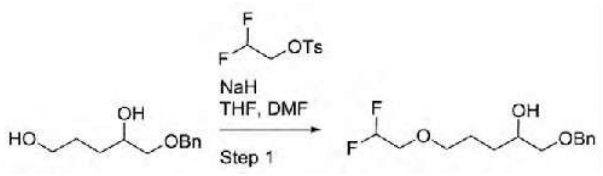
[1307]

The compound of Reference Example 105 was synthesized from the compound

synthesized in Step 2 in Example 245 under the scheme depicted in the figure below.

[1308]

[Chem 285]

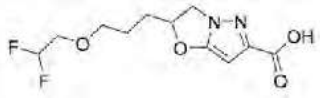


[1309]

The compound of Reference Example 106 (shown in the figure below) was synthesized from the compound of Reference Example 105 by a method similar to one described in Step 5 to Step 8 in Example 245.

[1310]

[Chem 286]



[1311]

The compounds of Example 604 (isomer A and isomer B) were obtained by separating the compound synthesized using the compound of Reference Example 106 and Reference Example 24 by a method similar to Step 8 in Example 70.

[1312]

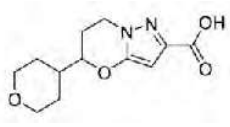
The compound of Example 605 was synthesized from the compound of Reference Example 100 and Reference Example 44 by a method similar to Step 8 in Example 70.

[1313]

The compound of Reference Example 107 (shown in the figure below) was synthesized by methods similar to those described in Step 3 to Step 5 in Reference Example 34 and Step 1 to Step 5 in Example 85.

[1314]

[Chem 287]



[1315]

The compound of Example 606 was synthesized from the compound of Reference Example 107 and the compound of Reference Example 44 by a method similar to Step 8 in

Example 70.

[1316]

The compound of Example 607 was synthesized using the compound of Reference Example 106 and the compound of Reference Example 92 (isomer A) by a method similar to one described in Step 8 in Example 70.

[1317]

The compounds of Example 608 (isomer A and isomer B) were obtained by separating the compound of Example 607.

[1318]

The compound of Example 609 was synthesized using the compound of Reference Example 106 and the compound of Reference Example 92 (isomer B) by a method similar to Step 8 in Example 70.

[1319]

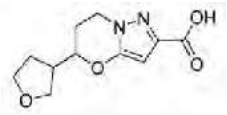
The compounds of Example 610 (isomer A and isomer B) were obtained by separating the compound of Example 609.

[1320]

The compound of Reference Example 108 (shown in the figure below) was synthesized by a method similar to the compound of Reference Example 107.

[1321]

[Chem 288]



[1322]

The compound of Example 611 was synthesized from the compound of Reference Example 108 and the compound of Reference Example 1 by a method similar to one described in Step 8 in Example 70.

[1323]

The compound of Example 612 was synthesized from the compound of Reference Example 108 and the compound of Reference Example 43 by a method similar to one described in Step 8 in Example 70.

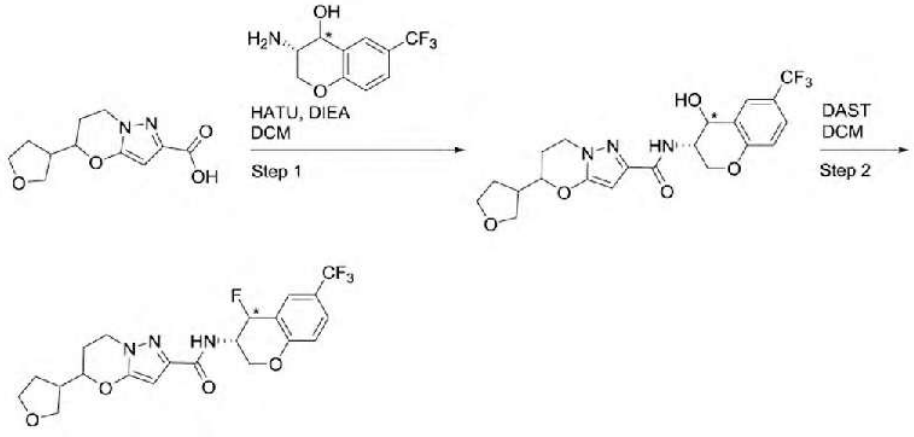
[1324]

The compound of Example 613 was synthesized from the compound of Reference Example 108 and the compound of Reference Example 92 (isomer A) under the scheme depicted

in the figure below.

[1325]

[Chem 289]



[1326]

The compound of Example 614 was synthesized from the compound of Reference Example 108 and Reference Example 92 (isomer B) by a method similar to Example 613.

[1327]

The compounds of Example 615 (isomer A and isomer B) were obtained by separating the compound of Example 606.

[1328]

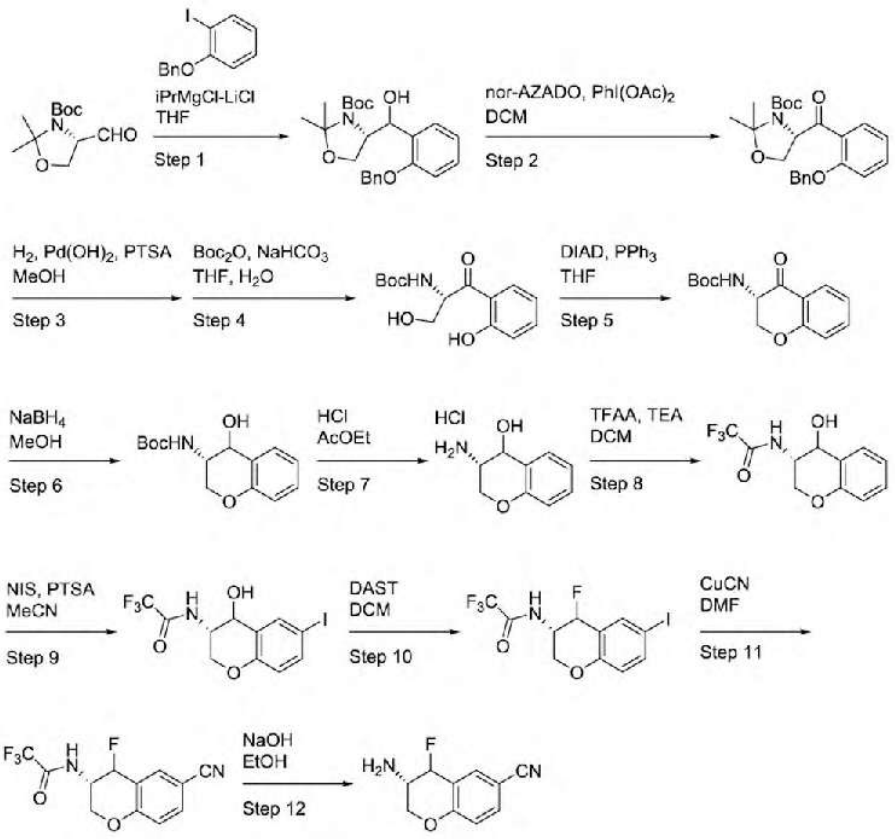
The compounds of Example 616 (isomer A and isomer B) were obtained by separating the compound of Example 592.

[1329]

The compound of Reference Example 109 ((3S)-3-amino-4-fluorochroman-6-carbonitrile) was synthesized under the scheme depicted in the figure below.

[1330]

[Chem 290]



[1331]

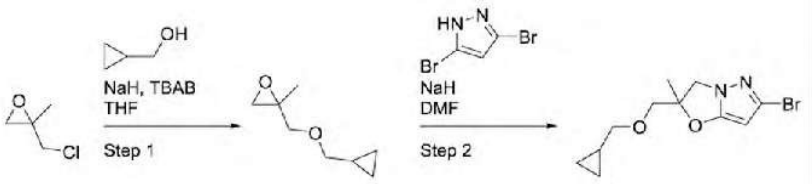
The compounds of Example 617 (isomer A, isomer B, isomer C and isomer D) were obtained by separating the compound synthesized from the compound of Reference Example 33 and the compound of Reference Example 109 by a method similar to Step 8 in Example 70.

[1332]

The compound of Reference Example 110 (6-bromo-2-((cyclopropylmethoxy)methyl)-2-methyl-2,3-dihydropyrazolo[5,1-b]oxazole) was synthesized under the scheme depicted in the figure below.

[1333]

[Chem 291]

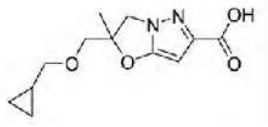


[1334]

The compound of Reference Example 111 (shown in the figure below.) was synthesized from the compound of Reference Example 110 by a method similar to one described in Step 8 to Step 10 in Reference Example 79.

[1335]

[Chem 292]



[1336]

The compound of Example 618 was synthesized from the compound of Reference Example 111 and the compound of Reference Example 24 by a method similar to one described in Step 8 in Example 70.

[1337]

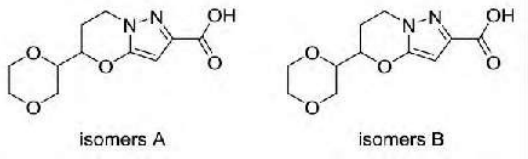
The compound of Example 619 was synthesized from the compound of Reference Example 111 and the compound of Reference Example 48 by a method similar to one described in Step 8 in Example 70.

[1338]

The compound of Reference Example 112 (shown in the figure below.) was synthesized by methods similar to those described in Step 3 to Step 5 in Reference Example 34 and Step 1 to Step 5 in Example 85.

[1339]

[Chem 293]



[1340]

The compound of Example 620 was synthesized from the compound of Reference Example 112 (isomers A) and the compound of Reference Example 43 by a method similar to one described in Step 8 in Example 70.

[1341]

The compound of Example 621 was synthesized from the compound of Example 588 by a method similar to one described in Example 535.

[1342]

The compounds of Example 622 (isomer A and isomer B) were obtained by separating the compound of Example 605.

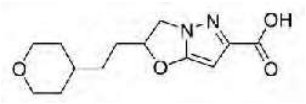
[1343]

The compound of Reference Example 113 (shown in the figure below.) was synthesized

by a method similar to one described in Reference Example 100.

[1344]

[Chem 294]



[1345]

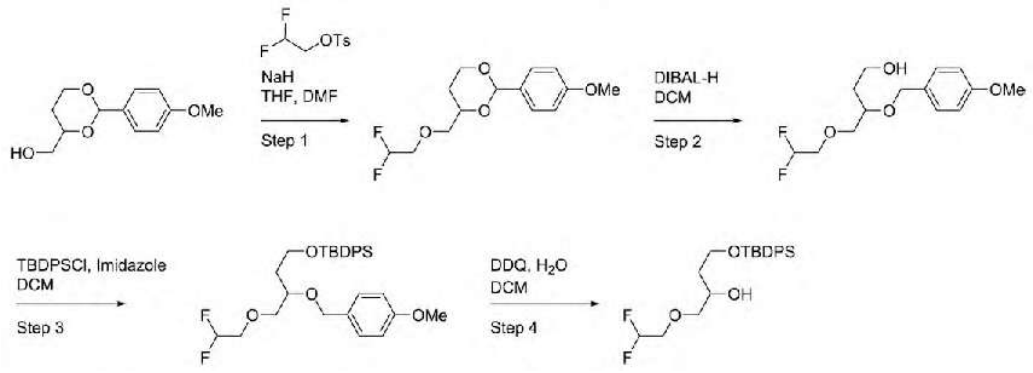
The compound of Example 623 was synthesized from the compound of Reference Example 113 and the compound of Reference Example 24 in a method similar to one described in Step 8 in Example 70.

[1346]

The compound of Reference Example 114 (4-((tert-butyldiphenylsilyl)oxy)-1-(2,2-difluoroethoxy)butan-2-ol) was synthesized under the scheme depicted in the figure below.

[1347]

[Chem 295]

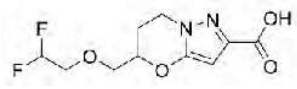


[1348]

The compound of Reference Example 115 (shown in the figure below) was synthesized from the compound of Reference Example 114 by methods similar to those described in Step 2 to Step 5 in Example 85.

[1349]

[Chem 296]



[1350]

The compound of Example 624 was synthesized from the compound of Reference Example 115 and the compound of Reference Example 92 (isomer B) by methods similar to those described in Step 8 in Example 70 and Step 2 in Example 613.

[1351]

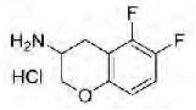
The compound of Example 625 was synthesized from the compound of Reference Example 70 and the compound of Reference Example 92 (isomer A) by methods similar to those described in Step 7 to Step 8 in Example 70 and Step 2 in Example 613.

[1352]

The compound of Reference Example 116 (shown in the figure below) was synthesized by a method similar to one described in Reference Example 4.

[1353]

[Chem 297]



[1354]

The compound of Example 626 was synthesized from the compound synthesized in Step 5 in Example 169 and the compound of Reference Example 116 by a method similar to one described in Step 8 in Example 70.

[1355]

The compound of Example 627 was synthesized from the compound of Reference Example 36 and the compound of Reference Example 116 by a method similar to one described in Step 7 to Step 8 in Example 70.

[1356]

The compound of Example 628 was synthesized from the compound of Reference Example 104 and the compound of Reference Example 116 in a method similar to one described in Step 8 in Example 70.

[1357]

The compound of Example 629 was synthesized from the compound of Reference Example 55 and the compound of Reference Example 116 in a method similar to one described in Step 8 in Example 70.

[1358]

The compound of Example 630 was synthesized from the compound of Reference Example 108 and the compound of Reference Example 44 in a method similar to one described in Step 8 in Example 70.

[1359]

The compound of Example 631 was synthesized from the compound of Reference

Example 112 (isomers A) and the compound of Reference Example 44 in a method similar to one described in Step 8 in Example 70.

[1360]

The compound of Example 632 was synthesized from the compound of Reference Example 89 by methods similar to those described in Step 2 to Step 6 Example 85 and Reference Example 44.

[1361]

The compound of Example 633 was synthesized from the compound of Reference Example 89 by methods similar to those described in Step 2 to Step 6 Example 85 and Reference Example 48

[1362]

The compound of Example 634 was synthesized from the compound of Reference Example 99 and the compound of Reference Example 92 (isomer A) by methods similar to those described in Step 8 in Example 70 and Step 2 in Example 613.

[1363]

The compound of Example 635 was synthesized from the compound of Reference Example 115 and Reference Example 44 in a method similar to one described in Step 8 in Example 70.

[1364]

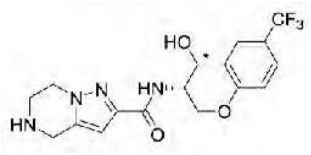
The compounds of Example 636 (isomer A and isomer B) were obtained by separating the compound of Example 595.

[1365]

The compound of Reference Example 117 (shown in the figure below.) was synthesized using the compound of Reference Example 92 (isomer A) by a method similar to one described in Step 1 to Step 2 in Example 268.

[1366]

[Chem 298]



[1367]

The compound of Example 637 was synthesized from the compound of Reference Example 117 by methods similar to those described in Step 1 in Example 261 and Step 2 in Example 613.

[1368]

The compound of Example 638 was synthesized from the compound of Reference Example 112 (isomers B) and the compound of Reference Example 44 in a method similar to one described in Step 8 in Example 70.

[1369]

The compound of Example 639 was synthesized from the compound synthesized in Step 6 in Example 201 and the compound of Reference Example 116 in a method similar to one described in Step 8 in Example 70.

[1370]

The compound of Example 640 was synthesized from the compound of Reference Example 106 and the compound of Reference Example 116 in a method similar to one described in Step 8 in Example 70.

[1371]

The compounds of Example 641 (isomer A and isomer B) were obtained by separating the compound of Example 587.

[1372]

The compound of Example 642 was synthesized from the compound of Reference Example 117 by methods similar to those described in Reference Example 69 and Step 2 in Example 613.

[1373]

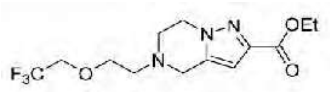
The compound of Example 643 was synthesized from the compound of Reference Example 117 by a method similar to Reference Example 637.

[1374]

The compound of Reference Example 118 (shown in the figure below.) was synthesized by a method similar to Step 1 in Example 267.

[1375]

[Chem 299]



[1376]

The compound of Example 644 was synthesized from the compound of Reference Example 118 and the compound of Reference Example 43 by a method similar to one described in Step 7 to Step 8 in Example 70.

[1377]

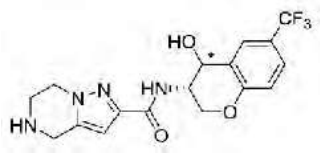
The compound of Example 645 was synthesized from the compound of Reference Example 118 and the compound of Reference Example 92 (isomer B) by methods similar to those described in Step 2 to Step 3 in Example 100 and Step 2 in Example 613.

[1378]

The compound of Reference Example 119 (shown in the figure below.) was synthesized using the compound of Reference Example 92 (isomer B) by methods similar to one described in Step 1 to Step 2 in Example 268.

[1379]

[Chem 300]



[1380]

The compound of Example 646 was synthesized from the compound of Reference Example 119 by methods similar to those described in Reference Example 69 and Step 2 in Example 613.

[1381]

The compound of Example 647 was synthesized from the compound of Reference Example 119 by methods similar to those described in Step 1 in Example 261 and Step 2 in Example 613.

[1382]

The compound of Example 648 was synthesized from the compound synthesized in Step 5 in Example 169 and the compound of Reference Example 109 by a method similar to one described in Step 8 in Example 70.

[1383]

The compound of Example 649 was synthesized from the compound of Reference Example 89 by methods similar to those described in Step 2 to Step 6 in Example 85 and Reference Example 109.

[1384]

The compound of Example 650 was synthesized from the compound synthesized in Step 6 in Example 201 and the compound of Reference Example 109 by a method similar to Step 8 in Example 70.

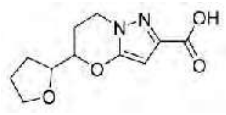
[1385]

The compound of Reference Example 120 (shown in the figure below.) was synthesized

by a method similar to one described in the compound of Reference Example 107.

[1386]

[Chem 301]



[1387]

The compound of Example 651 was synthesized from the compound of Reference Example 120 and the compound of Reference Example 44 by a method similar to Step 8 in Example 70.

[1388]

The compound of Example 652 was synthesized from the compound of Reference Example 117 by a method similar to Reference Example 69.

[1389]

The compound of Example 653 was synthesized by methods similar to those described in Example 268 and Reference Example 43.

[1390]

The compound of Example 654 was synthesized from the compound of Example 652 by a method similar to one described in Step 2 in Example 613.

[1391]

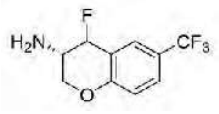
The compound of Example 655 was synthesized by methods similar to those described in Reference Example 82, Example 159 and Reference Example 44.

[1392]

The compound of Reference Example 121 (shown in the figure below.) was synthesized from the compound synthesized in Step 3 in Reference Example 92 by methods similar to those described in Step 1 and Step 3 in Reference Example 1 and Step 2 in Example 613.

[1393]

[Chem 302]

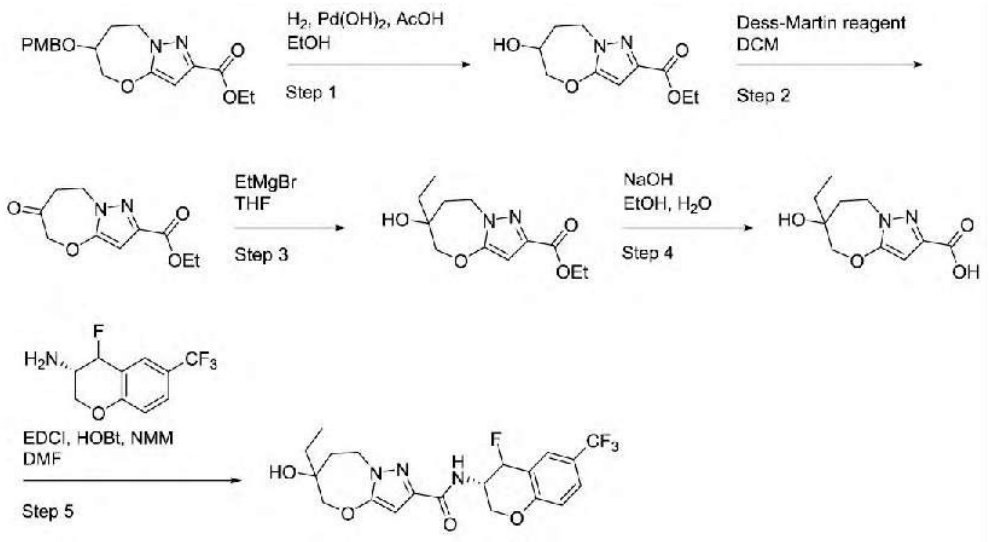


[1394]

The compound of Example 656 was synthesized from the compound synthesized in Step 8 in Example 252 and the compound of Reference Example 121 under the scheme depicted in the figure below.

[1395]

[Chem 303]

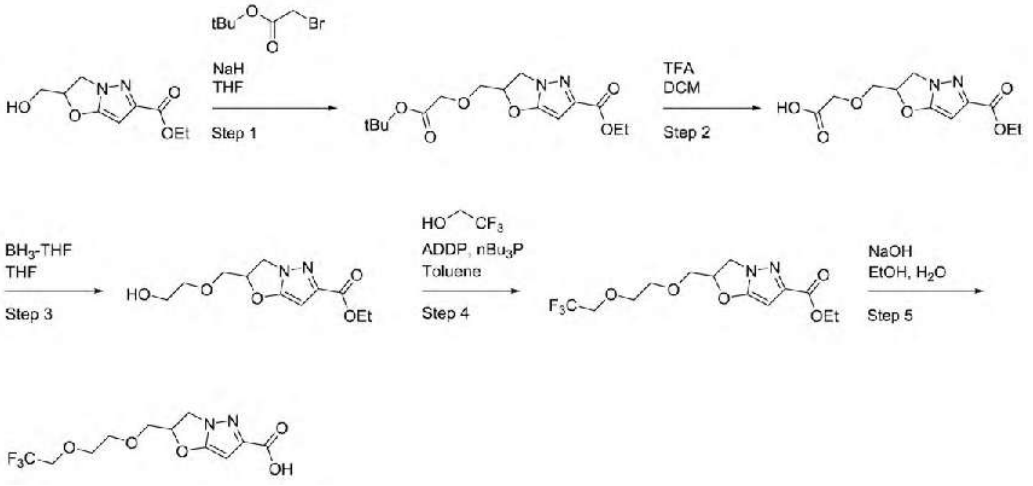


[1396]

The compound of Reference Example 122 (2-((2-(2,2,2-trifluoroethoxy)ethoxy)methyl)-2,3-dihydropyrazolo[5,1-b]oxazole-6-carboxylic acid) was synthesized from the compound synthesized in Step 1 in Example 187 under the scheme depicted in the figure below.

[1397]

[Chem 304]



[1398]

The compound of Example 657 was synthesized from the compound of Reference Example 122 and the compound of Reference Example 43 by a method similar to Step 3 in Example 100.

[1399]

The compound of Example 658 was synthesized from the compound of Reference Example 122 and the compound of Reference Example 1 by a method similar to Step 3 in Example 100.

[1400]

The compound of Example 659 was synthesized from the compound of Reference Example 122 and the compound of Reference Example 24 by a method similar to Step 3 in Example 100.

[1401]

The compound of Example 660 was synthesized from the compound of Reference Example 122 and the compound of Reference Example 92 (isomer A) by a method similar to Step 3 in Example 100.

[1402]

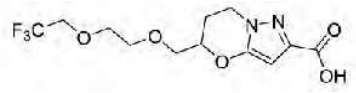
The compound of Example 661 was synthesized from the compound of Reference Example 122 and the compound of Reference Example 44 by a method similar to Step 3 in Example 100.

[1403]

The compound of Reference Example 123 (shown in the figure below.) was synthesized from the compound synthesized in Step 1 in Example 100 by a method similar to Reference Example 122.

[1404]

[Chem 305]



[1405]

The compound of Example 662 was synthesized from the compound of Reference Example 123 and the compound of Reference Example 1 by a method similar to Step 8 in Example 70.

[1406]

The compound of Example 663 was synthesized from the compound of Reference Example 123 and the compound of Reference Example 43 by a method similar to Step 8 in Example 70.

[1407]

The compound of Example 664 was synthesized from the compound of Reference Example 123 and the compound of Reference Example 24 by a method similar to Step 8 in

Example 70.

[1408]

The compound of Example 665 was synthesized from the compound of Reference Example 123 and the compound of Reference Example 92 (isomer B) by methods similar to those described in Step 8 in Example 70 and Step 2 in Example 613.

[1409]

The compound of Example 666 was synthesized by methods similar to those described in Example 268 and Reference Example 43.

[1410]

The compound of Example 667 was synthesized from the compound of Reference Example 118 and the compound of Reference Example 44 by methods similar to those described in Step 7 to Step 8 in Example 70.

[1411]

The compound of Example 668 was synthesized from the compound of Reference Example 120 and the compound of Reference Example 48 by a method similar to Step 8 in Example 70.

[1412]

The compound of Example 669 was synthesized by methods similar to those described in Example 268 and Reference Example 43.

[1413]

The compound of Example 670 was synthesized from the compound of Reference Example 119 by methods similar to those described in Step 1 in Example 261 and Step 2 in Example 613.

[1414]

The compound of Example 671 was synthesized from the compound of Reference Example 119 by methods similar to those described in Reference Example 69 and Step 2 in Example 613.

[1415]

The compound of Example 672 was synthesized from the compound of Reference Example 119 by methods similar to those described in Reference Example 69 and Step 2 in Example 613.

[1416]

The compound of Example 673 was synthesized from the compound of Reference Example 119 by methods similar to those described in Reference Example 69 and Step 2 in

Example 613.

[1417]

The compound of Example 674 was synthesized by methods similar to those described in Reference Example 82, Example 159 and Reference Example 48.

[1418]

The compound of Example 675 was synthesized from the compound of Reference Example 122 and the compound of Reference Example 92 (isomer B) was synthesized by a method similar to Step 3 in Example 100.

[1419]

The compound of Example 676 was synthesized from the compound of Example 660 by a method similar to one described in Step 2 in Example 613.

[1420]

The compound of Example 677 was synthesized from the compound of Reference Example 117 by a method similar to Reference Example 69.

[1421]

The compound of Example 678 was synthesized from the compound of Reference Example 117 and the compound of Example 119 by methods similar to those described in Reference Example 69 and Step 2 in Example 613.

[1422]

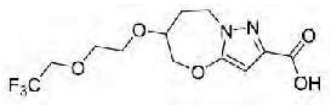
The compound of Example 679 was synthesized from the compound synthesized in Step 6 in Example 254 and the compound of Reference Example 92 (isomer B) by methods similar to those described in Step 8 in Example 70 and Step 2 in Example 613.

[1423]

The compound of Reference Example 124 (shown in the figure below.) was synthesized from the compound synthesized in Step 8 in Example 252 by a method similar to Reference Example 122.

[1424]

[Chem 306]



[1425]

The compound of Example 680 was synthesized from the compound of Reference Example 124 and the compound of Reference Example 43 by a method similar to Step 8 in Example 70.

[1426]

The compound of Example 681 was synthesized from the compound of Reference Example 124 and the compound of Reference Example 92 (isomer A) by a method similar to Step 8 in Example 70.

[1427]

The compound of Example 682 was synthesized from the compound of Reference Example 124 and the compound of Reference Example 1 by a method similar to Step 8 in Example 70.

[1428]

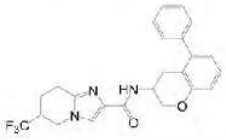
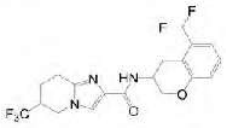
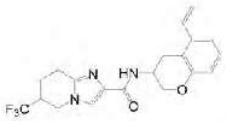
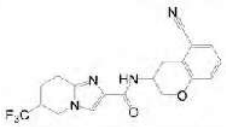
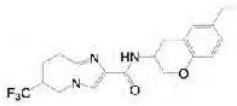
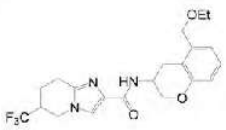
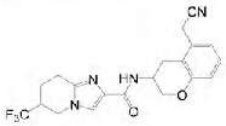
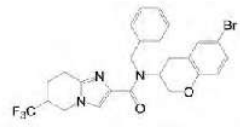
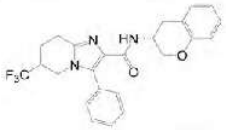
The compound of Example 683 was synthesized from the compound of Reference Example 99 and the compound of Reference Example 92 (isomer A) by methods similar to those described in Step 3 in Example 100 and Step 2 in Example 613.

[1429]

In the tables below, on the compounds synthesized in Example 291 to Example 683, chemical structures and instrumental analysis data are shown.

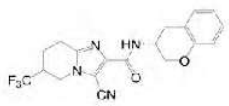
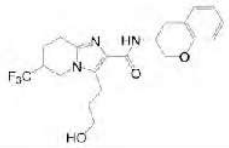
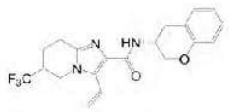
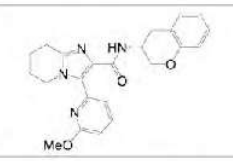
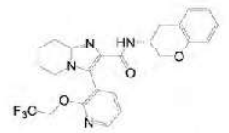
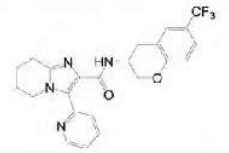
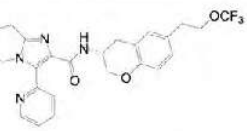
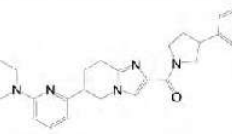
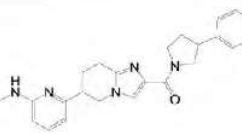
[1430]

[Table 42]

Example	Structural formula	NMR	MS
291		1H-NMR ($CDCl_3$) δ : 1.94 (1H, m), 2.33 (1H, m), 2.65-2.85 (3H, m), 2.98-3.08 (2H, m), 3.98 (1H, m), 4.07-4.30 (3H, m), 4.55 (1H, m), 6.85 (1H, dd, J=1.2, 7.4 Hz), 6.90 (1H, d, J=8.0 Hz), 7.07 (1H, d, J=8.4 Hz), 7.19 (1H, t, J=7.8 Hz), 7.27-7.42 (6H, m).	ESI-MS m/z: 442 [M+H]+
292		1H-NMR ($CDCl_3$) δ : 1.97 (1H, m), 2.34 (1H, m), 2.75-2.86 (2H, m), 2.95-3.10 (2H, m), 3.27 (1H, m), 4.00 (1H, t, J=12.4 Hz), 4.14 (1H, m), 4.24-4.31 (2H, m), 4.66 (1H, m), 6.64 (1H, t, J=55.6 Hz), 7.00 (1H, d, J=8.0 Hz), 7.10 (1H, d, J=7.4 Hz), 7.19-7.21 (2H, m), 7.47 (1H, s).	ESI-MS m/z: 416 [M+H]+
293		1H-NMR ($CDCl_3$) δ : 1.94 (1H, m), 2.34 (1H, m), 2.82 (3H, m), 3.05 (1H, m), 3.14 (1H, dd, J=5.8, 16.9 Hz), 3.99 (1H, t, J=11.6 Hz), 4.15 (2H, m), 4.28 (1H, dd, J=5.7, 12.5 Hz), 4.66 (1H, m), 5.30 (1H, dd, J=1.2, 11.0 Hz), 5.63 (1H, dd, J=1.3, 17.4 Hz), 6.79 (2H, m), 7.11 (2H, m), 7.22 (1H, d, J=7.9 Hz), 7.46 (1H, s).	ESI-MS m/z: 392 [M+H]+
294		1H-NMR ($CDCl_3$) δ : 1.96 (1H, m), 2.33 (1H, m), 2.74-3.08 (4H, m), 3.26 (1H, m), 3.96(1H, m), 4.11-4.31 (3H, m), 4.66 (1H, m), 6.86-7.27 (4H, m), 7.47 (1H, m).	ESI-MS m/z: 391 [M+H]+
295		1H-NMR ($CDCl_3$) δ : 1.20 (3H, t, J=7.6 Hz), 1.94 (1H, m), 2.33 (1H, m), 2.55 (2H, q, J=7.6 Hz), 2.74-2.86 (3H, m), 3.05 (1H, m), 3.16 (1H, m), 3.99 (1H, m), 4.12 (1H, m), 4.19 (1H, m), 4.27 (1H, m), 4.60 (1H, m), 6.79 (1H, d, J=8.3 Hz), 6.87 (1H, s), 6.95 (1H, dd, J=2.1, 8.3 Hz), 7.20 (1H, d, J=8.0 Hz), 7.45 (1H, s).	ESI-MS m/z: 394 [M+H]+
296		1H-NMR ($CDCl_3$) δ : 1.23 (3H, t, J=7.0 Hz), 1.95 (1H, m), 2.34 (1H, m), 2.79-2.87 (3H, m), 3.06 (1H, m), 3.17 (1H, dd, J=5.7, 16.9 Hz), 3.53 (2H, q, J=7.0 Hz), 3.99 (1H, t, J=11.8 Hz), 4.11 (1H, m), 4.20-4.30 (2H, m), 4.42 (2H, s), 4.65 (1H, m), 6.84 (1H, d, J=8.1 Hz), 6.95 (1H, d, J=6.5 Hz), 7.11 (1H, t, J=7.8 Hz), 7.21 (1H, m), 7.46 (1H, s).	ESI-MS m/z: 424 [M+H]+
297		1H-NMR ($CDCl_3$) δ : 1.95 (1H, m,), 2.34 (1H, m), 2.75-2.85 (3H, m), 3.03-3.11 (2H, m), 3.59 (2H, s), 4.00 (1H, t, J=10.9 Hz), 4.13-4.30 (3H, m), 4.68 (1H, m), 6.90 (1H, d, J=8.2 Hz), 7.01 (1H, d, J=7.2 Hz), 7.17 (1H, t, J=7.9 Hz), 7.23 (1H, d, J=6.4 Hz), 7.46 (1H, s).	ESI-MS m/z: 405 [M+H]+
298		1H-NMR ($CDCl_3$) δ : 1.93 (1H, m), 2.32 (1H, m), 2.75-4.71 (11H, m), 5.26 (1H, m), 6.65 (1H, d, J=8.6 Hz), 7.08 (1H, s), 7.15 (1H, dd, J=2.3, 8.7 Hz), 7.22-7.32 (5H, m), 7.48 (1H, s).	ESI-MS m/z: 534 [M+H]+
299		1H-NMR ($CDCl_3$) δ : 1.95 (1H, m), 2.34 (1H, m), 2.68 (1H, m), 2.80-2.91 (2H, m), 3.09-3.17 (2H, m), 3.70 (1H, t, J=11.8 Hz), 3.91 (1H, dd, J=4.2, 13.0 Hz), 4.08-4.20 (2H, m), 4.54 (1H, m), 6.85-6.90 (2H, m), 7.03 (1H, t, J=6.1 Hz), 7.12 (1H, t, J=7.7 Hz), 7.29 (1H, d, J=8.4 Hz), 7.39-7.50 (5H, m).	ESI-MS m/z: 442 [M+H]+

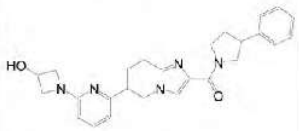
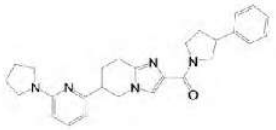
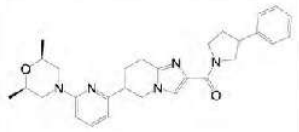
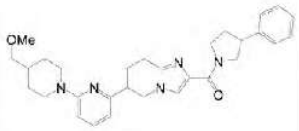
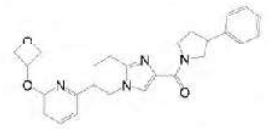
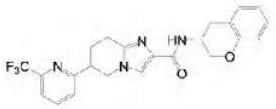
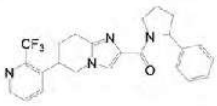
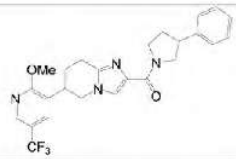
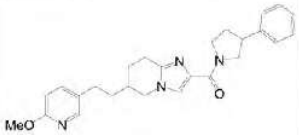
[1431]

[Table 43]

Example	Structural formula	NMR	MS
300		1H-NMR ($CDCl_3$) δ : 1.96 (1H, m), 2.34 (1H, m), 2.76-2.84 (2H, m), 2.90 (1H, dd, J = 4.9, 16.3 Hz), 3.06 (1H, m), 3.17 (1H, m), 4.00 (1H, m), 4.20-4.32 (3H, m), 4.63 (1H, m), 6.92 (1H, d, J = 8.6 Hz), 7.11 (1H, d, J = 7.7 Hz), 7.38 (1H, s), 7.42 (1H, dd, J = 2.0, 8.5 Hz), 7.47 (1H, s).	ESI-MS m/z: 391 [M+H]+
301		1H-NMR ($CDCl_3$) δ : 1.74-1.78 (2H, m), 1.90 (1H, m), 2.32 (1H, m), 2.71-2.82 (2H, m), 2.86 (1H, dd, J = 4.6, 16.5 Hz), 2.99-3.11 (2H, m), 3.16-3.22 (2H, m), 3.46-3.52 (2H, m), 3.76 (1H, m), 4.11-4.23 (3H, m), 4.59 (1H, m), 4.75 (1H, t, J = 7.0 Hz), 6.86-6.91 (2H, m), 7.06 (1H, d, J = 7.6 Hz), 7.13 (1H, m), 7.40 (1H, d, J = 7.3 Hz).	ESI-MS m/z: 424 [M+H]+
302		1H-NMR ($CDCl_3$) δ : 1.91 (1H, m), 2.32 (1H, m), 2.71-2.90 (3H, m), 3.07 (1H, m), 3.18 (1H, m), 3.91 (1H, t, J = 11.6 Hz), 4.15 (1H, m), 4.23 (1H, m), 4.33 (1H, dd, J = 5.4, 12.5 Hz), 4.59 (1H, m), 5.53 (1H, d, J = 12.3 Hz), 5.72 (1H, d, J = 18.4 Hz), 6.86-6.91 (2H, m), 7.05 (1H, d, J = 7.2 Hz), 7.13 (1H, m), 7.30-7.38 (2H, m).	ESI-MS m/z: 392 [M+H]+
303		1H-NMR ($CDCl_3$) δ : 1.93-1.94 (4H, m), 2.84-2.89 (3H, m), 3.15 (1H, dd, J = 5.5, 16.5 Hz), 3.91 (3H, s), 4.04-4.05 (2H, m), 4.11 (1H, m), 4.22 (1H, m), 4.55 (1H, m), 6.72 (1H, dd, J = 0.8, 8.2 Hz), 6.85-6.89 (2H, m), 7.04 (1H, d, J = 1.0, 7.4 Hz), 7.12 (1H, m), 7.44 (1H, d, J = 8.0 Hz), 7.55 (1H, dd, J = 0.8, 7.4 Hz), 7.66 (1H, dd, J = 7.4, 8.2 Hz).	ESI-MS m/z: 405 [M+H]+
304		1H-NMR ($CDCl_3$) δ : 1.82-1.95 (4H, m), 2.79-2.96 (3H, m), 3.13 (1H, dt, J = 5.4, 16.9 Hz), 3.51 (1H, m), 3.87 (1H, m), 4.03-4.22 (2H, m), 4.38 (1H, m), 4.51 (1H, m), 5.21 (1H, m), 6.85-6.90 (2H, m), 7.04 (1H, m), 7.09-7.14 (2H, m), 7.36 (1H, t, J = 7.8 Hz), 7.83 (1H, m), 8.22 (1H, dt, J = 1.6, 5.0 Hz).	ESI-MS m/z: 472 [M+H]+
305		1H-NMR ($CDCl_3$) δ : 1.94 (4H, m), 2.89-2.93 (3H, m), 3.16 (1H, m), 4.02 (2H, m), 4.16 (1H, m), 4.26 (1H, m), 4.56 (1H, m), 6.93 (1H, d, J=8.6 Hz), 7.26-7.38 (3H, m), 7.47 (1H, m), 7.78 (1H, t, J=7.9 Hz), 7.91 (1H, d, J=8.2 Hz), 8.63 (1H, d, J=4.1 Hz).	ESI-MS m/z: 443 [M+H]+
306		1H-NMR ($CDCl_3$) δ : 1.93 (3H, m), 2.81-2.92 (5H, m), 3.12 (1H, dd, J=5.2, 16.7 Hz), 4.01-4.21 (7H, m), 4.54 (1H, m), 6.81 (1H, d, J=8.3 Hz), 6.88 (1H, s), 6.96 (1H, d, J=7.7 Hz), 7.24-7.26 (1H, m), 7.48 (1H, d, J=7.8 Hz), 7.78 (1H, d, J=7.7 Hz), 7.92 (1H, d, J=7.8 Hz), 8.63 (1H, d, J=4.8 Hz).	ESI-MS m/z: 467 [M+H]+
307		1H-NMR ($CDCl_3$) δ : 2.01-4.64 (22H, m), 6.51-6.61 (2H, m), 7.23-7.35 (5H, m), 7.46-7.51 (2H, m).	ESI-MS m/z: 458 [M+H]+
308		1H-NMR ($CDCl_3$) δ : 1.22-1.28 (3H, m,), 2.01-4.61 (17H, m), 6.26 (1H, dd, J=3.6, 8.3 Hz), 6.48 (1H, t, J=6.7 Hz), 7.24-7.51 (7H, m).	ESI-MS m/z: 416 [M+H]+

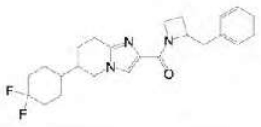
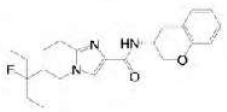
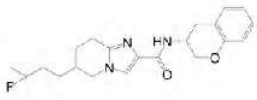
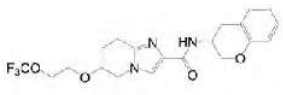
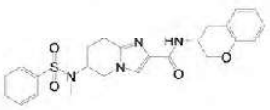
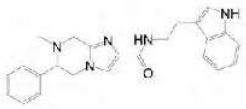
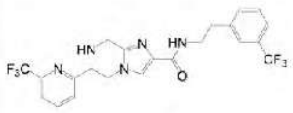
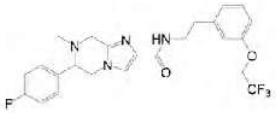
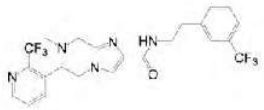
[1432]

[Table 44]

Example	Structural formula	NMR	MS
309		1H-NMR ($CDCl_3$) δ : 1.98-4.76 (20H, m), 6.20 (1H, dd, J=3.7, 8.4 Hz), 6.52 (1H, t, J=6.6 Hz), 7.26 (7H, s).	ESI-MS m/z: 444 [M+H]+
310		1H-NMR ($CDCl_3$) δ : 1.97-2.04 (6H, m), 2.16-2.39 (3H, m), 2.81-3.07 (2H, m), 3.21 (1H, m), 3.40-3.41 (4H, m), 3.69 (1H, m), 3.90 (1H, m), 3.99-4.64 (4H, m), 6.23 (1H, dd, J=3.9, 8.3 Hz), 6.43 (1H, t, J=6.7 Hz), 7.22-7.41 (6H, m), 7.49 (1H, d, J=13.2 Hz).	ESI-MS m/z: 442 [M+H]+
311		1H-NMR ($CDCl_3$) δ : 1.26 (6H, d, J=6.16 Hz), 2.01-4.64 (20H, m), 6.51 (1H, dd, J=3.5, 8.5 Hz), 6.56 (1H, t, J=6.6 Hz), 7.22-7.35 (5H, m), 7.43-7.53 (2H, m).	ESI-MS m/z: 486 [M+H]+
312		1H-NMR ($CDCl_3$) δ : 1.14-4.62 (28H, m), 6.49 (1H, t, J=6.6 Hz), 6.54 (1H, dd, J=3.6, 8.5 Hz), 7.227.35 (5H, m), 7.41 (1H, m), 7.49 (1H, d, J=13.4 Hz).	ESI-MS m/z: 486 [M+H]+
313		1H-NMR ($CDCl_3$) δ : 2.06-5.64 (19H, m), 6.79 (1H, m), 6.84 (1H, m), 7.24-7.33 (5H, m), 7.50 (1H, d, J=14.4 Hz), 7.58 (1H, m)	ESI-MS m/z: 445 [M+H]+
314		1H-NMR ($CDCl_3$) δ : 2.20-2.36 (2H, m), 2.86-2.95 (2H, m), 2.99-3.06 (1H, m), 3.19 (1H, dd, J=5.7, 16.5 Hz), 3.46 (1H, m), 4.14 (1H, dd, J=5.5, 10.8 Hz), 4.25 (1H, dd, J=1.9, 10.7 Hz), 4.34 (2H, d, J=8.0 Hz), 4.63 (1H, m), 6.86-6.90 (2H, m), 7.06 (1H, d, J=7.5 Hz), 7.12 (1H, t, J=7.7 Hz), 7.22 (1H, d, J=6.6 Hz), 7.44 (1H, d, J=7.8 Hz), 7.49 (1H, s), 7.61 (1H, d, J=7.8 Hz), 7.66 (1H, t, J=7.8 Hz).	ESI-MS m/z: 443 [M+H]+
315		1H-NMR ($CDCl_3$) δ : 1.85-2.34 (6H, m), 2.74-3.14 (2H, m), 3.43 (1H, m), 3.89 (1H, m), 4.13-4.35 (4H, m), 5.37 (0.6H, m), 6.15 (0.4H, m), 7.05-7.22 (2H, m), 7.28-7.62 (5H, m), 7.86 (1H, m).	ESI-MS m/z: 441 [M+H]+
316		1H-NMR ($CDCl_3$) δ : 2.17-2.42 (3H, m), 2.94 (1H, m), 3.07-3.18 (1H, m), 3.42 (1H, m), 3.54 (1H, m), 3.63-3.75 (1H, m), 3.82-3.97 (2H, m), 4.05 (3H, d, J=4.4 Hz), 4.16 (1H, m), 4.35 (2H, m), 4.59 (1H, m), 7.23-7.35 (5H, m), 7.50 (1H, dd, J=2.0, 12.3 Hz), 7.64 (1H, d, J=6.2 Hz), 8.40 (1H, s).	ESI-MS m/z: 471 [M+H]+
317		1H-NMR ($CDCl_3$) δ : 1.55-1.74 (3H, m), 1.97-2.12 (3H, m), 2.33 (1H, m), 2.62-2.79 (3H, m), 2.98 (1H, m), 3.41 (1H, m), 3.56-3.73 (2H, m), 3.83-4.18 (6H, m), 4.45 (1H, m), 6.70 (1H, dd, J=3.1, 8.4 Hz), 7.22-7.34 (5H, m), 7.39-7.46 (2H, m), 7.98 (1H, m).	ESI-MS m/z: 431 [M+H]+

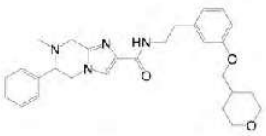
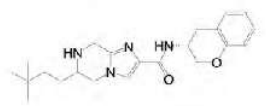
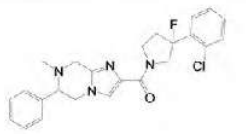
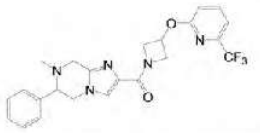
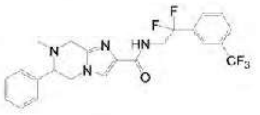
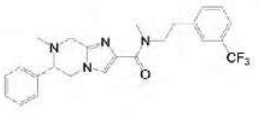
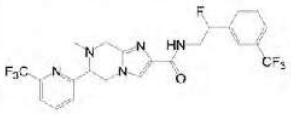
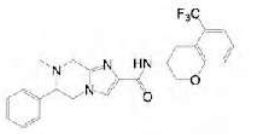
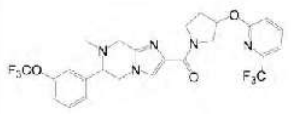
[1433]

[Table 45]

Example	Structural formula	NMR	MS
318		1H-NMR ($CDCl_3$) δ : 1.39-2.36 (14H, m), 2.76 (1H, m), 3.03-3.06 (2H, m), 3.49 (1H, m), 3.70 (1H, m), 3.94-4.11 (2H, m), 4.37 (1H, m), 4.77 (0.6H, m), 5.21 (0.4H, m), 7.20-7.31 (5H, m), 7.43 (1H, m).	ESI-MS m/z: 414 [M+H]+
319		1H-NMR ($CDCl_3$) δ : 0.94-1.06 (6H, m), 1.63-2.18 (6H, m), 2.54-3.20 (5H, m), 3.80 (1H, m), 4.08 (1H, m), 4.24 (1H, m), 4.58-5.42 (2H, m), 6.85-6.90 (2H, m), 7.05 (1H, d, J=7.4 Hz), 7.12 (1H, t, J=7.7 Hz), 7.18 (1H, d, J=7.6 Hz), 7.43 (1H, m).	ESI-MS m/z: 386 [M+H]+
320		1H-NMR ($CDCl_3$) δ : 1.33 (3H, s), 1.39 (3H, s), 1.49-1.76 (5H, m), 1.96 (1H, m), 2.07 (1H, m), 2.73 (1H, m), 2.84-2.96 (2H, m), 3.18 (1H, dd, J=5.5, 16.5 Hz), 3.56 (1H, t, J=11.1 Hz), 4.06-4.15 (2H, m), 4.24 (1H, d, J=10.6 Hz), 4.62 (1H, m), 6.85-6.90 (2H, m), 7.05 (1H, d, J=7.4 Hz), 7.12 (1H, t, J=7.7 Hz), 7.18 (1H, d, J=8.0 Hz), 7.40 (1H, s).	ESI-MS m/z: 386 [M+H]+
321		1H-NMR ($CDCl_3$) δ : 1.98 (1H, m), 2.20 (1H, m), 2.76-2.99 (3H, m), 3.18 (1H, dd, J = 5.6, 16.6 Hz), 3.71-3.82 (2H, m), 3.96-4.15 (6H, m), 4.24 (1H, dd, J= 2.3, 10.7 Hz), 4.62 (1H, m), 6.85-6.90 (2H, m), 7.05 (1H, d, J = 7.4 Hz), 7.12 (1H, t, J = 7.7 Hz), 7.18 (1H, d, J = 7.9 Hz), 7.41 (1H, s) .	ESI-MS m/z: 426 [M+H]+
322		1H-NMR ($CDCl_3$) δ : 1.74 (1H, m), 1.87 (1H, m), 2.73 (1H, m), 2.84 (3H, d, J=1.7 Hz), 2.88 (1H, m), 2.96 (1H, m), 3.18 (1H, td, J=5.4, 16.5 Hz), 3.83 (1H, m), 4.01 (1H, dd, J=5.5, 12.3 Hz), 4.13 (1H, m), 4.22 (1H, m), 4.39 (1H, m), 4.61 (1H, m), 6.84-6.91 (2H, m), 7.04 (1H, t, J=6.9 Hz), 7.10-7.17 (2H, m), 7.35 (1H, s), 7.55-7.59 (2H, m), 7.65 (1H, m), 7.82-7.85 (2H, m).	ESI-MS m/z: 467 [M+H]+
323		1H-NMR ($CDCl_3$) δ : 2.16 (3H, s), 3.07 (2H, t, J=7.1 Hz), 3.49 (1H, d, J=15.8 Hz), 3.57 (1H, t, J=7.2 Hz), 3.76 (2H, q, J=6.8 Hz), 4.05-4.10 (3H, m), 7.05 (1H, m), 7.12 (1H, m), 7.7-7.21 (2H, m), 7.32-7.39 (6H, m), 7.43 (1H, s), 7.64 (1H, d, J=7.8 Hz), 8.25 (1H, s).	
324		1H-NMR ($CDCl_3$) δ : 2.97 (2H, t, J=7.2 Hz), 3.65-3.70 (2H, m), 4.18-4.31 (3H, m), 4.42-4.47 (2H, m,), 7.11 (1H, m), 7.40-7.53 (5H, m), 7.68 (1H, d, J=7.8 Hz), 7.71 (1H, d, J=7.9 Hz), 7.95 (1H, t, J=7.7 Hz).	ESI-MS m/z: 484 [M+H]+
325		1H-NMR ($CDCl_3$) δ : 2.16 (3H, s), 2.90 (2H, t, J=7.3 Hz), 3.51 (1H, m), 3.57-3.68 (4H, m), 4.04-4.13 (4H, m), 6.83 (1H, m), 6.95 (1H, m), 7.07-7.11 (4H, m), 7.26 (1H, m), 7.31-7.35 (2H, m), 7.43 (1H, s).	
326		1H-NMR ($CDCl_3$) δ : 2.27 (3H, s), 2.97 (2H, t, J=7.3 Hz), 3.67 (2H, q, J=7.0 Hz), 3.83 (1H, d, J=16.1 Hz), 4.03 (1H, d, J=16.1 Hz), 4.18 (1H, m), 4.31-4.44 (2H, m), 7.11 (1H, m), 7.42-7.51 (5H, m), 7.67-7.71 (2H, m), 7.95 (1H, t, J=7.7 Hz).	ESI-MS m/z: 496 [M+H]+

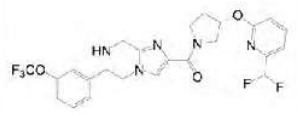
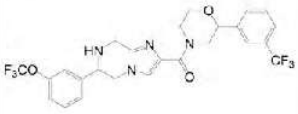
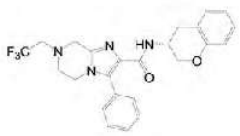
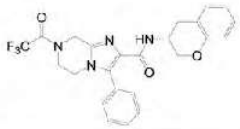
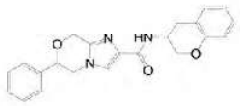
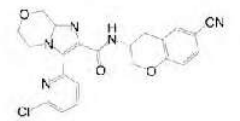
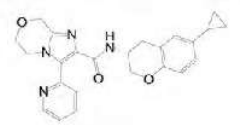
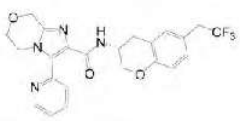
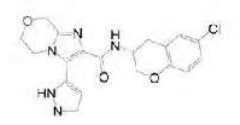
[1434]

[Table 46]

Example	Structural formula	NMR	MS
327		1H-NMR ($CDCl_3$) δ : 1.40-1.50 (2H, m), 1.77 (2H, m), 2.06 (1H, m), 2.18 (3H, s), 2.68 (2H, t, J=7.3 Hz), 3.42-3.68 (6H, m), 3.79 (2H, d, J=6.5 Hz), 4.08-4.13 (5H, m), 6.74-6.79 (2H, m), 6.83 (1H, d, J=7.7 Hz), 7.12 (1H, t, J=6.2 Hz), 7.21 (1H, t, J=7.8 Hz), 7.33-7.40 (5H, m), 7.44 (1H, s).	
328		1H-NMR ($CDCl_3$) δ : 0.91 (9H, s), 1.23-1.26 (2H, m), 1.39 (1H, m), 1.48-1.54 (2H, m), 2.87 (1H, dd, J=5.0, 16.4 Hz), 2.99 (1H, m), 3.18 (1H, m), 3.61 (1H, m), 3.95-4.04 (2H, m), 4.11-4.16 (2H, m), 4.24 (1H, d, J=10.8 Hz), 4.62 (1H, m), 6.85-6.90 (2H, m), 7.05 (1H, d, J=7.8 Hz), 7.12 (1H, m), 7.17 (1H, m), 7.43 (1H, s).	
329		1H-NMR ($CDCl_3$) δ : 1.26 (2H, m), 2.16 (1H, m), 2.20 (1H, s), 2.38 (1H, m), 2.85-3.10 (1H, m), 3.48-3.63 (2H, m), 4.07-4.28 (4H, m), 4.394.53 (1H, m), 4.64-4.77 (1H, m), 7.23-7.43 (8H, m), 7.52 (1H, m), 7.70 (1H, dd, J=2.0, 7.4 Hz).	ESI-MS m/z: 439 [M+H]+
330		1H-NMR ($CDCl_3$) δ : 2.18 (3H, s), 3.51-3.61 (2H, m), 4.08-4.23 (4H, m), 4.58-4.60 (2H, m), 5.03 (1H, m), 5.50 (1H, m), 6.98 (1H, d, J=8.4 Hz), 7.30 (1H, d, J=7.3 Hz), 7.34-7.41 (5H, m), 7.46 (1H, s), 7.75 (1H, t, J=7.6 Hz).	ESI-MS m/z: 458 [M+H]+
331		1H-NMR ($CDCl_3$) δ : 2.19 (3H, s), 3.52-3.62 (2H, m), 4.04-4.16 (5H, m), 7.33-7.42 (7H, m), 7.57 (1H, t, J=7.8 Hz), 7.71 (1H, d, J=7.9 Hz), 7.76 (1H, d, J=7.8 Hz), 7.82 (1H, s).	ESI-MS m/z: 465 [M+H]+
332		1H-NMR ($CDCl_3$) δ : 2.20 (3H, s), 3.06-3.11 (4H, m), 3.44-3.70 (4H, m), 4.07-4.25 (4H, m), 7.32-7.61 (10H, m).	ESI-MS m/z: 443 [M+H]+
333		1H-NMR ($CDCl_3$) δ : 2.29 (3H, s), 3.58 (1H, m), 3.87 (1H, d, J=16.1 Hz), 3.99-4.14 (2H, m), 4.20 (1H, m), 4.40 (1H, m), 5.70 (1H, dd, J=6.6, 47.8 Hz), 7.45 (1H, m), 7.53 (1H, s), 7.51-7.55 (2H, m), 7.59-7.63 (2H, m), 7.67-7.73 (3H, m), 7.96 (1H, t, J=7.8 Hz).	ESI-MS m/z: 516 [M+H]+
334		1H-NMR ($CDCl_3$) δ : 2.17-2.19 (3H, m), 3.01-3.95 (5H, m), 4.08-4.31 (4H, m), 4.67-5.05 (1H, m), 6.95-7.25 (4H, m), 7.35-7.40 (5H, m), 7.46 (1H, s).	
335		1H-NMR ($CDCl_3$) δ : 2.19-2.31 (5H, m), 3.53-3.68 (2H, m), 3.77-3.95 (2H, m), 4.02-4.20 (4H, m), 4.30-4.40 (2H, m), 5.71 (1H, m), 6.88 (1H, d, J=8.3 Hz), 7.22-7.25 (2H, m), 7.30 (1H, m), 7.43 (1H, m), 7.48 (1H, d, J=8.3 Hz), 7.70 (1H, t, J=7.8 Hz).	ESI-MS m/z: 556 [M+H]+

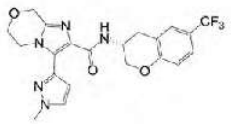
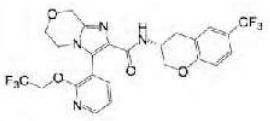
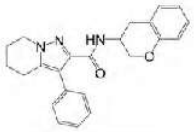
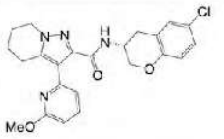
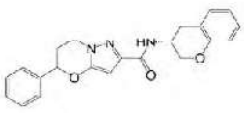
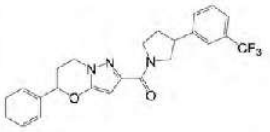
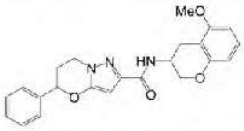
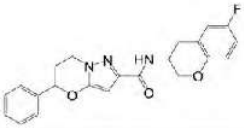
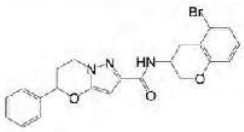
[1435]

[Table 47]

Example	Structural formula	NMR	MS
336		1H-NMR ($CDCl_3$) δ : 2.17-2.28 (3H, m), 3.81-3.99 (3H, m), 4.11-4.37 (6H, m), 5.68 (1H, d, J=19.5 Hz), 6.50 (1H, t, J=55.6 Hz), 6.80 (1H, d, J=7.4 Hz), 7.21 (1H, t, J=7.4 Hz), 7.33-7.46 (3H, m), 7.50 (1H, d, J=7.2 Hz), 7.68 (1H, t, J=7.8 Hz).	ESI-MS m/z: 524 [M+H]+
337		1H-NMR ($CDCl_3$) δ : 2.09 (1H, m), 3.82 (1H, td, J=2.7, 11.7 Hz), 3.96 (1H, t, J=11.0 Hz), 4.09-4.35 (6H, m), 4.62 (1H, d, J=10.5 Hz), 4.77 (1H, m), 5.39-5.51 (1H, m), 7.23 (1H, dd, J=1.0, 8.0 Hz), 7.35-7.51 (5H, m), 7.56 (1H, s), 7.60 (1H, t, J=7.6 Hz), 7.73 (1H, s).	ESI-MS m/z: 541 [M+H]+
338		1H-NMR ($CDCl_3$) δ : 2.83 (1H, dd, J=4.9, 16.2 Hz), 3.07 (2H, t, J=5.3 Hz), 3.13 (1H, dd, J=5.6, 16.7 Hz), 3.18-3.25 (2H, m), 3.80 (2H, t, J=5.3 Hz), 3.99 (2H, s), 4.09-4.20 (2H, m), 4.54 (1H, m), 6.85-6.90 (2H, m), 7.04 (1H, d, J=7.3 Hz), 7.12 (1H, t, J=7.5 Hz), 7.29 (1H, d, J=8.2 Hz), 7.41-7.44 (5H, m).	ESI-MS m/z: 457 [M+H]+
339		1H-NMR ($CDCl_3$) δ : 2.84 (1H, m), 3.15 (1H, dd, J=5.7, 17.0 Hz), 3.85-3.95 (2H, m), 3.94 (1H, m), 4.04 (1H, m), 4.15-4.17 (2H, m), 4.55 (1H, m), 4.91 (2H, s), 6.87-6.91 (2H, m), 7.05 (1H, d, J=7.4 Hz), 7.14 (1H, t, J=7.6 Hz), 7.33 (1H, m), 7.42-7.49 (5H, m).	ESI-MS m/z: 471 [M+H]+
340		1H-NMR ($CDCl_3$) δ : 1.24-1.48 (2H, m), 2.81 (1H, m), 3.16 (1H, m), 4.03-4.65 (4H, m), 4.85-5.08 (2H, m), 6.85-6.93 (2H, m), 7.02-7.23 (3H, m), 7.36-7.51 (5H, m), 7.68 (1H, m).	
341		1H-NMR ($CDCl_3$) δ : 2.91 (1H, dd, J = 5.1, 16.6 Hz), 3.16 (1H, dd, J = 5.1, 16.6 Hz), 4.05 (2H, t, J = 5.0 Hz), 4.20-4.31 (4H, m), 4.55 (1H, m), 4.82 (2H, s), 6.93 (1H, d, J = 8.5 Hz), 7.31 (1H, d, J = 8.0 Hz), 7.38 (1H, s), 7.41-7.43 (2H, m), 7.77 (1H, t, J = 7.8 Hz), 8.12 (1H, d, J = 7.7 Hz).	ESI-MS m/z: 436 [M+H]+
342		1H-NMR ($CDCl_3$) δ : 0.60 (2H, d, J = 4.9 Hz), 0.88 (2H, d, J = 8.4 Hz), 1.81 (1H, m), 2.82 (1H, m), 3.12 (1H, dd, J = 5.5, 16.6 Hz), 4.02 (2H, t, J = 4.9 Hz), 4.10-4.20 (4H, m), 4.54 (1H, m), 4.84 (2H, s), 6.77-6.78 (2H, m), 6.84 (1H, d, J = 8.5 Hz), 7.28 (1H, m), 7.54 (1H, d, J = 8.0 Hz), 7.79 (1H, t, J = 7.8 Hz), 8.08 (1H, d, J = 7.7 Hz), 8.62 (1H, d, J = 4.8 Hz).	ESI-MS m/z: 417 [M+H]+
343		1H-NMR ($CDCl_3$) δ : 2.86 (1H, dd, J = 4.8, 16.7 Hz), 3.15 (1H, dd, J = 5.5, 16.5 Hz), 3.26 (2H, q, J = 10.8 Hz), 4.02 (2H, t, J = 5.2 Hz), 4.13-4.23 (4H, m), 4.56 (1H, m), 4.84 (2H, s), 6.85 (1H, d, J = 8.4 Hz), 6.97 (1H, s), 7.05 (1H, d, J = 7.9 Hz), 7.26 (1H, m), 7.55 (1H, d, J = 8.2 Hz), 7.80 (1H, dt, J = 1.8, 7.8 Hz), 8.07 (1H, d, J = 7.9 Hz), 8.61 (1H, m).	ESI-MS m/z: 459 [M+H]+
344		1H-NMR ($CDCl_3$) δ : 2.90 (1H, dd, J = 3.9, 16.9 Hz), 3.19 (1H, dd, J = 5.3, 16.9 Hz), 4.11 (2H, t, J = 5.2 Hz), 4.23-4.25 (4H, m), 4.63 (1H, m), 4.83 (2H, s), 6.54 (1H, s,), 6.83 (1H, d, J = 8.6 Hz), 7.05-7.11 (2H, m), 7.68-7.69 (2H, m), 14.4 (1H, s).	ESI-MS m/z: 400 [M+H]+

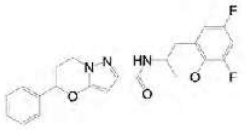
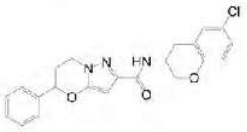
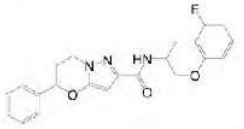
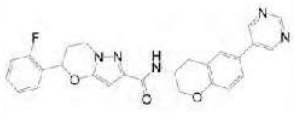
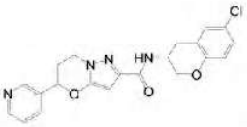
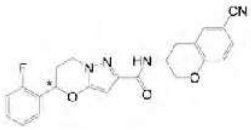
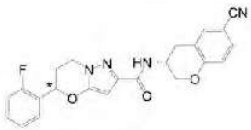
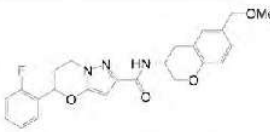
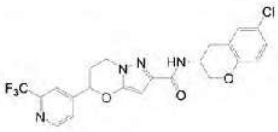
[1436]

[Table 48]

Example	Structural formula	NMR	MS
345		1H-NMR ($CDCl_3$) δ : 2.92 (1H, d, J = 5.2, 16.6 Hz), 3.18 (1H, dd, J = 5.3, 16.5 Hz), 3.92 (3H, s), 4.02 (2H, t, J = 5.0 Hz), 4.18-4.29 (4H, m), 4.61 (1H, m), 4.82 (2H, s), 6.93 (1H, d, J = 8.6 Hz), 7.08 (1H, s), 7.31 (1H, s), 7.37 (1H, d, J = 8.8 Hz), 7.41 (1H, s), 7.48 (1H, d, J = 8.0 Hz).	ESI-MS m/z: 448 [M+H]+
346		1H-NMR ($CDCl_3$) δ : 2.89 (1H, m), 3.15 (1H, dt, J = 5.3, 17.4 Hz), 3.62 (1H, m), 3.97-4.05 (3H, m), 4.11-4.23 (2H, m), 4.40 (1H, m), 4.53 (1H, m), 4.79-4.89 (2H, m), 5.22 (1H, m), 6.94 (1H, d, J = 8.6 Hz), 7.14 (1H, dd, J = 5.0, 7.4 Hz), 7.29-7.39 (3H, m), 7.87 (1H, m), 8.25 (1H, dd, J = 1.7, 4.9 Hz).	ESI-MS m/z: 543 [M+H]+
347		1H-NMR ($CDCl_3$) δ : 1.79-1.85 (2H, m), 2.03-2.08 (2H, m), 2.70 (2H, t, J=6.3 Hz), 2.81 (1H, m), 3.12 (1H, dd, J=5.3, 16.8 Hz), 4.11-4.21 (4H, m), 4.56 (1H, m), 6.82-6.92 (2H, m), 6.95 (1H, d, J=7.5 Hz), 7.02 (1H, d, J=7.6 Hz), 7.12 (1H, t, J=7.4 Hz), 7.34 (4H, d, J=3.9 Hz), 7.46 (1H, m).	ESI-MS m/z: 374 [M+H]+
348		1H-NMR ($CDCl_3$) δ : 1.84-1.87 (2H, m), 1.99-2.09 (2H, m), 2.83 (1H, m), 2.99 (2H, t, J = 6.4 Hz), 3.13 (1H, m), 3.90 (3H, s), 4.06-4.19 (4H, m), 4.58 (1H, m), 6.60 (1H, d, J = 8.4 Hz), 6.79 (1H, m), 7.01-7.07 (2H, m), 7.30 (1H, d, J = 7.8 Hz), 7.38 (1H, d, J = 7.4 Hz), 7.57 (1H, t, J = 7.8 Hz).	ESI-MS m/z: 439 [M+H]+
349		1H-NMR ($CDCl_3$) δ : 2.40-2.44 (2H, m), 2.88 (1H, dd, J=3.7, 16.7 Hz), 3.20 (1H, dd, J=5.3, 16.9 Hz), 4.17-4.24 (4H, m), 4.64 (1H, m), 5.26 (1H, m), 6.09 (1H, s), 6.87-6.92 (2H, m), 7.06 (2H, t, J=6.7 Hz), 7.14 (1H, t, J=7.7 Hz), 7.37-7.43 (5H, m).	ESI-MS m/z: 376 [M+H]+
350		1H-NMR ($CDCl_3$) δ : 2.05-2.46 (4H, m), 3.44-4.29 (7H, m), 5.28 (1H, m), 6.09 (1H, m), 7.31-7.53 (9H, m).	ESI-MS m/z: 442 [M+H]+
351		1H-NMR ($CDCl_3$) δ : 2.39-2.46 (2H, m), 2.79 (1H, dd, J=3.9, 17.3 Hz), 3.00 (1H, dd, J=5.9, 17.7 Hz), 3.80-3.82 (3H, m), 4.10-4.22 (4H, m), 4.62 (1H, m), 5.26 (1H, m), 6.09 (1H, s), 6.45-6.55 (2H, m), 7.00-7.12 (2H, m), 7.36-7.44 (5H, m).	ESI-MS m/z: 406 [M+H]+
352		1H-NMR ($CDCl_3$) δ : 2.40-2.46 (2H, m), 2.87 (1H, dd, J=3.7, 16.8 Hz), 3.17 (1H, dd, J=5.7, 17.1 Hz), 4.15-4.26 (4H, m), 4.61 (1H, m), 5.27 (1H, m), 6.09 (1H, s), 6.77 (1H, m), 6.82-6.84 (2H, m), 7.04 (1H, d, J=8.1 Hz), 7.35-7.44 (5H, m)	ESI-MS m/z: 394 [M+H]+
353		1H-NMR ($CDCl_3$) δ : 2.41-2.46 (2H, m), 2.87 (1H, m), 3.11 (1H, dd, J=6.3, 17.8 Hz), 4.10-4.27 (4H, m), 4.68 (1H, m), 5.27 (1H, m), 6.11 (1H, s), 6.86 (1H, d, J=8.2 Hz), 7.02 (2H, t, J=8.0 Hz), 7.19 (1H, d, J=7.8 Hz), 7.36-7.44 (5H, m).	ESI-MS m/z: 454, 456 [M+H]+

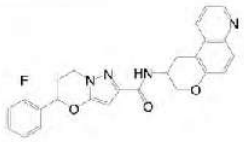
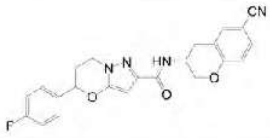
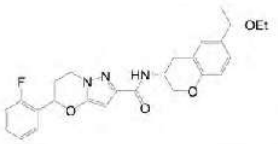
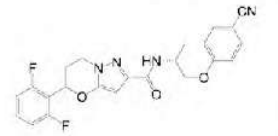
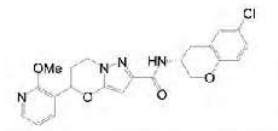
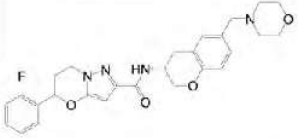
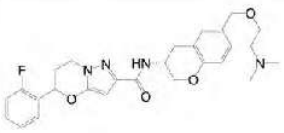
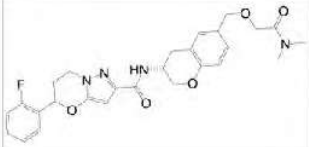
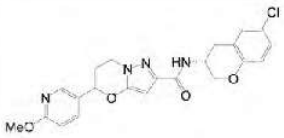
[1437]

[Table 49]

Example	Structural formula	NMR	MS
354		1H-NMR ($CDCl_3$) δ : 2.41-2.45 (2H, m), 2.92 (1H, dd, J=3.8, 17.0 Hz), 3.17 (1H, dd, J=5.4, 17.1 Hz), 4.11-4.31 (4H, m), 4.65 (1H, m), 5.27 (1H, m), 6.09 (1H, s), 6.59 (1H, m), 6.73 (1H, m), 7.07 (1H, d, J=7.9 Hz), 7.36-7.52 (5H, m).	ESI-MS m/z: 412 [M+H]+
355		1H-NMR ($CDCl_3$) δ : 2.40-2.45 (2H, m), 2.86 (1H, dd, J=4.1, 16.8 Hz), 3.16 (1H, dd, J=4.9, 16.5 Hz), 4.18-4.23 (4H, m), 4.62 (1H, m), 5.27 (1H, m), 6.09 (1H, s), 6.81 (1H, d, J=8.6 Hz), 7.00-7.10 (3H, m), 7.36-7.44 (5H, m).	ESI-MS m/z: 410 [M+H]+
356		1H-NMR ($CDCl_3$) δ : 2.41-2.48 (2H, m), 2.88 (1H, dd, J=4.7, 17.1 Hz), 3.10 (1H, dd, J=5.8, 17.2 Hz), 4.18-4.23 (4H, m), 4.65 (1H, m), 5.27 (1H, m), 6.10 (1H, s), 6.63-6.70 (2H, m), 7.01 (1H, m), 7.09 (1H, m), 7.36-7.44 (5H, m).	ESI-MS m/z: 394 [M+H]+
357		1H-NMR ($CDCl_3$) δ : 2.34-2.50 (2H, m), 5.99 (1H, dd, J=4.2, 16.7 Hz), 3.27 (1H, dd, J=5.1, 16.4 Hz), 4.11-4.31 (4H, m), 4.69 (1H, m), 5.56 (1H, m), 6.13 (1H, s), 7.02-7.13 (3H, m), 7.18-7.23 (1H, m), 7.29 (1H, s), 7.36 (1H, m), 7.47 (1H, qd, J=1.6, 6.0 Hz), 8.90 (1H, s), 9.16 (1H, s).	ESI-MS m/z: 472 [M+H]+
358		1H-NMR ($CDCl_3$) δ : 2.40-2.47 (2H, m), 2.86 (1H, dd, J=3.7, 16.8 Hz), 3.16 (1H, dd, J=5.2, 16.5 Hz), 4.20-4.30 (4H, m), 4.59-4.64 (1H, m), 5.29-5.33 (1H, m), 6.11 (1H, s), 6.82 (1H, d, J=8.7 Hz), 7.01-7.10 (3H, m), 7.37 (1H, dd, J=4.8, 7.9 Hz), 7.76 (1H, d, J=8.7 Hz), 8.64-8.66 (2H, m).	ESI-MS m/z: 411 [M+H]+
359		1H-NMR ($CDCl_3$) δ : 2.34-2.48 (2H, m), 2.92 (1H, m), 3.18 (1H, m), 4.14-4.33 (4H, m), 4.65 (1H, m), 5.56 (1H, m), 6.12 (1H, s), 6.93-6.96 (2H, m), 7.10 (1H, t, J=9.4 Hz), 7.21 (1H, t, J=7.4 Hz), 7.34-7.48 (4H, m).	ESI-MS m/z: 419 [M+H]+
360		1H-NMR ($CDCl_3$) δ : 2.29-2.50 (2H, m), 2.86 (1H, m), 3.18 (1H, m), 4..14-4.32 (4H, m), 4.65 (1H, m), 5.56 (1H, m), 6.12 (1H, s), 6.93-6.96 (2H, m), 7.11 (1H, m), 7.21 (1H, m), 7.33-7.49 (4H, m).	ESI-MS m/z: 419 [M+H]+
361		1H-NMR ($CDCl_3$) δ : 2.34-2.48 (2H, m), 2.88 (1H, dd, J=4.2, 16.7 Hz), 3.19 (1H, dd, J=5.4, 16.9 Hz), 3.38 (3H, s), 4.12-4.27 (4H, m), 4.35 (2H, s), 4.64 (1H, m), 5.55 (1H, d, J=9.5 Hz), 6.10 (1H, s), 6.86 (1H, d, J=8.3 Hz), 7.03-7.12 (4H, m), 7.20 (1H, t, J=7.7 Hz), 7.35 (1H, q, J=7.0 Hz), 7.47 (1H, t, J=7.6 Hz).	ESI-MS m/z: 438 [M+H]+
362		1H-NMR ($CDCl_3$) δ : 2.38 (1H, m), 2.52 (1H, m), 2.86 (1H, m), 3.16 (1H, dd, J = 5.3, 16.9 Hz), 4.17-4.31 (4H, m), 4.62 (1H, m), 5.34 (1H, dt, J = 2.8, 10.1 Hz), 6.16 (1H, s), 6.81 (1H, d, J = 8.7 Hz), 6.97-7.10 (3H, m), 7.55 (1H, d, J = 5.0 Hz), 7.73 (1H, s), 8.80 (1H, d, J = 5.0 Hz).	ESI-MS m/z: 479 [M+H]+

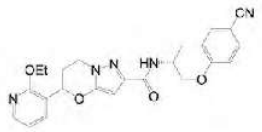
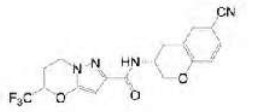
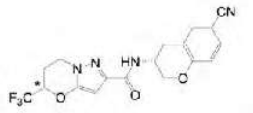
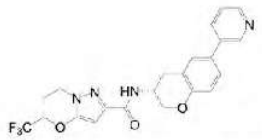
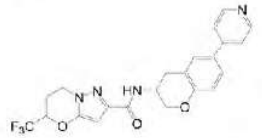
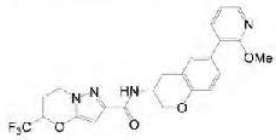
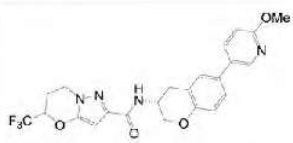
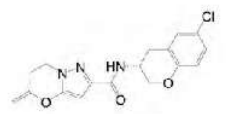
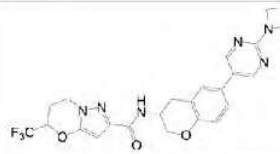
[1438]

[Table 50]

Example	Structural formula	NMR	MS
363		1H-NMR ($CDCl_3$) δ : 2.31-2.48 (2H, m), 3.21 (1H, m), 3.41 (1H, m), 4.10-4.37 (4H, m), 4.84 (1H, m), 5.54 (1H, m), 6.12 (1H, s), 7.09 (1H, m), 7.17-7.22 (2H, m), 7.31-7.48 (4H, m), 7.92 (1H, d, J=9.2 Hz), 8.12 (1H, d, J=8.5 Hz), 8.60 (1H, d, J=4.2 Hz).	ESI-MS m/z: 445 [M+H]+
364		1H-NMR ($CDCl_3$) δ : 2.38-2.44 (2H, m), 2.92 (1H, dd, J = 4.8, 16.8 Hz), 3.18 (1H, dd, J = 5.1, 16.7 Hz), 4.17-4.32 (4H, m), 4.65 (1H, m), 5.25 (1H, m), 6.09 (1H, s), 6.93-6.95 (2H, m), 7.11 (2H, t, J = 8.6 Hz), 7.36-7.44 (4H, m).	ESI-MS m/z: 419 [M+H]+
365		1H-NMR ($CDCl_3$) δ : 1.18 (3H, t, J=7.0 Hz), 1.41 (3H, d, J=6.4 Hz), 2.35-2.49 (2H, m), 2.88 (1H, dd, J=4.3, 16.9 Hz), 3.19 (1H, dd, J=5.5, 16.9 Hz), 3.36 (2H, q, J=7.0 Hz), 4.15-4.27 (4H, m, J=4.93 Hz), 4.32 (1H, q, J=6.5 Hz), 4.64 (1H, m), 5.56 (1H, m), 6.12 (1H, s), 6.85 (1H, d, J=8.4 Hz), 7.00 (1H, s), 7.00-7.13 (3H, m), 7.21 (1H, m), 7.36 (1H, q, J=7.1 Hz), 7.47 (1H, t, J=7.0 Hz).	ESI-MS m/z: 466 [M+H]+
366		1H-NMR ($CDCl_3$) δ : 2.29 (1H, dt, J = 2.2, 14.5 Hz), 2.86-2.98 (2H, m), 3.18 (1H, dd, J = 4.9, 16.8 Hz), 4.19-4.32 (4H, m), 4.65 (1H, m), 5.60 (1H, d, J = 11.9 Hz), 6.05 (1H, s), 6.93-6.98 (4H, m), 7.33-7.44 (3H, m).	ESI-MS m/z: 437 [M+H]+
367		1H-NMR ($CDCl_3$) δ : 2.24 (1H, m), 2.54 (1H, m), 2.86 (1H, dd, J=4.2, 16.8 Hz), 3.16 (1H, dd, J=5.2, 16.8 Hz), 3.99 (3H, s), 4.08-4.15 (2H, m), 4.16-4.26 (2H, m), 4.62 (1H, m), 5.47 (1H, d, J=9.5 Hz), 6.11 (1H, s), 6.81 (1H, d, J=8.6 Hz), 6.95 (1H, m), 7.01-7.10 (3H, m), 7.70 (1H, d, J=7.4 Hz), 8.16 (1H, d, J=5.0 Hz).	ESI-MS m/z: 441 [M+H]+
368		1H-NMR ($CDCl_3$) δ : 2.39-2.49 (6H, m), 2.87 (1H, m), 3.18 (1H, m), 3.40 (2H, s), 3.70-3.72 (4H, m), 4.10-4.28 (4H, m), 4.63 (1H, m), 5.56 (1H, m), 6.12 (1H, s), 6.83 (1H, d, J=8.3 Hz), 7.01-7.13 (4H, m), 7.21 (1H, m), 7.36 (1H, m), 7.47 (1H, m).	ESI-MS m/z: 493 [M+H]+
369		1H-NMR ($CDCl_3$) δ : 2.35-2.51 (9H, m), 2.86-2.92 (2H, m), 3.19 (1H, m), 3.49-3.64 (3H, m), 4.11-4.28 (5H, m), 4.63 (1H, m), 5.56 (1H, m), 6.11 (1H, s), 6.87 (1H, d, J=8.3 Hz), 7.03 (1H, d, J=7.9 Hz), 7.08-7.23 (4H, m), 7.36 (1H, m), 7.47 (1H, t, J=7.4 Hz).	ESI-MS m/z: 495 [M+H]+
370		1H-NMR ($CDCl_3$) δ : 2.34-2.47 (2H, m), 2.88 (1H, m), 2.96 (3H, s), 3.00 (3H, s), 3.19 (1H, m), 4.10-4.26 (6H, m), 4.50 (2H, s), 4.62 (1H, m), 5.56 (1H, m), 6.11 (1H, s), 6.86 (1H, d, J=8.2 Hz), 7.03-7.15 (4H, m), 7.21 (1H, t, J=7.8 Hz), 7.36 (1H, m), 7.47 (1H, t, J=7.6 Hz).	ESI-MS m/z: 509 [M+H]+
371		1H-NMR ($CDCl_3$) δ : 2.35-2.45 (2H, m), 2.86 (1H, m), 3.16 (1H, dd, J=4.8, 17.1 Hz), 3.95 (3H, s), 4.20-4.24 (4H, m), 4.62 (1H, m), 5.22 (1H, d, J=9.8 Hz), 6.07 (1H, s), 6.81 (2H, m), 7.00-7.13 (3H, m), 7.63 (1H, d, J=8.2 Hz), 8.19 (1H, s).	ESI-MS m/z: 441 [M+H]+

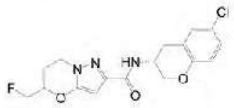
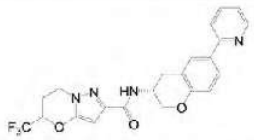
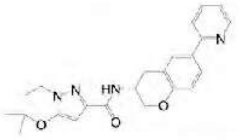
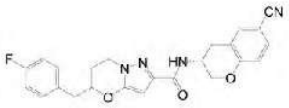
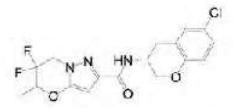
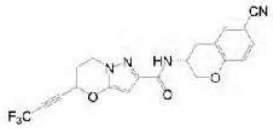
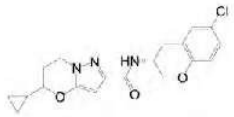
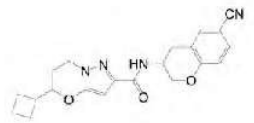
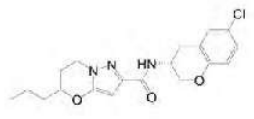
[1439]

[Table 51]

Example	Structural formula	NMR	MS
372		1H-NMR ($CDCl_3$) δ : 1.39 (1H, t, J=6.5 Hz), 2.26 (1H, m), 2.55 (1H, m), 2.92 (1H, dd, J=4.3, 16.2 Hz), 3.18 (1H, dd, J=4.7, 16.1 Hz), 4.12 (1H, m), 4.19-4.33 (3H, m), 4.44 (2H, m), 4.65 (1H, m), 5.49 (1H, d, J=9.2 Hz), 6.12 (1H, s), 6.91-6.95 (3H, m), 7.39 (1H, s), 7.43 (1H, d, J=8.6 Hz), 7.68 (1H, d, J=6.8 Hz), 8.14 (1H, d, J=4.6 Hz).	ESI-MS m/z: 446 [M+H]+
373		1H-NMR ($CDCl_3$) δ : 2.41-2.46 (2H, m), 2.91 (1H, dd, J=4.5, 16.6 Hz), 3.18 (1H, dd, J=5.3, 16.5 Hz), 4.15 (1H, m), 4.25-4.31 (3H, m), 4.57-4.66 (2H, m), 6.14 (1H, s), 6.90-6.95 (2H, m), 7.26-7.44 (1H, m).	ESI-MS m/z: 393 [M+H]+
374		1H-NMR ($CDCl_3$) δ : 2.41-2.46 (2H, m), 2.91 (1H, dd, J=4.5, 16.6 Hz), 3.18 (1H, dd, J=5.3, 16.5 Hz), 4.15 (1H, m), 4.25-4.31 (3H, m), 4.57-4.66 (2H, m), 6.14 (1H, s), 6.90-6.95 (2H, m), 7.26-7.44 (1H, m).	
375		1H-NMR ($CDCl_3$) δ : 2.37-2.46 (2H, m), 2.96 (1H, dd, J=3.9, 16.8 Hz), 3.26 (1H, dd, J=5.2, 16.8 Hz), 4.15 (1H, m), 4.26-4.30 (3H, m), 4.57 (1H, m), 4.67 (1H, m), 6.14 (1H, s), 6.99 (1H, d, J=8.4 Hz), 7.05 (1H, d, J=8.0 Hz), 7.29-7.35 (3H, m), 7.81 (1H, td, J=2.0, 7.9 Hz), 8.55 (1H, dd, J=1.4, 4.8 Hz), 8.79 (1H, d, J=1.8 Hz).	ESI-MS m/z: 445 [M+H]+
376		1H-NMR ($CDCl_3$) δ : 2.37-2.46 (2H, m), 2.96 (1H, m), 3.26 (1H, m), 4.14 (1H, m), 4.24-4.31 (3H, m), 4.57 (1H, m), 4.68 (1H, m), 6.14 (1H, s), 6.99 (1H, d, J=8.5 Hz), 7.03 (1H, d, J=8.0 Hz), 7.37 (1H, s), 7.45 (3H, d, J=6.2 Hz), 8.61 (2H, d, J=6.1 Hz).	ESI-MS m/z: 445 [M+H]+
377		1H-NMR ($CDCl_3$) δ : 2.41-2.45 (2H, m), 2.92 (1H, m), 3.24 (1H, m), 3.98 (3H, s), 4.11-4.29 (4H, m), 4.57-4.67 (2H, m), 6.14 (1H, s), 6.93-6.97 (2H, m), 7.08 (1H, d, J=8.1 Hz), 7.36 (1H, m), 7.56 (1H, dd, J=1.8, 7.3 Hz), 8.13 (1H, dd, J=1.7, 4.9 Hz).	ESI-MS m/z: 475 [M+H]+
378		1H-NMR ($CDCl_3$) δ : 2.36-2.46 (2H, m), 2.94 (1H, m), 3.25 (1H, dd, J=5.1, 16.6 Hz), 3.97 (3H, s), 4.15 (1H, m), 4.24-4.30 (3H, m), 4.57 (1H, m), 4.66 (1H, m), 6.14 (1H, s), 6.79 (1H, d, J=8.6 Hz), 6.96 (1H, d, J=8.4 Hz), 7.06 (1H, d, J=7.9 Hz), 7.21 (1H, s), 7.30 (1H, m), 7.72 (1H, dd, J=2.6, 8.6 Hz), 8.32 (1H, d, J=2.2 Hz).	ESI-MS m/z: 475 [M+H]+
379		1H-NMR ($CDCl_3$) δ : 2.79-2.87 (3H, m), 3.15 (1H, dd, J = 5.6, 16.8 Hz), 4.14 (2H, t, J = 6.3 Hz), 4.19 (2H, d, J = 2.8 Hz), 4.46 (1H, s), 4.61 (1H, m), 4.82 (1H, d, J = 1.7 Hz), 6.10 (1H, s), 6.81 (1H, d, J = 8.6 Hz), 6.99 (1H, d, J = 6.3 Hz), 7.04 (1H, s), 7.08 (1H, dd, J = 2.4, 8.7 Hz).	ESI-MS m/z: 346 [M+H]+
380		1H-NMR ($CDCl_3$) δ : 2.37-2.46 (4H, m), 2.94 (1H, m), 3.24 (1H, m), 4.11-4.29 (8H, m), 4.55-4.65 (2H, m), 6.14 (1H, s), 6.95 (1H, d, J=8.6 Hz), 7.05 (1H, d, J=7.9 Hz), 7.14 (1H, s), 7.23 (1H, m), 8.47 (2H, s).	ESI-MS m/z: 501 [M+H]+

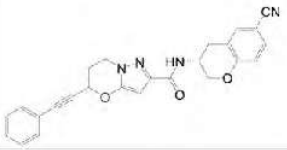
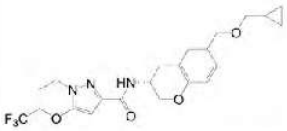
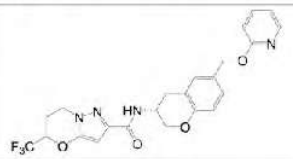
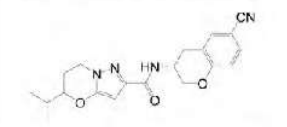
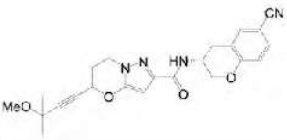
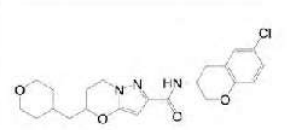
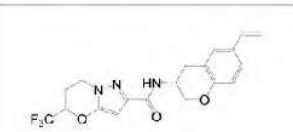
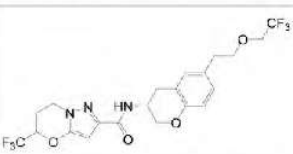
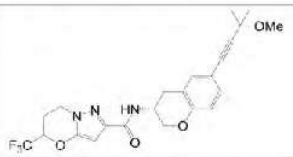
[1440]

[Table 52]

Example	Structural formula	NMR	MS
381		1H-NMR ($CDCl_3$) δ : 2.24-2.31 (2H, m), 2.85 (1H, m), 3.15 (1H, dd, J = 5.3, 16.9 Hz), 4.08-4.26 (4H, m), 4.42 (1H, m), 4.57-4.63 (2H, m), 4.70 (1H, m), 6.05 (1H, s), 6.81 (1H, d, J = 8.7 Hz), 7.00 (1H, d, J = 7.4 Hz), 7.04 (1H, s), 7.08 (1H, dd, J = 2.3, 8.6 Hz).	ESI-MS m/z: 366 [M+H]+
382		1H-NMR ($CDCl_3$) δ : 2.41 (2H, m), 2.95 (1H, m), 3.26 (1H, dd, J=5.5, 17.2 Hz), 4.12 (1H, m), 4.27 (3H, m), 4.56 (1H, m), 4.66 (1H, m), 6.13 (1H, s), 6.96-7.03 (2H, m), 7.16 (1H, m), 7.64-7.76 (4H, m), 8.64 (1H, d, J=4.4 Hz).	ESI-MS m/z: 445 [M+H]+
383		1H-NMR ($CDCl_3$) δ : 1.41 (6H, d, J=2.9 Hz), 2.07 (2H, t, J=7.3 Hz), 2.96 (1H, dd, J=4.4, 16.7 Hz), 3.26 (1H, dd, J=5.2, 16.8 Hz), 4.08 (2H, t, J=6.5 Hz), 4.25-4.26 (2H, m), 4.66 (1H, m), 5.97 (1H, s), 6.97 (1H, d, J=8.2 Hz), 7.02 (1H, d, J=8.3 Hz), 7.18 (1H, t, J=6.1 Hz), 7.64-7.76 (4H, m), 8.64 (1H, d, J=4.8 Hz).	
384		1H-NMR ($CDCl_3$) δ : 2.04 (1H, m), 2.16 (1H, m), 2.59 (1H, dd, J=6.7, 16.1 Hz), 3.05 (1H, d, J=16.2 Hz), 3.41 (1H, m), 3.89 (1H, m), 4.02 (1H, m), 4.13 (1H, m), 4.21-4.30 (2H, m), 4.35 (1H, m), 4.62 (1H, m), 6.00 (1H, s), 6.86-6.93 (2H, m), 7.02 (1H, s), 7.30 (2H, s), 7.37-7.67 (3H, m).	ESI-MS m/z: 433 [M+H]+
385		1H-NMR ($CDCl_3$) δ : 1.53 (3H, d, J=6.6 Hz), 2.84 (1H, m), 3.15 (1H, dd, J=5.0, 16.7 Hz), 4.11-4.23 (2H, m), 4.30-4.49 (3H, m), 4.60 (1H, m), 6.09 (1H, s), 6.82 (1H, d, J=8.7 Hz), 6.98 (1H, m), 7.04 (1H, s), 7.09 (1H, m).	ESI-MS m/z: 384 [M+H]+
386		1H-NMR ($CDCl_3$) δ : 2.41(1H, m), 2.55(1H, m), 2.98(1H, dd, J=16.7, 4.4 Hz), 3.17(1H, br d, J=16.7 Hz), 4.17-4.34(4H, m), 4.64(1H, m), 5.22(1H, m), 6.12(1H, s), 6.94(1H, d, J=8.5 Hz), 6.95(1H, m), 7.39(1H, m), 7.43(1H, dd, J=8.5, 2.2 Hz).	ESI-MS m/z: 417 [M+H]+
387		1H-NMR ($CDCl_3$) δ : 0.35 (1H, m), 0.55 (1H, m), 0.62-0.76 (2H, m), 1.12 (1H, m), 2.18-2.32 (2H, m), 2.84 (1H, m), 3.14 (1H, m), 3.50 (1H, m), 4.05 (1H, m), 4.18-4.19 (3H, m), 4.60 (1H, m), 6.00 (1H, s), 6.80 (1H, d, J=8.6 Hz), 6.98 (1H, d, J=7.6 Hz), 7.04 (1H, s), 7.08 (1H, m).	ESI-MS m/z: 374 [M+H]+
388		1H-NMR ($CDCl_3$) δ : 1.86-2.14 (8H, m), 2.58 (1H, m), 2.90 (1H, m), 3.17 (1H, m), 4.00-4.15 (3H, m), 4.22-4.31 (2H, m), 4.63 (1H, m), 6.00 (1H, s), 6.92-6.94 (2H, m), 7.38 (1H, s), 7.42 (1H, d, J=8.5 Hz).	
389		1H-NMR ($CDCl_3$) δ : 0.98(3H, t, J=7.2 Hz), 1.41-1.68.(3H, m), 1.78(1H, m), 2.05(1H, m), 2.17(1H, m), 2.84(1H, dd, J=16.8, 4.1 Hz), 3.14(1H, dd, J=16.8, 5.3 Hz), 4.00-4.26(5H, m),., 4.60(1H, m), 5.98(1H, s), 6.80(1H, d, J=8.6 Hz), 6.99(1H, m), 7.03(1H, m), 7.07(1H, dd, J=8.6, 2.2 Hz).	ESI-MS m/z: 376 [M+H]+

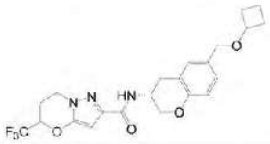
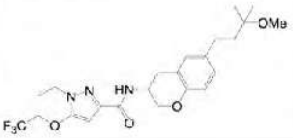
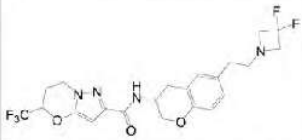
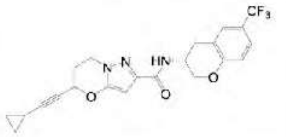
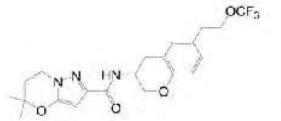
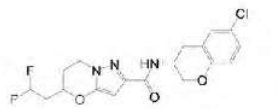
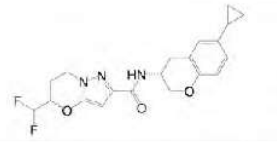
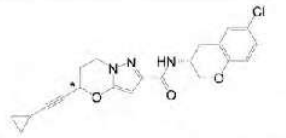
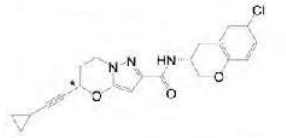
[1441]

[Table 53]

Example	Structural formula	NMR	MS
390		1H-NMR ($CDCl_3$) δ : 2.42(1H, m), 2.53(1H, m), 2.91(1H, dd, J=16.7, 4.7 Hz), 3.14(1H, dd, J=16.7, 5.2 Hz), 4.16-4.32(3H, m), 4.37(1H, m), 4.64(1H, m), 5.34(1H, m), 6.10(1H, s), 6.93(1H, d, J=8.5 Hz), 6.94(1H, m), 6.95(1H, s), 7.27-7.45(7H, m).	ESI-MS m/z: 425 [M+H]+
391		1H-NMR ($CDCl_3$) δ : 0.22 (2H, m), 0.54 (2H, q, J=6.1 Hz), 1.10 (1H, m), 2.42-2.43 (2H, m), 2.86 (1H, d, J=17.1 Hz), 3.18 (1H, dd, J=5.2, 16.8 Hz), 3.31 (2H, d, J=7.0 Hz), 4.13-4.28 (4H, m), 4.42 (2H, s), 4.59 (2H, m), 6.13 (1H, s), 6.85 (1H, d, J=8.2 Hz), 7.00-7.06 (2H, m), 7.12 (1H, d, J=7.8 Hz).	ESI-MS m/z: 452 [M+H]+
392		1H-NMR ($CDCl_3$) δ : 2.41-2.44 (2H, m), 2.88 (1H, d, J=13.5 Hz), 3.20 (1H, dd, J=5.1, 17.2 Hz), 4.10-4.30 (4H, m), 4.56-4.63 (2H, m), 5.27 (2H, s), 6.13 (1H, s), 6.79 (1H, d, J=8.2 Hz), 6.87-6.90 (2H, m), 7.05 (1H, d, J=7.7 Hz), 7.18 (1H, s), 7.23 (1H, m), 7.58 (1H, t, J=6.8 Hz), 8.18 (1H, d, J=4.4 Hz).	ESI-MS m/z: 475 [M+H]+
393		1H-NMR ($CDCl_3$) δ : 1.02(3H, d, J=6.8 Hz), 1.05(3H, d, J=6.7 Hz), 1.99(1H, m), 2.01-2.23(2H, m), 2.90(1H, dd, J=16.6, 4.7 Hz), 3.17(1H, dt, J=16.7, 5.1 Hz), 3.92(1H, m), 4.05(1H, m), 4.11-4.34(3H, m), 4.63(1H, m), 5.99(1H, s), 6.93(1H, d, J=8.5 Hz), 6.94(1H, m), 7.38(1H, s), 7.42(1H, d, J=8.5 Hz).	ESI-MS m/z: 367 [M+H]+
394		1H-NMR ($CDCl_3$) δ : 1.41(3H, m), 1.42(3H, m), 2.30(1H, m), 2.46(1H, m), 2.91(1H, dd, J=16.6, 4.6 Hz), 3.17(1H, dt, J=16.6, 4.6 Hz), 3.26(3H, m), 4.17(1H, m), 4.21-4.35(3H, m), 4.64(1H, m), 5.17(1H, m), 6.07(1H, s), 6.93(1H, m), 6.94(1H, d, J=6.6 Hz), 7.38(1H, m), 7.42(1H, d, J=6.6 Hz).	ESI-MS m/z: 421 [M+H]+
395		1H-NMR ($CDCl_3$) δ : 1.17-2.28(9H, m), 2.84(1H, br d, J=16.8 Hz), 3.16(1H, dd, J=16.8, 5.2 Hz), 3.42(2H, m), 3.97(2H, m), 4.03-4.22(4H, m), 4.30(1H, m), 4.60(1H, m), 5.96(1H, s), 6.80(1H, d, J=8.6 Hz), 6.96(1H, m), 7.04(1H, s), 7.08(1H, dd, J=8.6, 2.2 Hz).	ESI-MS m/z: 432 [M+H]+
396		1H-NMR ($CDCl_3$) δ : 2.36-2.47 (2H, m), 2.86 (1H, m), 3.18 (1H, m), 4.10-4.29 (4H, m), 4.54-4.64 (2H, m), 5.13 (1H, d, J=11.0 Hz), 5.60 (1H, d, J=17.6 Hz), 6.13 (1H, s), 6.62 (1H, dd, J=10.9, 17.5 Hz), 6.84 (1H, d, J=8.5 Hz), 7.03 (1H, d, J=7.9 Hz), 7.10 (1H, s), 7.21 (1H, d, J=8.4 Hz).	ESI-MS m/z: 394 [M+H]+
397		1H-NMR ($CDCl_3$) δ : 2.33-2.45 (2H, m), 2.81-2.87 (2H, m), 3.16 (1H, dd, J = 5.4, 16.7 Hz), 3.47 (1H, t, J = 5.5 Hz), 3.67 (1H, m), 3.76-3.84 (3H, m), 4.10-4.20 (3H, m), 4.26 (1H, m), 4.54-4.62 (2H, m), 6.13 (1H, s), 6.81 (1H, d, J = 8.3 Hz), 6.91 (1H, s), 7.00 (2H, dd, J = 8.2, 17.9 Hz).	ESI-MS m/z: 494 [M+H]+
398		1H-NMR ($CDCl_3$) δ : 1.52 (6H, s), 2.38-2.46 (2H, m), 2.83 (1H, m), 3.14 (1H, m), 3.41 (3H, s), 4.10-4.29 (4H, m), 4.55-4.63 (2H, m), 6.12 (1H, s), 6.81 (1H, d, J=8.4 Hz), 6.98 (1H, d, J=7.7 Hz), 7.17 (1H, s), 7.21 (1H, d, J=8.5 Hz).	

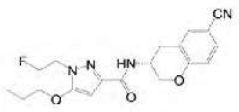
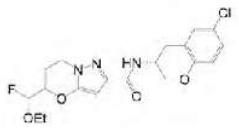
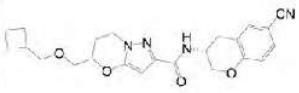
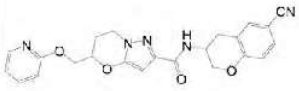
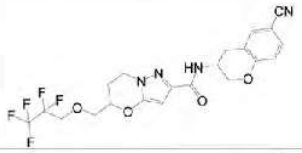
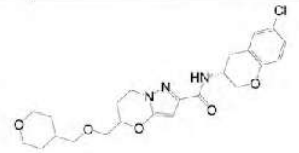
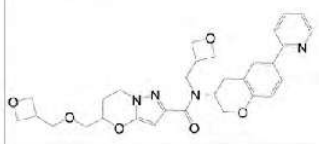
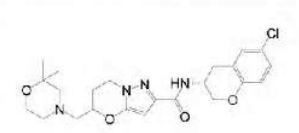
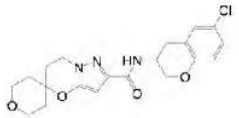
[1442]

[Table 54]

Example	Structural formula	NMR	MS
399		1H-NMR ($CDCl_3$) δ : 1.50 (1H, m), 1.71 (1H, q, J=10.1 Hz), 1.97 (2H, m), 2.22 (2H, m), 2.40 (2H, m), 2.85 (1H, m), 3.16 (1H, m), 4.01 (1H, m), 4.11-4.26 (6H, m), 4.56-4.62 (2H, m), 6.12 (1H, s), 6.84 (1H, d, J=8.3 Hz), 7.02 (1H, m), 7.05 (1H, s), 7.10 (1H, d, J=7.7 Hz).	ESI-MS m/z: 452 [M+H]+
400		1H-NMR ($CDCl_3$) δ : 1.20 (6H, s), 1.71-1.75 (2H, m), 2.36-2.46 (2H, m), 2.52-2.56 (2H, m), 2.83 (1H, m), 3.16 (1H, m), 3.22 (3H, s), 4.10-4.17 (3H, m), 4.28 (1H, m), 4.57-4.61 (2H, m), 6.13 (1H, s), 6.80 (1H, d, J=8.3 Hz), 6.88 (1H, s), 6.96 (1H, d, J=9.0 Hz), 7.04 (1H, d, J=7.9 Hz).	ESI-MS m/z: 468 [M+H]+
401		1H-NMR ($CDCl_3$) δ : 2.37-2.43 (2H, m), 2.58-2.92 (4H, m), 3.13-3.24 (2H, m), 3.54 (4H, t, J=12.5 Hz), 4.11-4.28 (4H, m), 4.57-4.60 (2H, m), 6.13 (1H, s), 6.81 (1H, m), 6.87 (1H, m), 6.95 (1H, d, J=7.4 Hz), 7.03 (1H, d, J=8.2 Hz).	ESI-MS m/z: 487 [M+H]+
402		1H-NMR ($CDCl_3$) δ : 0.68(2H, m), 0.80(2H, m), 1.25(1H, m), 2.24(1H, m), 2.39(1H, m), 2.92(1H, br d, J=16.6 Hz), 3.20(1H, dd, J=16.6, 5.3 Hz), 4.12(1H, m), 4.19-4.26(3H, m), 4.65(1H, m), 5.04(1H, m), 6.05(1H, s), 6.95(1H, d, J=8.6 Hz), 6.97(1H, m), 7.33(1H, s), 7.38(1H, d, J=8.6 Hz).	ESI-MS m/z: 432 [M+H]+
403		1H-NMR ($CDCl_3$) δ : 1.42-1.44 (6H, d, J=2.1 Hz), 2.08 (2H, t, J=6.5 Hz), 2.82-2.92 (3H, m), 3.16 (1H, dd, J=5.6, 16.6 Hz), 4.08-4.12 (4H, m), 4.17-4.22 (2H, m), 4.61 (1H, m), 5.97 (1H, s), 6.82 (1H, d, J=8.3 Hz), 6.90 (1H, s), 6.96-7.02 (1H, m).	ESI-MS m/z: 440 [M+H]+
404		1H-NMR ($CDCl_3$) δ : 2.09-2.44(4H, m), 2.84(1H, dd, J=16.8, 4.2 Hz), 3.15(1H, dd, J=16.8, 4.6 Hz), 4.06-4.24(3H, m), 4.44(1H, m), 4.61(1H, m), 4.63(1H, m), 6.01(1H, s), 6.12(1H, tdd, J=56., 6.5, 2.9 Hz), 6.81(1H, d, J=8.7 Hz), 6.99(1H, m), 7.04(1H, m), 7.06(1H, dd, J=8.7, 2.6 Hz)	ESI-MS m/z: 398 [M+H]+
405		1H-NMR ($CDCl_3$) δ : 0.56-0.62 (2H, m), 0.87-0.91 (2H, m), 1.81 (1H, m), 2.24-2.38 (2H, m), 2.82 (1H, m), 3.15 (1H, m), 4.07-4.20 (3H, m), 4.27 (1H, m), 4.37 (1H, m), 4.60 (1H, m), 5.89 (1H, dt, J=3.4, 82.0 Hz), 6.08 (1H, s), 6.77-6.79 (2H, m), 6.85 (1H, dd, J=2.1, 8.5 Hz), 7.04 (1H, d, J=8.2 Hz).	ESI-MS m/z: 390 [M+H]+
406		1H-NMR ($CDCl_3$) δ : 0.68(2H, m), 0.79(2H, m), 1.23(1H, m), 2.24(1H,m), 2.38(1H, m), 2.85(1H, dd, J=16.8, 4.2 Hz), 3.15(1H, dd, J=16.8, 5.4 Hz), 4.13(1H, m), 4.19(1H, m), 4.26(1H, m), 4.61(1H, m), 5.04(1H, m), 5.41(1H, m), 6.04(1H, s), 6.81(1H, d, J=8.7 Hz), 7.00(1H, m), 7.04(1H, m), 7.08(1H, dd, J=8.7, 2.5 Hz).	ESI-MS m/z: 398 [M+H]+
407		1H-NMR ($CDCl_3$) δ : 0.68(2H, m), 0.79(2H, m), 1.23(1H, m), 2.24(1H,m), 2.38(1H, m), 2.85(1H, dd, J=16.8, 4.2 Hz), 3.15(1H, dd, J=16.8, 5.4 Hz), 4.13(1H, m), 4.19(1H, m), 4.26(1H, m), 4.61(1H, m), 5.04(1H, m), 5.41(1H, m), 6.04(1H, s), 6.81(1H, d, J=8.7 Hz), 7.00(1H, m), 7.04(1H, m), 7.08(1H, dd, J=8.7, 2.5 Hz).	ESI-MS m/z: 398 [M+H]+

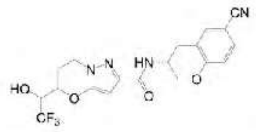
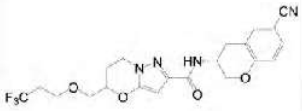
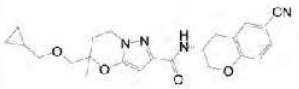
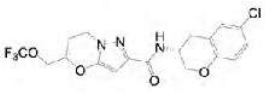
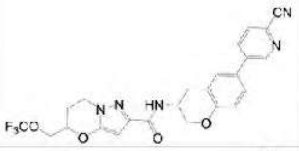
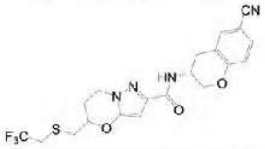
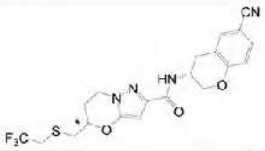
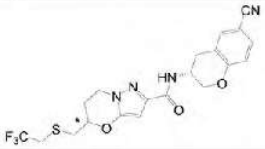
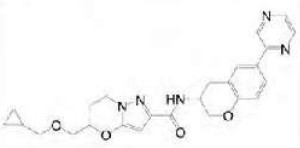
[1443]

[Table 55]

Example	Structural formula	NMR	MS
408		1H-NMR ($CDCl_3$) δ : 0.68(2H, m), 0.79(2H, m), 1.23(1H, m), 2.24(1H,m), 2.38(1H, m), 2.85(1H, dd, J=16.8, 4.2 Hz), 3.15(1H, dd, J=16.8, 5.4 Hz), 4.13(1H, m), 4.19(1H, m), 4.26(1H, m), 4.61(1H, m), 5.04(1H, m), 5.41(1H, m), 6.04(1H, s), 6.81(1H, d, J=8.7 Hz), 7.00(1H, m), 7.04(1H, m), 7.08(1H, dd, J=8.7, 2.5 Hz).	ESI-MS m/z: 398 [M+H]+
409		1H-NMR ($CDCl_3$) δ : 1.25-1.31 (3H, m), 2.23-2.37 (2H, m), 2.84 (1H, m), 3.14 (1H, dd, J = 5.3, 16.8 Hz), 3.75 (1H, m), 3.95-4.13 (2H, m), 4.18-4.29 (4H, m), 4.60 (1H, m), 5.43 (1H, m), 6.05 (1H, d, J = 1.0 Hz), 6.81 (1H, d, J = 8.6 Hz), 6.99 (1H, d, J = 7.4 Hz), 7.04 (1H, s), 7.08 (1H, dd, J = 2.4, 8.7 Hz).	ESI-MS m/z: 410 [M+H]+
410		1H-NMR ($CDCl_3$) δ : 1.68-1.77 (2H, m), 1.82-1.95 (2H, m), 2.01-2.06 (2H, m), 2.15-2.29 (2H, m), 2.58 (1H, m), 2.90 (1H, m), 3.17 (1H, m), 3.49 (2H, d, J=6.7 Hz), 3.62 (1H, m), 3.72 (1H, m), 4.07 (1H, m), 4.16-4.35 (4H, m), 4.63 (1H, m), 6.02 (1H, s), 6.90-6.94 (2H, m), 7.38 (1H, s), 7.42 (1H, d, J=8.5 Hz).	ESI-MS m/z: 423 [M+H]+
411		1H-NMR ($CDCl_3$) δ : 2.27-2.36 (2H, m), 2.91 (1H, m), 3.17 (1H, m), 4.13 (1H, m), 4.22-4.31 (3H, m), 4.58-4.64 (4H, m), 6.05 (1H, s), 6.81 (1H, d, J=8.3 Hz), 6.90-6.94 (3H, m), 7.39 (1H, s), 7.42 (1H, m), 7.61 (1H, m), 8.13 (1H, dd, J=1.3, 4.9 Hz).	ESI-MS m/z: 432 [M+H]+
412		1H-NMR ($CDCl_3$) δ : 2.24-2.26 (2H, m), 2.91 (1H, m), 3.17 (1H, m), 3.84-3.93 (2H, m), 4.00-4.13 (3H, m), 4.19-4.31 (3H, m), 4.37 (1H, m), 4.63 (1H, m), 6.03 (1H, s), 6.91–6.94 (2H, m), 7.39 (1H, s), 7.42 (1H, d, J=8.6 Hz).	ESI-MS m/z: 487 [M+H]+
413		1H-NMR ($CDCl_3$) δ : 1.24-1.38 (2H, m), 1.61-1.64 (2H, m), 1.86 (1H, m), 2.17-2.26 (2H, m), 2.84 (1H, dd, J = 3.9, 16.6 Hz), 3.14 (1H, dd, J = 5.5, 16.9 Hz), 3.35-3.41 (4H, m), 3.63 (1H, dd, J = 4.9, 10.3 Hz), 3.72 (1H, dd, J = 4.9, 10.5 Hz), 3.97 (2H, dd, J = 3.7, 11.2 Hz), 4.08 (1H, m), 4.18-4.21 (3H, m), 4.33 (1H, m), 4.60 (1H, m), 5.01 (1H, s), 6.81 (1H, d, J = 8.7 Hz), 6.99 (1H, d, J = 8.3 Hz), 7.04 (1H, s), 7.08 (1H, dd, J = 2.4, 8.6 Hz).	ESI-MS m/z: 462 [M+H]+
414		1H-NMR ($CDCl_3$) δ : 2.17-2.23 (2H, m), 2.88 (1H, dd, J = 9.6, 15.7 Hz), 3.06 (1H, dd, J = 4.5, 15.6 Hz), 3.23 (1H, m), 3.38 (1H, m), 3.67 (1H, m), 3.74-3.78 (3H, m), 3.97 (1H, t, J = 9.8 Hz), 4.11 (1H, m), 4.20-4.26 (2H, m), 4.33-4.38 (3H, m), 4.45 (2H, t, J = 6.0 Hz), 4.55 (2H, t, J = 6.1 Hz), 4.64 (1H, m), 4.78-4.82 (4H, m), 5.70 (1H, s), 6.91 (1H, d, J = 8.5 Hz), 7.16 (1H, t, J = 5.9 Hz), 7.64-7.77 (4H, m), 8.64 (1H, d, J = 4.7 Hz).	ESI-MS m/z: 547 [M+H]+
415		1H-NMR ($CDCl_3$) δ : 1.24 (3H, s), 1.25 (3H, s), 2.14 (1H, m), 2.31-2.34 (3H, m), 2.41-2.56 (3H, m), 2.68 (1H, dd, J = 5.5, 13.3 Hz), 2.84 (1H, dd, J = 4.1, 16.9 Hz), 3.14 (1H, dd, J = 4.3, 16.8 Hz), 3.74 (2H, t, J = 4.8 Hz), 4.08 (1H, m), 4.15-4.19 (3H, m), 4.31 (1H, m), 4.60 (1H, m), 6.00 (1H, s), 6.81 (1H, d, J = 8.7 Hz), 6.99 (1H, m), 7.04 (1H, s), 7.08 (1H, m).	ESI-MS m/z: 461 [M+H]+
416		1H-NMR ($CDCl_3$) δ : 1.69-1.91(4H, m), 1.96(2H, m), 2.86(1H, dd, J=16.8, 4.2 Hz), 3.76(1H, dd, J=16.8, 5.6 Hz), 3.71-3.81(3H, m), 3.82-3.97(3H, m), 4.19(2H, m), 4.62(1H, m), 6.11(1H, s), 6.81(1H, d, J=8.1 Hz), 6.99(1H, m), 7.04(1H, m), 7.09(1H, br d, J=8.1 Hz).	ESI-MS m/z: 404 [M+H]+

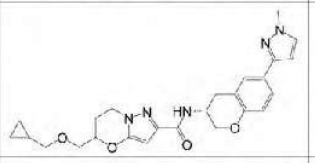
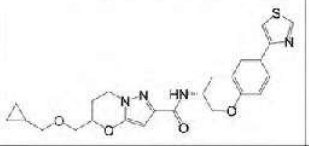
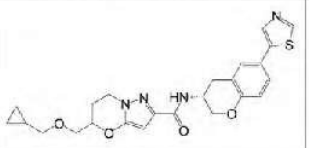
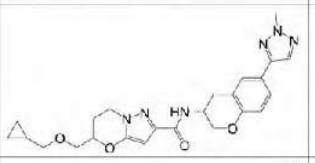
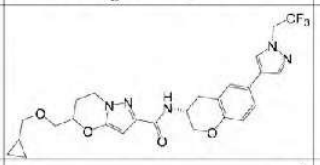
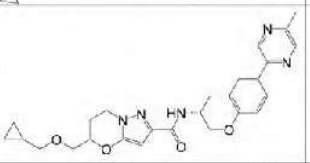
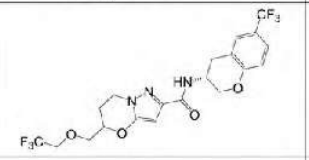
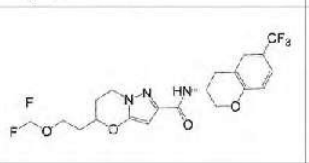
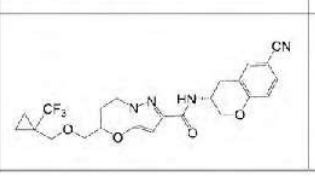
[1444]

[Table 56]

Example	Structural formula	NMR	MS
417		1H-NMR ($CDCl_3$) δ : 2.25(1H, m), 2.43(1H, m), 2.82(1H, dd, J=16.6, 3.6 Hz), 3.10(1H, dd, J=16.6, 5.0 Hz), 4.13(1H, m), 4.12-4.25(3H, m), 4.38(2H, m), 4.54(1H, m), 5.05(1H, br s), 6.06(1H, s), 6.86(1H, d, J=8.5 Hz), 6.98(1H, d, J=7.8 Hz), 7.31(1H, m), 7.35(1H, d, J=8.5 Hz).	ESI-MS m/z: 423 [M+H]+
418		1H-NMR ($CDCl_3$) δ : 2.43(2H, m), 2.41(2H, m), 2.91(1H, dd, J=16.7, 4.6 Hz), 3.17(1H, dd, J=16.7, 5.3 Hz), 3.66(1H, dd, J=10.7, 5.1 Hz), 3.72-3.79(3H, m), 4.02-4.34(5H, m), 4.63(1H, m), 6.02(1H, s), 6.91(1H, m), 6.92(1H, d, J=8.7 Hz), 7.38(1H, m), 7.42(1H, d, J=8.7 Hz).	ESI-MS m/z: 451 [M+H]+
419		1H-NMR ($CDCl_3$) δ : 0.17-0.18 (2H, m), 0.50-0.53 (2H, m), 1.00 (1H, m), 1.40 (3H, m), 2.04 (1H, m), 2.35 (1H, m), 2.91 (1H, m), 3.17 (1H, m), 3.31-3.35 (2H, m), 3.48-3.56 (2H, m), 4.04-4.18 (2H, m), 4.22-4.31 (2H, m), 4.63 (1H, m), 5.99 (1H, s), 6.92-6.94 (2H, m), 7.38 (1H, s), 7.42 (1H, d, J=8.5 Hz).	ESI-MS m/z: 423 [M+H]+
420		1H-NMR ($CDCl_3$) δ : 2.23-2.28 (2H, m), 2.84 (1H, m), 3.15 (1H, m), 4.09-4.26 (5H, m), 4.44 (1H, m), 4.61 (1H, m), 6.05 (1H, s), 6.81 (1H, d, J=8.6 Hz), 6.99 (1H, d, J=6.6 Hz), 7.04 (1H, s), 7.08 (1H, d, J=8.7 Hz).	ESI-MS m/z: 432 [M+H]+
421		1H-NMR ($CDCl_3$) δ : 2.23-2.29 (2H, m), 2.86 (1H, m), 3.26 (1H, dd, J=6.4, 16.7 Hz), 4.11-4.25 (5H, m), 4.44 (1H, m), 4.66 (1H, m), 6.06 (1H, s), 6.99 (1H, d, J=8.3 Hz), 7.04 (1H, d, J=7.6 Hz), 7.20 (1H, s), 7.29 (2H, m), 8.65 (2H, s).	ESI-MS m/z: 506 [M+H]+
422		1H-NMR ($CDCl_3$) δ : 2.26(1H, m), 2.30(1H, m), 2.91(1H, dd, J=16.8, 4.6 Hz), 2.98(1H, dd, J=14.8, 5.7 Hz), 3.06(1H, dd, J=14.8, 6.0 Hz), 3.11-3.30(3H, m), 4.11(1H, m), 4.06-4.33(3H, m), 4.40(1H, m), 4.64(1H, m), 6.03(1H, s), 6.93(1H, d, J=8.5 Hz), 6.94(1H, m), 7.38(1H, m), 7.42(1H, dd, J=8.5, 2.2 Hz).	ESI-MS m/z: 453 [M+H]+
423		1H-NMR ($CDCl_3$) δ : 2.15-2.36(2H, m), 2.91(1H, dd, J=16.8, 4.6 Hz), 2.98(1H, dd, J=14.0, 6.0 Hz), 3.06(1H, dd, J=14.0, 6.0 Hz), 3.12-3.29(3H, m), 4.10(1H, m), 4.16-4.36(3H, m), 4.39(1H, m), 4.63(1H, m), 6.03(1H, s), 6.93(1H, d, J=8.5 Hz), 6.94(1H, m), 7.38(1H, s), 7.42(1H, d, J=8.5 Hz).	ESI-MS m/z: 453 [M+H]+
424		1H-NMR ($CDCl_3$) δ : 2.15-2.36(2H, m), 2.91(1H, dd, J=16.8, 4.6 Hz), 2.98(1H, dd, J=14.0, 6.0 Hz), 3.06(1H, dd, J=14.0, 6.0 Hz), 3.12-3.29(3H, m), 4.10(1H, m), 4.16-4.36(3H, m), 4.39(1H, m), 4.63(1H, m), 6.03(1H, s), 6.93(1H, d, J=8.5 Hz), 6.94(1H, m), 7.38(1H, s), 7.42(1H, d, J=8.5 Hz).	ESI-MS m/z: 453 [M+H]+
425		1H-NMR ($CDCl_3$) δ : 0.21 (2H, d, J=4.6 Hz), 0.55 (2H, d, J=8.0 Hz), 1.06 (1H, m), 2.13-2.29 (2H, m), 2.97 (1H, m), 3.28 (1H, dd, J=5.2, 16.6 Hz), 3.37 (2H, d, J=6.9 Hz), 3.65 (1H, dd, J=5.2, 9.0 Hz), 3.75 (1H, dd, J=5.3, 10.5 Hz), 4.07 (1H, m), 4.18 (1H, m), 4.28 (2H, m), 4.35 (1H, m), 4.67 (1H, m), 6.02 (1H, s), 6.72 (1H, d, J=7.9 Hz), 7.02 (2H, m), 7.78 (1H, s), 8.45 (1H, d, J=2.4 Hz), 8.58 (1H, t, J=3.7 Hz), 8.96 (1H, d, J=1.2 Hz).	ESI-MS m/z: 462 [M+H]+

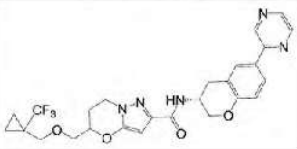
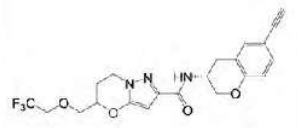
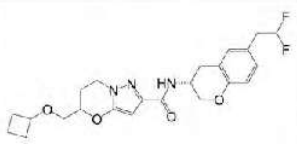
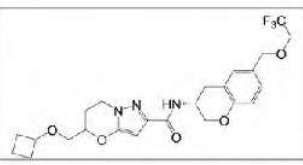
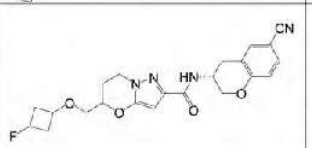
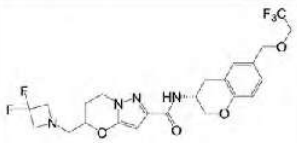
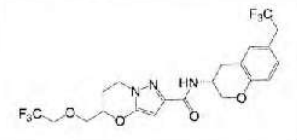
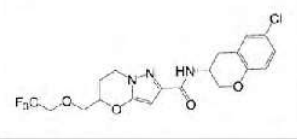
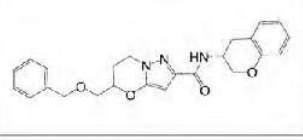
[1445]

[Table 57]

Example	Structural formula	NMR	MS
426		1H-NMR ($CDCl_3$) δ : 0.21 (2H, m), 0.55 (2H, d, J=6.8 Hz), 1.06 (1H, m), 2.18-2.27 (2H, m), 2.89 (1H, m), 3.21 (1H, m), 3.37 (2H, d, J=6.3 Hz), 3.65 (1H, m), 3.74 (1H, m), 3.93 (3H, s), 4.06 (1H, m), 4.16-4.22 (3H, m), 4.35 (1H, m), 4.64 (1H, m), 6.01 (1H, s), 6.44 (1H, s), 6.89 (1H, d, J=8.6 Hz), 7.02 (1H, d, J=8.2 Hz), 7.35 (1H, s), 7.52-7.54 (2H, m).	ESI-MS m/z: 464 [M+H]+
427		1H-NMR ($CDCl_3$) δ : 0.21 (2H, d, J=4.7 Hz), 0.55 (2H, d, J=7.5 Hz), 1.06 (1H, m), 2.21 (2H, m), 2.93 (1H, dd, J=4.0, 16.5 Hz), 3.24 (1H, dd, J=4.9, 17.0 Hz), 3.37 (2H, d, J=7.0 Hz), 3.64 (1H, dd, J=5.1, 10.0 Hz), 3.75 (1H, dd, J=4.8, 10.5 Hz), 4.07 (1H, m), 4.17-4.24 (2H, m), 4.35 (1H, m), 4.66 (1H, m), 6.02 (1H, s), 6.94 (1H, d, J=9.3 Hz), 7.02 (1H, d, J=8.1 Hz), 7.39 (1H, s), 7.66-7.68 (2H, m), 8.65 (1H, s).	ESI-MS m/z: 467 [M+H]+
428		1H-NMR ($CDCl_3$) δ : 0.21 (2H, d, J=4.7 Hz), 0.55 (2H, d, J=8.1 Hz), 1.06 (1H, m), 2.21 (2H, m), 2.92 (1H, dd, J=3.9, 17.0 Hz), 3.21 (1H, dd, J=5.1, 16.7 Hz), 3.37 (2H, d, J=6.6 Hz), 3.65 (1H, m), 3.75 (1H, dd, J=4.9, 10.4 Hz), 4.08 (1H, m), 4.19 (1H, m), 4.24 (2H, m), 4.35 (1H, m), 4.65 (1H, m), 6.03 (1H, s), 6.92 (1H, d, J=8.5 Hz), 7.02 (1H, d, J=8.1 Hz), 7.26 (1H, s), 7.35 (1H, dd, J=2.1, 8.4 Hz), 7.96 (1H, s), 8.70 (1H, s).	ESI-MS m/z: 467 [M+H]+
429		1H-NMR ($CDCl_3$) δ : 0.21 (2H, d, J=5.0 Hz), 0.55 (2H, d, J=7.9 Hz), 1.06 (1H, m), 2.21 (2H, m), 2.92 (1H, m), 3.22 (1H, m), 3.37 (2H, d, J=7.0 Hz), 3.64 (1H, dd, J=5.7, 10.3 Hz), 3.75 (1H, dd, J=5.2, 10.4 Hz), 4.08 (1H, m), 4.16-4.24 (5H, m), 4.35 (1H, m), 4.65 (1H, m), 6.02 (1H, s), 6.93 (1H, d, J=8.4 Hz), 7.02 (1H, d, J=8.6 Hz), 7.49 (1H, s), 7.52 (1H, d, J=6.5 Hz), 7.72 (1H, s).	ESI-MS m/z: 465 [M+H]+
430		1H-NMR ($CDCl_3$) δ : 0.21 (2H, d, J=4.6 Hz), 0.55 (2H, d, J=7.9 Hz), 1.06 (1H, m), 2.12-2.29 (2H, m), 2.90 (1H, dd, J=3.8, 16.5 Hz), 3.20 (1H, dd, J=5.3, 16.7 Hz), 3.37 (2H, d, J=6.8 Hz), 3.65 (1H, dd, J=5.3, 10.4 Hz), 3.75 (1H, dd, J=5.2, 10.4 Hz), 4.08 (1H, m), 4.17-4.24 (3H, m), 4.35 (1H, m), 4.64 (1H, m), 4.72 (2H, q, J=8.4 Hz), 6.02 (1H, s), 6.89 (1H, d, J=8.4 Hz), 7.04 (1H, d, J=8.0 Hz), 7.17 (1H, s), 7.24 (1H, s), 7.65 (1H, s), 7.78 (1H, s).	ESI-MS m/z: 532 [M+H]+
431		1H-NMR ($CDCl_3$) δ : 0.21 (2H, d, J=3.9 Hz), 0.55 (2H, d, J=7.2 Hz), 1.06 (1H, m), 2.17-2.28 (2H, m), 2.58 (3H, s), 2.97 (1H, m), 3.26 (1H, dd, J=5.2, 16.2 Hz), 3.37 (2H, d, J=6.8 Hz), 3.65 (1H, dd, J=4.8, 9.9 Hz), 3.75 (1H, dd, J=5.3, 10.8 Hz), 4.07 (1H, m), 4.17 (1H, m), 4.26 (2H, m), 4.35 (1H, m), 4.67 (1H, m), 6.02 (1H, s), 6.98-7.03 (2H, m), 7.73 (1H, s), 7.76 (1H, s), 8.45 (1H, s), 8.83 (1H, s).	ESI-MS m/z: 476 [M+H]+
432		1H-NMR ($CDCl_3$) δ : 2.25(2H, m), 2.91(1H, dd, J=16.8, 4.2 Hz), 3.20(1H, dd, J=16.8, 5.2 Hz), 3.83-4.00(4H, m), 4.10(1H, m), 4.17-4.30(3H, m), 4.37(1H, m), 4.64(1H, m), 6.03(1H, s), 6.95(1H, d, J=8.1 Hz), 6.98(1H, m), 7.33(1H, s), 7.38(1H, d, J=8.1 Hz).	ESI-MS m/z: 480 [M+H]+
433		1H-NMR ($CDCl_3$) δ : 1.45-1.47 (3H, m), 2.06 (1H, m), 2.17 (1H, m), 2.87 (1H, m), 3.17 (1H, m), 3.26 (2H, q, J=10.8 Hz), 4.07 (1H, m), 4.14-4.22 (3H, m), 4.35 (1H, m), 4.62 (1H, m), 5.99 (1H, s), 6.85 (1H, d, J=8.4 Hz), 6.97-7.06 (3H, m).	ESI-MS m/z: 462 [M+H]+
434		1H-NMR ($CDCl_3$) δ : 0.76(2H, m), 1.04(2H, m), 2.24(2H, m), 2.91(1H, dd, J=16.7, 4.8 Hz), 3.12(1H, dd, J=16.7, 5.2 Hz), 3.62-3.71(3H, m), 3.76 (1H, dd, J=9.6, 4.6 Hz), 4.08(1H, m), 4.21(1H, m), 4.28(2H, m), 4.34(1H, m), 4.63(1H, m), 6.01(1H, s), 6.89-6.96(2H, m), 7.38(1H, m), 7.42(1H, dd, J=8.5, 2.1 Hz).	ESI-MS m/z: 477 [M+H]+

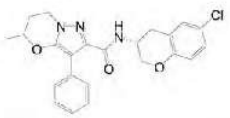
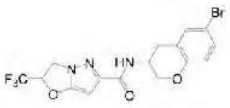
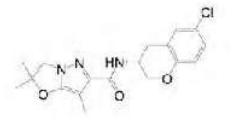
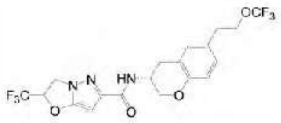
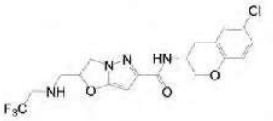
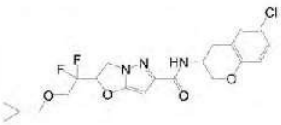
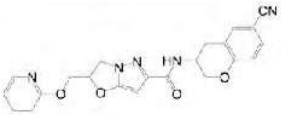
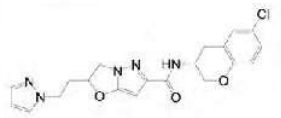
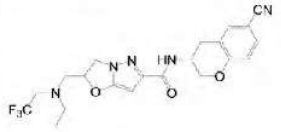
[1446]

[Table 58]

Example	Structural formula	NMR	MS
435		1H-NMR ($CDCl_3$) δ : 0.75(2H, m), 1.04(2H, m), 2.21(2H, m), 2.97(1H, dd, J=16.6, 4.4 Hz), 3.27(1H, dd, J=16.6, 5.3 Hz), 3.62-3.69(3H, m), 3.76(1H, ddd, J=10.1, 4.4, 0.5 Hz), 4.07(1H, m), 4.19(1H, m), 4.26-4.29(1H, m), 4.33(1H, m), 4.67(1H, m), 5.41(1H, m), 6.01(1H, s), 6.97-7.05(2H, m), 7.75-7.82(2H, m), 7.91(1H, m), 8.45(1H, d, J=2.5 Hz), 8.58(1H, dd, J =2.5, 1.6 Hz), 8.96(1H, d, J=1.5 Hz).	ESI-MS m/z: 530 [M+H]+
436		1H-NMR ($CDCl_3$) δ : 2.24(2H, m), 2.84(1H, dt, J=16.9, 3.3 Hz), 2.98(1H, m), 3.15(1H, dd, J=16.8, 4.9 Hz), 3.78-3.99(4H, m), 4.10(1H, m), 4.17-4.26(3H, m), 4.37(1H, m), 4.60(1H, m,), 6.03(1H, s), 6.78(1H, dd, J=22.7, 8.2 Hz), 6.97(1H, t, J=8.2 Hz), 7.23(1H, m), 7.23(1H, ddd, J=22.7, 8.2, 2.6 Hz).	ESI-MS m/z: 436 [M+H]+
437		1H-NMR ($CDCl_3$) δ : 1.50 (1H, m), 1.71 (1H, m), 1.67-1.75 (2H, m), 2.19-2.23 (4H, m), 2.86 (1H, m), 2.99-3.09 (2H, m), 3.16 (1H, m), 3.52 (1H, m), 3.62 (1H, m), 3.95-4.12 (2H, m), 4.17-4.21 (3H, m), 4.31 (1H, m), 4.61 (1H, m), 5.72-6.02 (2H, m), 6.84 (1H, d, J=8.2 Hz), 6.94 (1H, s), 7.00-7.02 (2H, m).	ESI-MS m/z: 448 [M+H]+
438		1H-NMR ($CDCl_3$) δ : 1.50 (1H, m), 1.71 (1H, m), 1.89-1.98 (2H, m), 2.17-2.22 (4H, m), 2.87 (1H, m), 3.18 (1H, m), 3.52 (1H, m), 3.62 (1H, m), 3.82 (2H, q, J=8.8 Hz), 3.95-4.11 (2H, m), 4.16-4.23 (3H, m), 4.32 (1H, m), 4.57 (2H, s), 4.62 (1H, m), 6.02 (1H, s), 6.87 (1H, d, J=8.2 Hz), 7.00 (1H, d, J=7.2 Hz), 7.04 (1H, s), 7.12 (1H, d, J=8.5 Hz).	ESI-MS m/z: 496 [M+H]+
439		1H-NMR ($CDCl_3$) δ : 2.15-2.27(2H, m), 2.28-2.58(4H, m), 2.90(1H, dd, J=16.5, 4.6 Hz), 3.16(1H, dd, J=16.5, 5.2 Hz), 3.55(1H, dd, J=10.4, 4.7 Hz), 3.63(1H, dd, J=10.4, 5.2 Hz), 4.08(1H, m), 4.15-4.41(5H, m), 4.63(1H, m), 5.20(1H, m), 6.03(1H, s), 6.89-6.96(2H, m), 7.38(1H, s), 7.42(1H, d, J=8.8 Hz).	ESI-MS m/z: 427 [M+H]+
440		1H-NMR ($CDCl_3$) δ : 2.17-19 (2H, m), 2.85-2.91 (3H, m), 3.18 (1H, dd, J=5.4, 16.7 Hz), 3.68-3.74 (4H, m), 3.82 (2H, q, J=8.7 Hz), 4.05-4.20 (5H, m), 4.57 (2H, s), 4.62 (1H, m), 6.00 (1H, s), 6.87 (1H, d, J=8.6 Hz), 7.00 (1H, d, J=8.2 Hz), 7.05 (1H, s), 7.12 (1H, d, J=8.4 Hz).	ESI-MS m/z: 517 [M+H]+
441		1H-NMR ($CDCl_3$) δ : 2.24 (2H, m), 2.87 (1H, dd, J=4.5, 17.4 Hz), 3.15-3.31 (3H, m), 3.84-3.98 (4H, m), 4.09 (1H, m), 4.16-4.22 (3H, m), 4.37 (1H, m), 4.62 (1H, m), 6.03 (1H, s), 6.86 (1H, d, J=8.3 Hz), 6.98-7.06 (3H, m).	ESI-MS m/z: 494 [M+H]+
442		1H-NMR ($CDCl_3$) δ : 2.20-2.26 (2H, m), 2.84 (1H, dd, J = 4.2, 16.9 Hz), 3.14 (1H, dd, J = 5.4, 16.8 Hz), 3.84-3.98 (4H, m), 4.09 (1H, m), 4.18-4.24 (3H, m), 4.37 (1H, m), 4.60 (1H, m), 6.02 (1H, s), 6.81 (1H, d, J = 8.7 Hz), 6.99 (1H, d, J = 7.8 Hz), 7.04 (1H, d, J = 2.5 Hz), 7.08 (1H, dd, J = 2.6, 8.7 Hz).	ESI-MS m/z: 446 [M+H]+
443		1H-NMR ($CDCl_3$) δ : 2.17-2.25 (2H, m), 2.87 (1H, m), 3.18 (1H, m), 3.66 (1H, m), 3.74 (1H, m), 4.06 (1H, m), 4.14-4.22 (3H, m), 4.36 (1H, m), 4.60-4.62 (3H, m), 6.02 (1H, s), 6.86-6.91 (2H, m), 7.01-7.07 (2H, m), 7.13 (1H, t, J=7.7 Hz), 7.29-7.38 (5H, m).	ESI-MS m/z: 420 [M+H]+

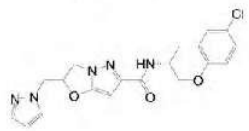
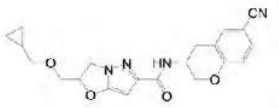
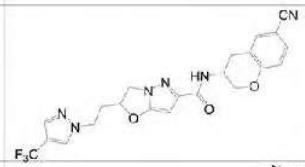
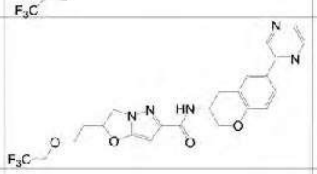
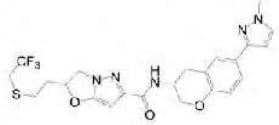
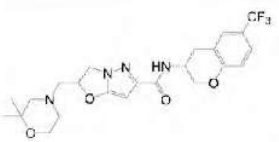
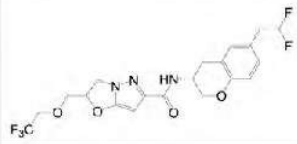
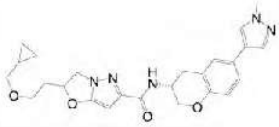
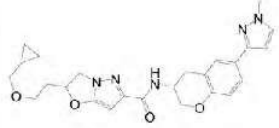
[1447]

[Table 59]

Example	Structural formula	NMR	MS
444		1H-NMR ($CDCl_3$) δ : 1.46 (3H, d, J=6.2 Hz), 2.04 (1H, m), 2.22 (1H, m), 2.80 (1H, m), 3.09 (1H, m), 4.10-4.25 (4H, m), 4.38 (1H, m), 4.58 (1H, m), 6.77 (1H, d, J=8.7 Hz), 6.92 (1H, d, J=7.7 Hz), 7.00 (1H, s), 7.07 (1H, d, J=8.7 Hz), 7.22 (1H, m), 7.31-7.34 (2H, m), 7.51 (2H, d, J=7.8 Hz).	ESI-MS m/z: 424 [M+H]+
445		1H-NMR ($CDCl_3$) δ : 2.84(1H, br d, J=16.9 Hz), 3.16(1H, dd, J=16.9, 5.2 Hz), 4.15-4.24(2H, m), 4.36(1H, dd, J=10.7, 5.5 Hz), 4.52(1H, t, J=9.5 Hz), 4.60(1H, m), 5.50(1H, m), 6.02(1H, m), 6.76(1H, d, J=8.6 Hz), 6.97(1H, d, J=8.0 Hz), 7.19(1H, m), 7.22(1H, br d, J=8.8 Hz).	ESI-MS m/z: 433 [M+H]+
446		1H-NMR ($CDCl_3$) δ : 1.53(3H, m), 1.54(3H, s), 2.09(3H, s), 2.76(1H, dd, J=16.8, 4.0 Hz), 3.07(1H, dd, J=16.8, 5.3 Hz), 3.87(2H, s), 4.11(2H, m), 4.51(1H, m), 6.72(1H, d, J=8.6 Hz), 6.89-6.97(2H, m), 7.00(1H, br d, J=6.4 Hz).	ESI-MS m/z: 362 [M+H]+
447		1H-NMR ($CDCl_3$) δ : 2.84(1H, dt, J=16.7, 4.0 Hz), 2.90(1H, t, J=7.2 Hz), 3.17(1H, dd, J=16.7, 5.4 Hz), 4.11(2H, t, J=7.2 Hz), 4.14-4.24(2H, m), 4.36(1H, m), 4.51(1H, m), 4.61(1H, m), 5.50(1H, m,), 6.02(1H, s), 6.83(1H, br d, J=, 8.3 Hz), 6.90(1H, br s), 6.98(1H, dd, J=8.5, 2.0Hz), 7.01(1H, m).	ESI-MS m/z: 466 [M+H]+
448		1H-NMR ($CDCl_3$) δ : 1.62 (1H, s), 2.83 (1H, m), 3.06 (1H, m), 3.15 (1H, dd, J = 5.3, 16.8 Hz), 3.25 (3H, s), 4.11-4.18 (3H, m), 4.29 (1H, dt, J = 2.7, 9.1 Hz), 4.61 (1H, m), 5.38 (1H, m), 5.90 (1H, s), 6.80 (1H, d, J = 8.7 Hz), 6.99 (1H, d, J = 5.0 Hz), 7.04 (1H, s), 7.08 (1H, dd, J = 2.2, 8.7 Hz).	ESI-MS m/z: 431 [M+H]+
449		1H-NMR ($CDCl_3$) δ : 0.18-0.22 (2H, m), 0.54 (2H, t, J=8.9 Hz), 1.02 (1H, m), 2.84 (1H, m), 3.15 (1H, m), 3.32-3.41 (2H, m), 3.77-3.98 (2H, m), 4.19 (2H, s), 4.38 (1H, m), 4.48 (1H, m), 4.61 (1H, m), 5.59 (1H, m), 5.95 (1H, s), 6.81 (1H, d, J=8.8 Hz), 6.99 (1H, d, J=4.2 Hz), 7.04 (1H, s), 7.08 (1H, d, J=8.8 Hz).	ESI-MS m/z: 454 [M+H]+
450		1H-NMR ($CDCl_3$) δ : 2.90 (1H, m), 3.18 (1H, dd, J = 5.3, 16.5 Hz), 4.22-4.31 (3H, m), 4.40 (1H, t, J = 9.5 Hz), 4.62-4.73 (3H, m), 5.65 (1H, m), 5.93 (1H, s), 6.75 (1H, dd, J = 4.9, 8.3 Hz), 6.92-6.94 (3H, m), 7.38 (1H, s), 7.42 (1H, d, J = 8.5 Hz), 7.60 (1H, t, J = 7.7 Hz), 8.12 (1H, m).	ESI-MS m/z: 418 [M+H]+
451		1H-NMR ($CDCl_3$) δ : 2.40 (1H, m), 2.48 (1H, m), 2.83 (1H, d, J=16.9 Hz), 3.14 (1H, dd, J=5.1, 16.9 Hz), 3.76 (1H, m), 4.18 (2H, s), 4.26 (1H, m), 4.38 (2H, m), 4.59 (1H, m), 5.15 (1H, m), 5.90 (1H, s), 6.26 (1H, s), 6.79 (1H, d, J=8.6 Hz), 6.98 (1H, d, J=7.0 Hz), 7.03 (1H, s), 7.07 (1H, d, J=8.8 Hz), 7.42 (1H, s), 7.54 (1H, s).	ESI-MS m/z: 414 [M+H]+
452		1H-NMR ($CDCl_3$) δ : 1.06 (3H, t, J = 7.1 Hz), 2.80 (2H, q, J = 7.1 Hz), 2.90 (1H, dd, J = 4.4, 16.6 Hz), 3.01 (1H, m), 3.08-3.20 (4H, m), 4.13 (1H, m), 4.23-4.31 (3H, m), 4.64 (1H, m), 5.34 (1H, m), 5.90 (1H, s), 6.92-6.94 (2H, m), 7.38 (1H, s), 7.42 (1H, d, J = 8.6 Hz).	ESI-MS m/z: 450 [M+H]+

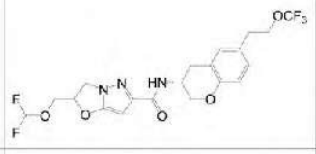
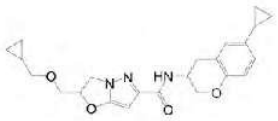
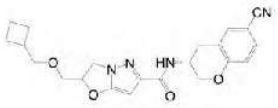
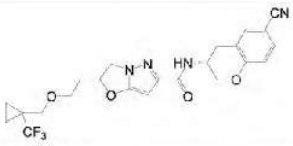
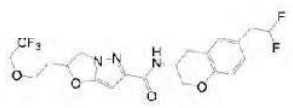
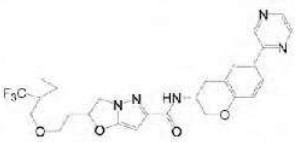
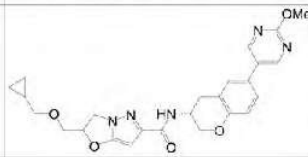
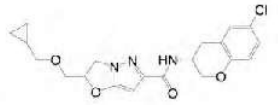
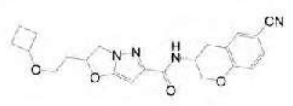
[1448]

[Table 60]

Example	Structural formula	NMR	MS
453		1H-NMR ($CDCl_3$) δ : 2.82 (1H, dd, J = 3.6, 17.1 Hz), 3.13 (1H, dd, J = 5.2, 16.8 Hz), 4.12-4.18 (3H, m), 4.33 (1H, m), 4.55-4.59 (3H, m), 5.63 (1H, m), 5.89 (1H, m), 6.27 (1H, d, J = 2.0 Hz), 6.80 (1H, d, J = 8.6 Hz), 6.95 (1H, d, J = 7.6 Hz), 7.03 (1H, s), 7.07 (1H, d, J = 8.7 Hz), 7.47 (1H, s), 7.52 (1H, s).	ESI-MS m/z: 400 [M+H]+
454		1H-NMR ($CDCl_3$) δ : 0.18 (2H, s), 0.54 (2H, d, J = 7.8 Hz), 1.02 (1H, s), 2.90 (1H, dd, J = 4.4, 16.5 Hz), 3.17 (1H, m), 3.37 (2H, dd, J = 3.2, 6.8 Hz), 3.77-3.79 (2H, m), 4.18 (1H, m), 4.23-4.33 (3H, m), 4.64 (1H, m), 5.41 (1H, m), 5.91 (1H, s), 6.93 (2H, d, J = 8.4 Hz), 7.38 (1H, s), 7.42 (1H, d, J = 8.6 Hz).	ESI-MS m/z: 395 [M+H]+
455		1H-NMR ($CDCl_3$) δ : 2.44(1H, m), 2.52(1H, m), 2.89(1H, br d, J=16.8 Hz), 3.17(1H, dd, J=16.7, 5.1 Hz), 3.83(1H, m), 4.27(2H, m), 4.33(1H, m), 4.40(2H, m), 4.63(1H, m), 5.21(1H, m), 5.93(1H, s), 6.91(1H, m), 6.92(1H, d, J=8.6 Hz), 7.37(1H, s), 7.42(1H, d, J=8.6 Hz), 7.70(1H, m), 7.74(1H, s).	ESI-MS m/z: 473 [M+H]+
456		1H-NMR ($CDCl_3$) δ : 2.19 (2H, m), 2.97 (1H, dd, J=4.5, 16.7 Hz), 3.27 (1H, dd, J=5.6, 17.2 Hz), 3.83 (4H, m), 3.96 (1H, m), 4.28 (2H, s), 4.34 (1H, m), 4.68 (1H, m), 5.44 (1H, m), 5.90 (1H, s), 7.00 (2H, d, J=7.7 Hz), 7.77 (1H, s), 7.80 (1H, s), 8.45 (1H, d, J=1.9 Hz), 8.58 (1H, s), 8.96 (1H, s).	ESI-MS m/z: 490 [M+H]+
457		1H-NMR ($CDCl_3$) δ : 2.05 (1H, m), 2.24 (1H, m), 2.84-2.92 (3H, m), 3.11 (2H, m), 3.22 (1H, dd, J=4.4, 17.2 Hz), 3.88-3.93 (4H, m), 4.22 (2H, m), 4.38 (1H, m), 4.64 (1H, m), 5.41 (1H, m), 5.89 (1H, s), 6.44 (1H, d, J=2.0 Hz), 6.89 (1H, d, J=8.2 Hz), 7.02 (1H, m), 7.35 (1H, d, J=2.0 Hz), 7.51 (1H, s), 7.54 (1H, s).	ESI-MS m/z: 508 [M+H]+
458		1H-NMR ($CDCl_3$) δ : 1.18(3H, m), 1.20(3H, m), 2.33(2H, m), 2.49(2H, m), 2.73(2H, m), 2.91(1H, dd, J=16.7, 3.9 Hz), 3.21(1H, dd, J=16.7, 5.3 Hz), 3.70(2H, m), 4.11-4.35(4H, m), 4.66(1H, m), 5.40(1H, m), 5.89(1H, s), 6.94(1H, d, J=8.5 Hz), 6.98(1H, m), 7.33(1H, s), 7.38(1H, d, J=8.5 Hz).	ESI-MS m/z: 461 [M+H]+
459		1H-NMR ($CDCl_3$) δ : 2.85 (1H, m), 3.04 (2H, dt, J = 4.5, 17.4 Hz), 3.17 (1H, dd, J = 5.5 16.8 Hz), 3.89-3.98 (4H, m), 4.16-4.21 (3H, m), 4.32 (1H, dt, J = 4.0, 9.3 Hz), 4.62 (1H, m), 5.41 (1H, m), 5.88 (1H, tt, J = 4.5, 56.3 Hz), 5.92 (1H, s), 6.84 (1H, d, J = 8.4 Hz), 6.93 (1H, s), 7.01 (2H, d, J = 8.0 Hz).	ESI-MS m/z: 462 [M+H]+
460		1H-NMR ($CDCl_3$) δ : 0.18 (2H, m), 0.52 (2H, m), 1.02 (1H, m), 2.16 (2H, m), 2.88 (1H, m), 3.20 (1H, dd, J=5.0, 16.9 Hz), 3.26 (2H, d, J=6.6 Hz), 3.62 (2H, m), 3.93 (3H, s), 4.00 (1H, m), 4.21 (2H, s), 4.33 (1H, m), 4.64 (1H, m), 5.44 (1H, m), 5.89 (1H, s), 6.87 (1H, d, J=8.4 Hz), 7.04 (1H, d, J=8.5 Hz), 7.15 (1H, m), 7.22 (1H, d, J=8.3 Hz), 7.51 (1H, s), 7.67 (1H, s).	ESI-MS m/z: 464 [M+H]+
461		1H-NMR ($CDCl_3$) δ : 0.18 (2H, m), 0.53 (2H, m), 1.02 (1H, m), 2.16 (2H, m), 2.89 (1H, m), 3.19-3.27 (3H, m), 3.62 (2H, m), 3.93 (3H, s), 3.99 (1H, m), 4.22 (2H, m), 4.32 (1H, m), 4.64 (1H, m), 5.44 (1H, m), 5.88 (1H, s), 6.44 (1H, d, J=2.1 Hz), 6.89 (1H, d, J=8.2 Hz), 7.02 (1H, d, J=7.6 Hz), 7.35 (1H, d, J=2.0 Hz), 7.51-7.53 (2H, m).	ESI-MS m/z: 464 [M+H]+

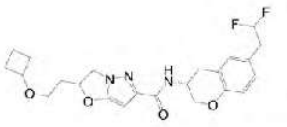
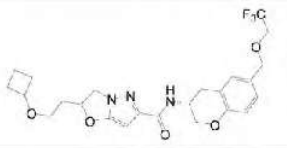
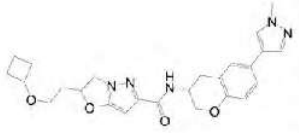
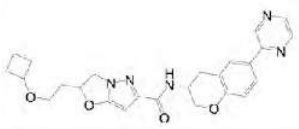
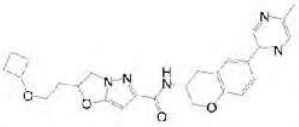
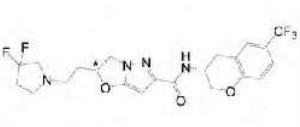
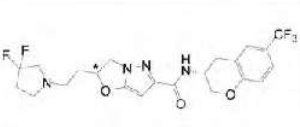
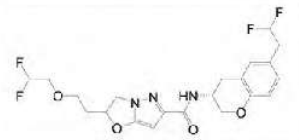
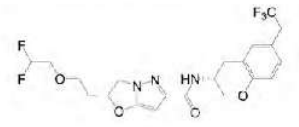
[1449]

[Table 61]

Example	Structural formula	NMR	MS
462		1H-NMR ($CDCl_3$) δ : 2.82-2.92 (3H, m), 3.16 (1H, dd, J = 5.0, 16.5 Hz), 4.08-4.24 (7H, m), 4.36 (1H, m), 4.61 (1H, m), 5.46 (1H, m), 5.93 (1H, s), 6.36 (1H, dt, J = 5.6, 109.3 Hz), 6.82 (1H, d, J = 8.3 Hz), 6.90 (1H, s), 6.97-7.03 (2H, m).	ESI-MS m/z: 476 [M+H]+
463		1H-NMR ($CDCl_3$) δ : 0.15-0.21 (2H, m), 0.51-0.62 (4H, m), 0.86-0.91 (2H, m), 1.02 (1H, m), 1.81 (1H, m), 2.81 (1H, d, J = 15.6 Hz), 3.14 (1H, m), 3.37 (2H, dd, J = 2.7, 6.9 Hz), 3.73-3.82 (2H, m), 4.14-4.19 (3H, m), 4.29 (1H, dt, J = 4.0, 9.2 Hz), 4.60 (1H, m), 5.40 (1H, m), 5.90 (1H, m), 6.76-6.78 (2H, m), 6.84 (1H, dd, J = 2.0, 8.4 Hz), 7.02 (1H, m).	ESI-MS m/z: 410 [M+H]+
464		1H-NMR ($CDCl_3$) δ : 1.83-1.72 (2H, m), 1.77-1.93 (2H, m), 1.96-2.04 (2H, m), 2.53 (1H, m), 2.90 (1H, m), 3.17 (1H, dd, J = 5.1, 16.7 Hz), 3.47-3.50 (2H, m), 3.74-3.75 (2H, m), 4.17 (1H, m), 4.23-4.31 (3H, m), 4.64 (1H, m), 5.39 (1H, m), 5.91 (1H, s), 6.91-6.94 (2H, m), 7.38 (1H, s), 7.42 (1H, d, J = 8.5 Hz).	ESI-MS m/z: 409 [M+H]+
465		1H-NMR ($CDCl_3$) δ : 0.72(2H, m), 1.02(2H, m), 2.17(2H, m), 2.89(1H, dd, J=17.3, 4.5 Hz), 3.17(1H, dd, J=17.3, 5.1 Hz), 3.47(1H, dd, J=10.8, 6.4 Hz), 3.59(1H, d, J=10.6 Hz), 3.58-3.68(2H, m), 4.01(1H, dd, J=9.8, 9.4 Hz), 4.24-4.29(2H, m), 4.34(1H, m), 4.65(1H, m), 5.42(1H, m), 5.89(1H, s), 6.86-6.97(2H, m), 7.38(1H, s), 7.42(1H, dd, J=8.4, 2.0 Hz).	ESI-MS m/z: 477 [M+H]+
466		1H-NMR ($CDCl_3$) δ : 2.19 (2H, m), 2.84 (1H, d, J=15.4 Hz), 3.03 (2H, t, J=17.3 Hz), 3.16 (1H, dd, J=4.7, 17.1 Hz), 3.80-3.96 (4H, m), 3.96 (1H, m), 4.18 (2H, s), 4.35 (1H, m), 4.61 (1H, m), 5.43 (1H, m), 5.73-6.02 (2H, m), 6.83 (1H, dd, J=1.8, 8.2 Hz), 6.93 (1H, s), 7.00 (2H, d, J=8.3 Hz).	ESI-MS m/z: 476 [M+H]+
467		1H-NMR ($CDCl_3$) δ : 0.71(2H, m), 1.01(2H, m), 2.16(2H, m), 2.97(1H, dd J=16.9, 3.7 Hz), 3.27(1H, dd, J=16.9, 5.2 Hz), 3.47(1H, dd, J=11.0, 6.2 Hz), 3.55(1H, dd, J=11.0, 1.6 Hz), 3.57-3.69(2H, m), 3.99(1H, m), 4.24-4.29(1H, m), 4.32(1H, m), 4.68(1H, m), 5.41(1H, m), 5.89(1H, s), 6.97-7.05(2H, m), 7.78-7.82(2H, m), 7.01(1H, m), 8.45(1H, d, J=2.5 Hz), 8.58(1H, t, J=1.6 Hz), 8.96(1H, d, J=1.2 Hz).	ESI-MS m/z: 530 [M+H]+
468		1H-NMR ($CDCl_3$) δ : 0.15-0.20 (2H, m), 0.50-0.57 (2H, m), 1.02 (1H, m), 2.95 (1H, m), 3.25 (1H, dd, J = 4.7, 16.6 Hz), 3.36 (2H, t, J = 6.6 Hz), 3.75-3.81 (2H, m), 4.05 (3H, s), 4.18 (1H, m), 4.25-4.33 (3H, m), 4.67 (1H, m), 5.41 (1H, m), 5.92 (1H, s), 6.98 (1H, d, J = 8.4 Hz), 7.03 (1H, m), 7.19 (1H, s), 7.29 (1H, m), 8.66 (2H, s).	ESI-MS m/z: 478 [M+H]+
469		1H-NMR ($CDCl_3$) δ : 0.15-0.21 (2H, m), 0.51-0.57 (2H, m), 1.02 (1H, m), 2.84 (1H, d, J = 16.6 Hz), 3.15 (1H, dd, J = 5.4, 16.6 Hz), 3.37 (2H, dd, J = 3.2, 6.9 Hz), 3.74-3.82 (2H, m), 4.15-4.19 (3H, m), 4.30 (1H, m), 4.61 (1H, m), 5.41 (1H, m), 5.92 (1H, s), 6.80 (1H, d, J = 8.7 Hz), 7.00-7.09 (3H, m).	ESI-MS m/z: 404 [M+H]+
470		1H-NMR ($CDCl_3$) δ : 1.49 (1H, m), 1.69 (1H, m), 1.82-1.89 (2H, m), 2.08-2.19 (4H, m), 2.90 (1H, m), 3.17 (1H, m), 3.50 (2H, t, J=5.5 Hz), 3.89 (1H, t, J=7.3 Hz), 4.00 (1H, t, J=8.4 Hz), 4.27-4.35 (3H, m), 4.64 (1H, m), 5.43 (1H, m), 5.89 (1H, s), 6.92 (2H, d, J=8.4 Hz), 7.38-7.43 (2H, m).	ESI-MS m/z: 409 [M+H]+

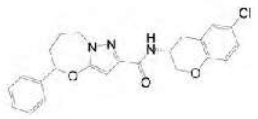
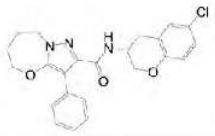
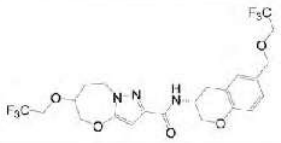
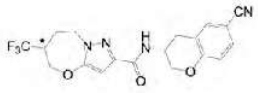
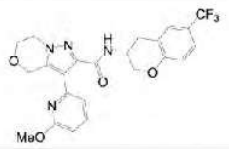
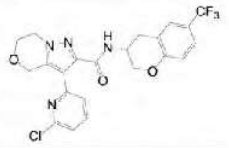
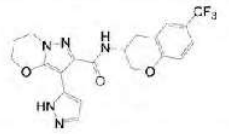
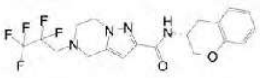
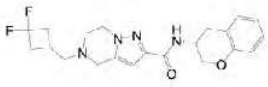
[1450]

[Table 62]

Example	Structural formula	NMR	MS
471		1H-NMR ($CDCl_3$) δ : 1.51 (1H, m), 1.69 (1H, m), 1.82-1.90 (2H, m), 2.05-2.21 (4H, m), 2.85 (1H, dd, J=3.9, 16.4 Hz), 3.06 (2H, dt, J=4.5, 26.1 Hz), 3.17 (1H, dd, J=5.4, 16.5 Hz), 3.48-3.50 (2H, m), 3.90 (1H, m), 3.99 (1H, m), 4.19 (2H, s), 4.33 (1H, m), 4.62 (1H, m), 5.41 (1H, m), 5.73-6.02 (2H, m), 6.83 (1H, d, J=8.3 Hz), 6.93 (1H, s), 7.00 (2H, d, J=8.2 Hz).	ESI-MS m/z: 448 [M+H]+
472		1H-NMR ($CDCl_3$) δ : 1.49 (1H, m), 1.70 (1H, m), 1.83-1.90 (2H, m), 2.07-2.19 (4H, m), 2.86 (1H, m), 3.16 (1H, m), 3.49-3.51 (2H, m), 3.81 (2H, q, J=8.8 Hz), 3.89 (1H, t, J=7.1 Hz), 3.99 (1H, m), 4.20 (2H, s), 4.32 (1H, dt, J=4.2, 9.0 Hz), 4.56 (2H, s), 4.63 (1H, m), 5.43 (1H, m), 5.89 (1H, s), 6.87 (1H, d, J=8.5 Hz), 7.00 (1H, d, J=7.7 Hz), 7.04 (1H, s), 7.11 (1H, d, J=8.2 Hz).	ESI-MS m/z: 496 [M+H]+
473		1H-NMR ($CDCl_3$) δ : 1.50 (1H, m), 1.68 (1H, m), 1.80-1.89 (2H, m), 2.04-2.21 (4H, m), 2.88 (1H, dd, J=3.9, 16.7 Hz), 3.20 (1H, dd, J=5.3, 16.7 Hz), 3.48-3.51 (2H, m), 3.88-4.01 (5H, m), 4.21 (2H, d, J=2.8 Hz), 4.32 (1H, m), 4.64 (1H, m), 5.42 (1H, m), 5.89 (1H, s), 6.87 (1H, d, J=8.4 Hz), 7.04 (1H, d, J=8.1 Hz), 7.14 (1H, d, J=1.3 Hz), 7.23 (1H, dd, J=2.2, 8.4 Hz), 7.51 (1H, s), 7.67 (1H, s).	ESI-MS m/z: 464 [M+H]+
474		1H-NMR ($CDCl_3$) δ : 1.51 (1H, m), 1.68 (1H, m), 1.82-1.89 (2H, m), 2.05-2.21 (4H, m), 2.97 (1H, m), 3.27 (1H, m), 3.48-3.51 (2H, m), 3.89 (1H, m), 3.98 (1H, m), 4.27-4.35 (3H, m), 4.68 (1H, m), 5.42 (1H, m), 5.89 (1H, s), 6.99-7.02 (2H, m), 7.78-7.80 (2H, m), 8.45 (1H, d, J=2.5 Hz), 8.58 (1H, t, J=2.0 Hz), 8.96 (1H, d, J=1.4 Hz).	ESI-MS m/z: 462 [M+H]+
475		1H-NMR ($CDCl_3$) δ : 1.51 (1H, m), 1.69 (1H, m), 1.82-1.89 (2H, m), 2.05-2.18 (4H, m), 2.50-2.59 (3H, m), 2.96 (1H, m), 3.26 (1H, dd, J=5.3, 16.8 Hz), 3.48-3.50 (2H, m), 3.89 (1H, m), 3.98 (1H, m), 4.20-4.34 (3H, m), 4.67 (1H, m), 5.43 (1H, m), 5.89 (1H, s), 6.97-7.03 (2H, m), 7.73-7.75 (2H, m), 8.45 (1H, s), 8.83 (1H, s).	ESI-MS m/z: 476 [M+H]+
476		1H-NMR ($CDCl_3$) δ : 1.98 (1H, m), 2.10 (1H, m), 2.21-2.32 (2H, m), 2.62 (1H, m), 2.69-2.76 (3H, m), 2.86-2.94 (3H, m), 3.20 (1H, dd, J = 5.1, 16.8 Hz), 3.93 (1H, t, J = 8.8 Hz), 4.26 (2H, s), 4.36 (1H, t, J = 9.0 Hz), 4.65 (1H, m), 5.40 (1H, m), 5.89 (1H, s), 6.93-7.00 (2H, m), 7.33 (1H, s), 7.38 (1H, d, J = 8.6 Hz).	ESI-MS m/z: 487 [M+H]+
477		1H-NMR ($CDCl_3$) δ : 1.99 (1H, m), 2.11 (1H, m), 2.22-2.33 (2H, m), 2.63 (1H, m), 2.69-2.77 (3H, m), 2.86-2.93 (3H, m), 3.21 (1H, dd, J = 5.5, 16.8 Hz), 3.94 (1H, t, J = 9.0 Hz), 4.25 (2H, d, J = 2.6 Hz), 4.35 (1H, t, J = 9.1 Hz), 4.65 (1H, m), 5.39 (1H, m), 5.89 (1H, s), 6.93-6.98 (2H, m), 7.33 (1H, s), 7.38 (1H, d, J = 8.6 Hz).	ESI-MS m/z: 487 [M+H]+
478		1H-NMR ($CDCl_3$) δ : 2.17 (2H, m), 2.85 (1H, dd, J=3.4, 16.7 Hz), 3.03 (2H, td, J=4.3, 17.4 Hz), 3.17 (1H, dd, J=5.2, 16.7 Hz), 3.63-3.75 (4H, m), 3.97 (1H, m), 4.19 (2H, s), 4.34 (1H, m), 4.61 (1H, m), 5.43 (1H, m), 5.70-6.03 (3H, m), 6.83 (1H, d, J=8.3 Hz), 6.93 (1H, s), 7.01 (2H, d, J=8.0 Hz).	ESI-MS m/z: 458 [M+H]+
479		1H-NMR ($CDCl_3$) δ :2.18 (2H, m), 2.86 (1H, m), 3.15-3.30 (3H, m), 3.63-3.75 (4H, m), 3.97 (1H, m), 4.20 (2H, s), 4.35 (1H, m), 4.62 (1H, m), 5.43 (1H, m), 5.84 (1H, m), 5.90 (1H, s), 6.85 (1H, d, J=8.4 Hz), 6.97-7.06 (3H, m).	ESI-MS m/z: 476 [M+H]+

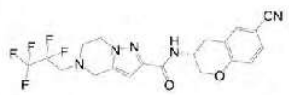
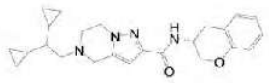
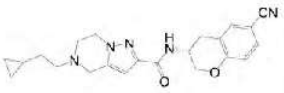
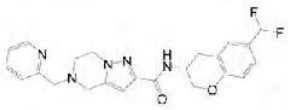
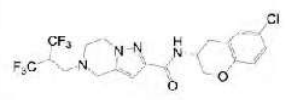
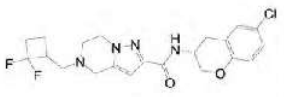
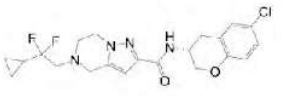
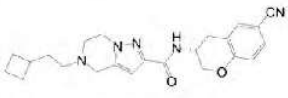
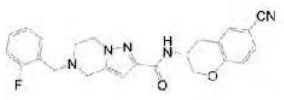
[1451]

[Table 63]

Example	Structural formula	NMR	MS
480		1H-NMR ($CDCl_3$) δ : 1.86 (1H, m), 2.03-2.25 (3H, m), 2.86 (1H, m), 3.15 (1H, m), 4.14 (1H, t, J=12.3 Hz), 4.20 (2H, d, J=2.9 Hz), 4.40 (1H, d, J=14.4 Hz), 4.59-4.69 (2H, m), 6.26 (1H, s), 6.82 (1H, m), 7.00-7.05 (2H, m), 7.09 (1H, d, J=8.7 Hz), 7.35-7.41 (6H, m).	ESI-MS m/z: 424 [M+H]+
481		1H-NMR ($CDCl_3$) δ : 1.88 (2H, m), 2.06 (2H,m), 2.76-2.81 (1H, m), 3.06-3.13 (1H, m), 4.04 (2H, m), 4.15 (2H, m), 4.26 (2H,m), 4.57 (1H, m), 6.77 (1H, m), 6.92 (1H, d, J=8.20 Hz), 7.00 (1H, s), 7.07 (1H, d, J=8.20 Hz), 7.27 (1H, m), 7.13-7.35 (2H,m), 7.44-7.47 (2H, m).	ESI-MS m/z: 424 [M+H]+
482		1H-NMR ($CDCl_3$) δ : 2.05-2.07 (2H, m), 2.88 (1H, m), 3.18 (1H, m), 3.83 (2H, q, J=8.6 Hz), 3.91-4.16 (6H, m), 4.21 (2H, s), 4.43 (1H, m), 4.57 (2H, s), 4.61 (1H, m), 6.26 (1H, s), 6.88 (1H, d, J=8.9 Hz), 7.01-7.05 (2H, m), 7.12 (1H, d, J=7.9 Hz).	ESI-MS m/z: 524 [M+H]+
483		1H-NMR ($CDCl_3$) δ : 1.91 (1H, m), 2.30 (1H, m), 2.82 (1H, m), 2.91 (1H, m), 3.18 (1H, m), 3.80 (1H, m), 4.09 (1H, m), 4.27-4.29 (2H, m), 4.45 (1H, m), 4.56 (1H,), 4.64 (1H,), 6.28 (1H, s), 6.91-7.00 (2H, m), 7.39 (1H, s), 7.43 (1H, m).	ESI-MS m/z: 407 [M+H]+
484		1H-NMR ($CDCl_3$) δ : 2.96 (1H, m), 3.22 (1H, m), 3.91 (3H, s), 4.13 (2H, d, J=4.9 Hz), 4.19 (2H, d, J=5.0 Hz), 4.28 (2H, s), 4.66 (1H, m), 5.17 (2H, s), 6.60 (1H, d, J=8.6 Hz), 6.95 (1H, d, J=8.8 Hz), 7.34 (2H, s), 7.39 (1H, d, J=8.6 Hz), 7.60 (1H, t, J=7.9 Hz), 7.91 (1H, d, J=7.5 Hz).	ESI-MS m/z: 475 [M+H]+
485		1H-NMR ($CDCl_3$) δ : 2.94-2.99 (1H, m), 3.20-3.26 (1H, m), 4.13 (2H, m), 4.18 (2H, m), 4.29 (2H, m), 4.64 (1H, m), 5.11 (2H, s), 6.96 (1H,m), 7.15 (1H, m), 7.35-7.41 (3H, m), 7.66 (1H, m), 8.34 (1H, m).	ESI-MS m/z: 479 [M+H]+
486		1H-NMR ($CDCl_3$) δ : 2.30-2.55 (2H, m), 2.94-2.95 (1H, m), 3.22-3.28 (1H, m), 4.15-4.19 (2H, m), 4.30 (2H, m), 4.44-4.46 (2H, m), 4.69 (1H, m), 6.56 (1H, m), 6.97 (1H, d, J=8.5 Hz), 7.44-7.58 (3H, m), 7.64-7.69 (2H, m).	ESI-MS m/z: 434 [M+H]+
487		1H-NMR ($CDCl_3$) δ : 2.88 (1H, m), 3.16-3.25 (5H, m), 3.95 (2H, s), 4.13-4.16 (2H, m), 4.19-4.21 (2H, m), 4.64 (1H, m), 6.53 (1H, s), 6.87-6.92 (2H, m), 7.06 (2H, d, J=7.7 Hz), 7.13 (1H, t, J=7.8 Hz).	ESI-MS m/z: 431 [M+H]+
488		1H-NMR ($CDCl_3$) δ : 2.20-2.39 (3H, m), 2.65-2.74 (4H, m), 2.85-2.93 (3H, m), 3.19 (1H, dd, J=5.1, 16.6 Hz), 3.66 (2H, s), 4.12 (2H, t, J=5.6 Hz), 4.16-4.24 (2H, m), 4.64 (1H, m), 6.51 (1H, s), 6.87-6.92 (2H, m), 7.04-7.07 (2H, m), 7.13 (1H, t, J=7.7 Hz).	ESI-MS m/z: 403 [M+H]+

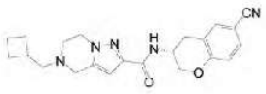
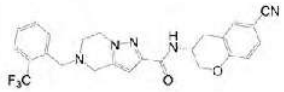
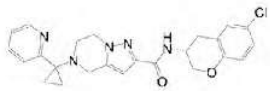
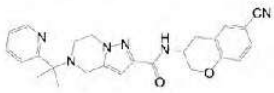
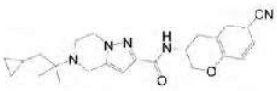
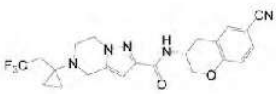
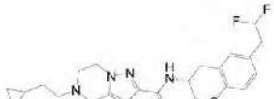
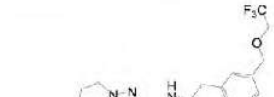
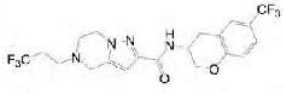
[1452]

[Table 64]

Example	Structural formula	NMR	MS
489		1H-NMR ($CDCl_3$) δ : 2.92 (1H, dd, J=4.8, 16.5 Hz), 3.15-3.26 (5H, m), 3.96 (2H, s), 4.16 (2H, t, J=5.5 Hz), 4.24-4.32 (2H, m), 4.64 (1H, m), 6.54 (1H, s), 6.92-6.96 (2H, m), 7.39-7.44 (2H, m).	ESI-MS m/z: 456 [M+H]+
490		1H-NMR ($CDCl_3$) δ : 0.15-0.23 (4H, m), 0.38-0.48 (4H, m), 0.63-0.68 (2H, m), 1.26 (1H, m), 2.62 (2H, d, J=6.6 Hz), 2.89-2.93 (3H, m), 3.18 (1H, m), 3.68 (2H, s), 4.11 (2H, t, J=5.5 Hz), 4.18-4.22 (2H, m), 4.63 (1H, m), 6.49 (1H, s), 6.88-6.91 (2H, m), 7.04-7.07 (2H, m), 7.12 (1H, t, J=8.0 Hz).	ESI-MS m/z: 407 [M+H]+
491		1H-NMR ($CDCl_3$) δ : 0.06 (2H, q, J=5.0 Hz), 0.44-0.48 (2H, m), 0.70 (1H, m), 1.45 (2H, q, J=7.3 Hz), 2.65 (2H, t, J=7.6 Hz), 2.89-2.94 (3H, m), 3.17 (1H, dd, J=5.5, 16.6 Hz), 3.68 (2H, s), 4.13 (2H, t, J=5.6 Hz), 4.22-4.32 (2H, m), 4.64 (1H, m), 6.51 (1H, s), 6.92-6.95 (2H, m), 7.38-7.43 (2H, m).	ESI-MS m/z: 392 [M+H]+
492		1H-NMR ($CDCl_3$) δ : 2.91 (1H, m), 3.00 (2H, m), 3.19 (1H, m), 3.75 (2H, d, J=4.9 Hz), 3.87 (2H, d, J=5.4 Hz), 4.15 (2H, m), 4.23 (2H, m), 4.63 (1H, m), 6.40-6.70 (2H, m), 6.92 (1H, t, J=7.8 Hz), 7.01 (1H, m), 7.23 (3H, m), 7.41 (1H, t, J=5.8 Hz), 7.69 (1H, m), 8.58 (1H, m).	ESI-MS m/z: 440 [M+H]+
493		1H-NMR ($CDCl_3$) δ : 2.85 (1H, dd, J=3.9, 16.9 Hz), 3.01-3.03 (4H, m), 3.06-3.16 (1H, m), 3.80 (2H, s), 4.15 (2H, t, J=5.5 Hz), 4.19 (2H, d, J=2.8 Hz), 4.61 (1H, m), 6.54 (1H, s), 6.81 (1H, d, J=8.7 Hz), 7.01-7.10 (3H, m).	
494		1H-NMR ($CDCl_3$) δ : 0.88 (1H, m), 1.27 (2H, m), 1.99 (1H, m), 2.47 (2H, m), 2.66 (1H, m), 2.85-3.08 (4H, m), 3.16 (1H, m), 3.71 (2H, s), 4.13-4.32 (3H, m), 4.63 (1H, m), 6.52 (1H, d, J=11.3 Hz), 6.82 (1H, m), 7.05 (2H, m), 7.29 (1H, s).	ESI-MS m/z: 437 [M+H]+
495		1H-NMR ($CDCl_3$) δ : 0.59 (2H, m), 0.68 (2H, m), 1.40 (1H, m), 2.86 (1H, dd, J=4.2, 17.1 Hz), 2.99 (2H, t, J=13.2 Hz), 3.15 (3H, m), 3.91 (2H, s), 4.14 (2H, t, J=5.5 Hz), 4.19 (2H, d, J=3.0 Hz), 4.62 (1H, m), 6.52 (1H, s), 6.81 (1H, d, J=8.6 Hz), 7.01-7.10 (3H, m).	ESI-MS m/z: 437 [M+H]+
496		1H-NMR ($CDCl_3$) δ : 1.58-1.66 (4H, m), 1.76-1.91 (2H, m), 2.05 (2H, m), 2.30 (1H, m), 2.44 (2H, m), 2.88-2.94 (3H, m), 3.17 (1H, dd, J=5.2, 16.7 Hz), 3.65 (2H, s), 4.12 (2H, t, J=5.5 Hz), 4.22-4.32 (2H, m), 4.64 (1H, m), 6.51 (1H, s), 6.92-6.96 (2H, m), 7.38 (1H, s), 7.42 (1H, dd, J=2.1, 8.5 Hz).	ESI-MS m/z: 406 [M+H]+
497		1H-NMR ($CDCl_3$) δ : 2.91 (1H, dd, J=4.5, 16.3 Hz), 2.97 (2H, t, J=6.0 Hz), 3.17 (1H, dd, J=5.2, 16.7 Hz), 3.72 (2H, s), 3.79 (2H, s), 4.13 (2H, t, J=5.2 Hz), 4.22-4.32 (2H, m), 4.63 (1H, m), 6.50 (1H, s), 6.92 (1H, d, J=8.5 Hz), 6.95 (1H, d, J=7.8 Hz), 7.07 (1H, m), 7.14 (1H, td, J=1.1, 7.5 Hz), 7.29 (1H, m), 7.37-7.43 (3H, m).	ESI-MS m/z: 432 [M+H]+

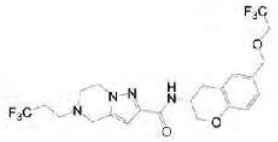
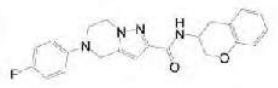
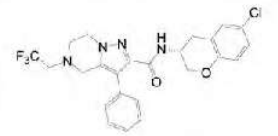
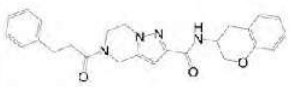
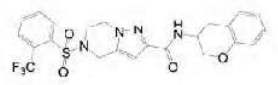
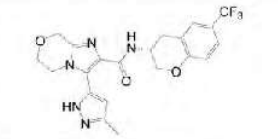
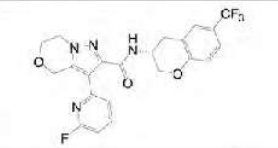
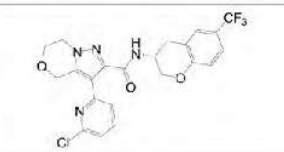
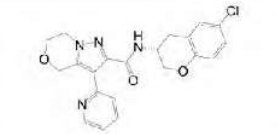
[1453]

[Table 65]

Example	Structural formula	NMR	MS
498		1H-NMR ($CDCl_3$) δ : 1.72 (2H, m), 1.81-1.97 (2H, m), 2.10 (2H, m), 2.53-2.63 (3H, m), 2.86-2.96 (3H, m), 3.17 (1H, dd, J=5.2, 16.5 Hz), 3.63 (2H, s), 4.11 (2H, t, J=5.6 Hz), 4.22-4.32 (2H, m), 4.64 (1H, m), 6.50 (1H, s), 6.93 (1H, d, J=8.5 Hz), 6.95 (1H, s), 7.38 (1H, s), 7.42 (1H, dd, J=2.0, 8.5 Hz).	ESI-MS m/z: 392 [M+H]+
499		1H-NMR ($CDCl_3$) δ : 2.89-2.97 (3H, m), 3.18 (1H, dd, J=5.2, 16.7 Hz), 3.73 (2H, s), 3.89 (2H, s), 4.14 (2H, t, J=5.4 Hz), 4.23-4.33 (2H, m), 4.65 (1H, m), 6.50 (1H, s), 6.93 (1H, d, J=8.5 Hz), 6.97 (1H, d, J=7.8 Hz), 7.38-7.43 (3H, m), 7.54 (1H, t, J=7.5 Hz), 7.67 (1H, d, J=7.8 Hz), 7.76 (1H, d, J=7.8 Hz).	ESI-MS m/z: 482 [M+H]+
500		1H-NMR ($CDCl_3$) δ : 1.14 (4H, m), 2.84 (1H, dd, J=4.5, 17.0 Hz), 3.14 (1H, dd, J=5.3, 16.9 Hz), 3.24 (2H, t, J=5.3 Hz), 3.96 (2H, s), 4.07 (2H, t, J=5.5 Hz), 4.14-4.21 (2H, m), 4.60 (1H, m), 6.47 (1H, s), 6.80 (1H, d, J=8.7 Hz), 6.97-7.08 (3H, m), 7.17 (1H, m), 7.28 (1H, s), 7.65 (1H, td, J=1.8, 7.7 Hz), 8.58 (1H, d, J=3.9 Hz).	ESI-MS m/z: 450 [M+H]+
501		1H-NMR ($CDCl_3$) δ : 1.50 (6H, s), 2.84 (2H, t, J=5.2 Hz), 2.92 (1H, dd, J=5.0, 16.7 Hz), 3.17 (1H, dd, J=5.1, 16.7 Hz), 3.86 (1H, s), 4.04 (2H, t, J=5.2 Hz), 4.23-4.32 (2H, m), 4.64 (1H, m), 6.51 (1H, s), 6.92-6.96 (2H, m), 7.17 (1H, q, J=3.7 Hz), 7.38 (1H, s), 7.42 (1H, d, J=8.6 Hz), 7.66 (2H, d, J=3.7 Hz), 8.57 (1H, d, J=4.6 Hz).	ESI-MS m/z: 443 [M+H]+
502		1H-NMR ($CDCl_3$) δ : 0.04 (2H, m), 0.47 (2H, m), 0.73 (1H, m), 1.17 (6H, s), 1.41 (2H, d, J=6.4 Hz), 2.91 (1H, dd, J=4.9, 16.4 Hz), 2.98 (2H, t, J=5.8 Hz), 3.17 (1H, dd, J=5.2, 16.5 Hz), 3.83 (2H, s), 4.08 (2H, t, J=5.4 Hz), 4.22-4.33 (2H, m), 4.64 (1H, m), 6.51 (1H, s), 6.92-6.96 (2H, m), 7.38 (1H, s), 7.42 (1H, dd, J=1.7, 8.5 Hz).	ESI-MS m/z: 420 [M+H]+
503		1H-NMR ($CDCl_3$) δ : 2.25-2.38 (2H, m), 2.91 (1H, dd, J=4.9, 16.5 Hz), 3.12-3.20 (3H, m), 3.89 (2H, s), 4.03 (1H, t, J=5.2 Hz), 4.23-4.31 (3H, m), 4.64 (1H, m), 6.51 (1H, s), 6.92-6.94 (2H, m), 7.38 (1H, s), 7.42 (1H, d, J=8.4 Hz).	ESI-MS m/z: 446 [M+H]+
504		1H-NMR ($CDCl_3$) δ : 0.06 (2H, q, J=5.0 Hz), 0.43-0.48 (2H, m), 0.71 (1H, m), 1.45 (2H, q, J=7.4 Hz), 2.64 (2H, t, J=7.6 Hz), 2.84-2.93 (3H, m), 3.06 (2H, dt, J=4.5, 26.1 Hz), 3.17 (1H, dd, J=5.5, 16.7 Hz), 3.68 (2H, s), 4.11-4.23 (4H, m), 4.63 (1H, m), 5.88 (1H, m), 6.51 (1H, s), 6.84 (1H, d, J=8.3 Hz), 6.94 (1H, s), 7.00-7.05 (2H, m).	ESI-MS m/z: 431 [M+H]+
505		1H-NMR ($CDCl_3$) δ : 0.06-0.07 (2H, m), 0.45-0.47 (2H, m), 0.70 (1H, m), 1.45 (2H, q, J=7.4 Hz), 2.64 (2H, t, J=7.6 Hz), 2.86-2.93 (3H, m), 3.16 (1H, m), 3.68 (2H, s), 3.81 (2H, q, J=6.8 Hz), 4.13 (2H, t, J=5.6 Hz), 4.20-4.24 (2H, m), 4.57 (2H, s), 4.64 (1H, m), 6.51 (1H, s), 6.87 (1H, d, J=8.6 Hz), 7.02-7.05 (2H, m), 7.11 (1H, d, J=8.1 Hz).	ESI-MS m/z: 479 [M+H]+
506		1H-NMR ($CDCl_3$) δ : 2.32-2.44 (2H, m), 2.80-2.84 (2H, m), 2.90-2.97 (3H, m), 3.18-3.22 (1H, m), 3.72 (2H, s), 4.11-4.16 (2H, m), 4.26 (2H, m), 4.66 (1H, m), 6.53 (1H, s), 6.93-7.00(2H, m), 7.33 (1H, s), 7.39-7.45 (1H, m).	ESI-MS m/z: 463 [M+H]+

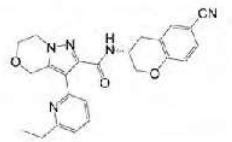
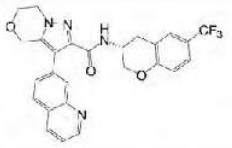
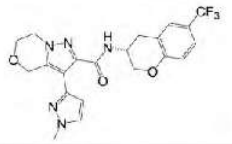
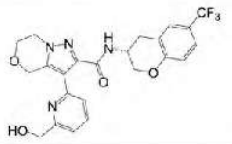
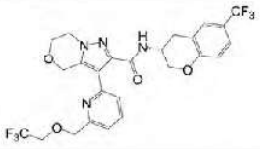
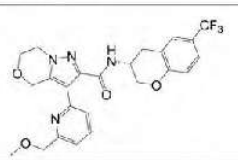
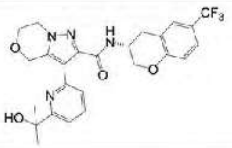
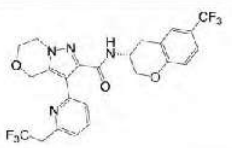
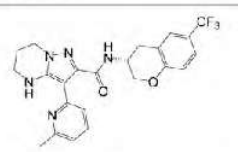
[1454]

[Table 66]

Example	Structural formula	NMR	MS
507		1H-NMR ($CDCl_3$) δ : 2.32-2.45 (2H, m), 2.77-2.90 (3H, m), 2.95 (2H, m), 3.16-3.21 (1H, m), 3.72 (2H, s), 3.78-3.88 (2H, m), 4.10-4.17 (2H, m), 4.21 (2H, m), 4.57 (2H, s), 4.64 (1H, m), 6.53 (1H, s), 6.88 (1H, d, J=8.3 Hz), 7.00-7.05 (2H, m), 7.12 (1H, d, J=8.3 Hz).	ESI-MS m/z: 507 [M+H]+
508		1H-NMR ($CDCl_3$) δ : 2.89 (1H, m), 3.21 (1H, m), 3.65 (2H, t, J=5.5 Hz), 4.21-4.23 (4H, m), 4.36 (2H, s), 4.65 (1H, m), 6.63 (1H, s), 6.87-6.95 (4H, m), 6.98-7.16 (5H, m).	ESI-MS m/z: 393 [M+H]+
509		1H-NMR ($CDCl_3$) δ : 2.77 (1H, m), 3.06-3.23 (5H, m), 3.86 (2H, s), 4.10-4.24 (4H, m), 4.56 (1H, m), 6.77 (1H, d, J=8.7 Hz), 6.90 (1H, d, J=8.6 Hz), 7.00 (1H, m), 7.07 (1H, dd, J=2.3, 8.5 Hz), 7.30-7.37 (5H, m).	ESI-MS m/z: 491 [M+H]+
510		1H-NMR ($CDCl_3$) δ : 2.71 (2H, q, J=8.1 Hz), 2.86 (1H, m), 2.97-3.01 (2H, m), 3.20 (1H, dd, J=5.5, 16.8 Hz), 3.77 (1H, m), 3.99-4.09 (3H, m), 4.21 (2H, d, J=3.0 Hz), 4.59 (1H, s), 4.64 (1H, m), 4.80 (1H, s), 6.56 (1H, m), 6.87-6.92 (2H, m), 7.06-7.07 (2H, m), 7.12-7.24 (6H, m).	ESI-MS m/z: 431 [M+H]+
511		1H-NMR ($CDCl_3$) δ : 2.87 (1H, dd, J=4.1, 16.5 Hz), 3.19 (1H, dd, J=5.3, 16.6 Hz), 3.82 (2H, t, J=5.5 Hz), 4.19-4.21 (4H, m), 4.50 (2H, s), 4.63 (1H, m), 6.58 (1H, s), 6.87-6.92 (2H, m), 7.04-7.07 (2H, m), 7.14 (1H, m), 7.75-7.78 (2H, m), 7.93 (1H, m), 8.23 (1H, m).	ESI-MS m/z: 507 [M+H]+
512		1H-NMR ($CDCl_3$) δ : 2.37 (3H, s), 2.97 (1H, m), 3.23 (1H, dd, J = 4.9, 16.8 Hz), 4.09-4.10 (2H, m), 4.20-4.21 (2H, m), 4.28 (2H, s), 4.66 (1H, m), 4.82 (2H, s), 6.33 (1H, s), 6.96 (1H, d, J = 8.5 Hz), 7.34 (1H, s), 7.39 (1H, d, J = 8.2 Hz), 7.49 (1H, s), 7.63 (1H, d, J = 7.8 Hz).	ESI-MS m/z: 448 [M+H]+
513		1H-NMR ($CDCl_3$) δ : 2.94-2.99 (1H, m), 3.20-3.26 (1H, s), 4.12 (2H, m), 4.18-4.21 (2H, m), 4.29 (2H, m), 4.64-4.69 (1H, m), 5.12 (2H, s), 6.73-6.77(1H, m), 6.96-7.00 (1H, m), 7.35-7.43 (3H, m), 7.76-7.82 (1H, m), 8.24-8.29 (1H, m).	ESI-MS m/z: 463 [M+H]+
514		1H-NMR ($CDCl_3$) δ : 2.94-2.99 (1H, m), 3.20-3.25 (1H, m), 4.13 (2H, m), 4.18 (2H, m), 4.29 (2H, m), 4.62-4.70 (1H, m), 5.11 (2H, s), 6.95-6.99 (1H, m), 7.14-7.16 (1H, m), 7.35-7.41 (3H, m), 7.64-7.68 (1H, m), 8.32-8.35 (1H, m).	ESI-MS m/z: 479 [M+H]+
515		1H-NMR ($CDCl_3$) δ : 2.87-2.90 (1H, m), 3.10-3.19 (1H, m), 4.06-4.28 (5H, m), 4.46-4.51 (1H, m), 5.00 (2H, s), 6.73-6.82 (1H, m), 7.00-7.11 (3H, m), 7.69-7.79 (2H, m), 8.30 (1H, m), 8.81 (1H, m).	ESI-MS m/z: 411 [M+H]+

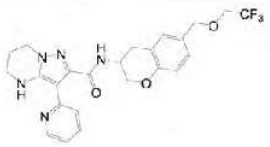
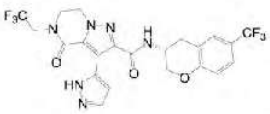
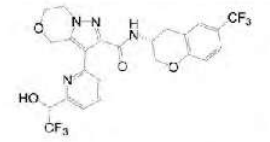
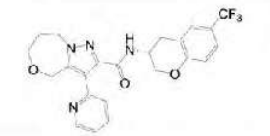
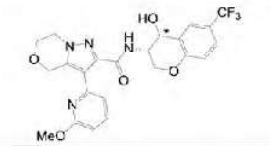
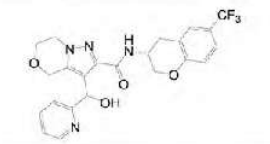
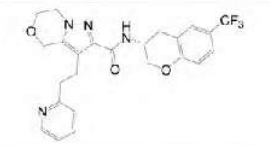
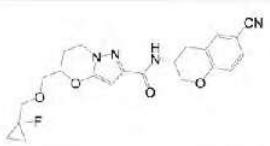
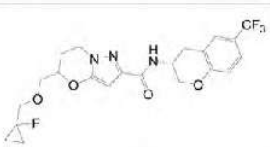
[1455]

[Table 67]

Example	Structural formula	NMR	MS
516		1H-NMR ($CDCl_3$) δ : 1.30 (3H, t, J=7.60 Hz), 2.79 (2H, q, J=7.60 Hz), 2.92-2.97 (1H, m), 3.15-3.21 (1H, m), 4.13-4.20 (4H, m), 4.23-4.33 (2H, m), 4.64 (1H, m), 5.08 (2H, s), 6.91-6.93 (1H, m), 7.00-7.02 (1H, m), 7.38-7.43 (2H, m), 7.55-7.58 (1H, m), 7.60-7.64 (1H, m), 7.90-7.92 (1H, m).	ESI-MS m/z: 430 [M+H]+
517		1H-NMR ($CDCl_3$) δ : 2.91 (1H, dd, J=3.3, 16.9 Hz), 3.17 (1H, dd, J=5.3, 17.0 Hz), 4.11-4.28 (6H, m), 4.62 (1H, m), 4.87 (2H, s), 6.91 (1H, d, J=8.6 Hz), 7.07 (1H, d, J=7.6 Hz), 7.31 (1H, s), 7.36 (1H, d, J=8.5 Hz), 7.41 (1H, m), 7.73 (1H, dd, J=1.7, 8.4 Hz), 7.82 (1H, d, J=8.4 Hz), 7.86 (1H, s), 8.16 (1H, d, J=7.5 Hz), 8.91 (1H, m).	ESI-MS m/z: 495 [M+H]+
518		1H-NMR ($CDCl_3$) δ : 2.99 (1H, m), 3.23 (1H, dd, J=5.7, 17.1 Hz), 3.78 (3H, s), 4.10-4.12 (2H, m), 4.22-4.24 (2H, m), 4.26-4.35 (2H, m), 4.71 (1H, m), 4.97 (2H, s), 6.63 (1H, d, J=2.3 Hz), 6.93 (1H, d, J=8.4 Hz), 7.31-7.38 (3H, m), 8.62 (1H, d, J=7.9 Hz).	ESI-MS m/z: 448 [M+H]+
519		1H-NMR ($CDCl_3$) δ : 2.97 (1H, dd, J=4.0, 16.7 Hz), 3.22 (1H, dd, J=5.3, 16.9 Hz), 3.46 (1H, m), 4.10-4.15 (2H, m), 4.19-4.21 (2H, m), 4.28 (2H, m), 4.65 (1H, m), 4.75 (2H, s), 5.04 (2H, s), 6.95 (1H, d, J=8.6 Hz), 7.11 (1H, d, J=7.7 Hz), 7.34-7.40 (3H, m), 7.72 (1H, t, J=7.8 Hz), 8.08 (1H, d, J=7.8 Hz).	ESI-MS m/z: 475 [M+H]+
520		1H-NMR ($CDCl_3$) δ : 2.96 (1H, dd, J=4.2, 16.8 Hz), 3.22 (1H, dd, J=5.3, 16.7 Hz), 3.94 (2H, m), 4.11-4.14 (2H, m), 4.18-4.21 (2H, m), 4.28 (2H, d, J=3.2 Hz), 4.65 (1H, m), 4.75 (2H, s), 5.05 (2H, s), 6.95 (1H, d, J=8.6 Hz), 7.29 (1H, d, J=7.6 Hz), 7.34 (1H, s), 7.36-7.40 (2H, m), 7.75 (1H, t, J=7.8 Hz), 8.18 (1H, d, J=8.0 Hz).	ESI-MS m/z: 557 [M+H]+
521		1H-NMR ($CDCl_3$) δ : 1.55 (6H, s), 2.97 (1H, dd, J=4.3, 16.8 Hz), 3.22 (1H, dd, J=5.3, 16.8 Hz), 4.13-4.15 (2H, m), 4.18-4.21 (2H, m), 4.29 (2H, m), 4.58 (1H, s), 4.65 (1H, m), 5.05 (2H, s), 6.96 (1H, d, J=8.5 Hz), 7.22 (1H, s), 7.25 (1H, dd, J=0.8, 7.8 Hz), 7.35 (1H, s), 7.39 (1H, d, J=6.9 Hz), 7.74 (1H, t, J=7.9 Hz), 8.13 (1H, dd, J=0.8, 7.9 Hz).	ESI-MS m/z: 503 [M+H]+
522		1H-NMR ($CDCl_3$) δ : 2.97 (1H, dd, J=4.5, 17.0 Hz), 3.21 (1H, dd, J=5.3, 16.8 Hz), 3.46 (2H, s), 4.11-4.28 (7H, m), 4.54-4.68 (3H, m), 5.05 (2H, s), 6.95 (1H, d, J=8.5 Hz), 7.26-7.28 (1H, m), 7.34 (1H, s), 7.38 (1H, m), 7.50 (1H, d, J=7.7 Hz), 7.73 (1H, t, J=7.8 Hz), 8.07 (1H, d, J=7.9 Hz).	ESI-MS m/z: 489 [M+H]+
523		1H-NMR ($CDCl_3$) δ : 2.97 (1H, dd, J=4.3, 16.8 Hz), 3.23 (1H, dd, J=5.4, 16.7 Hz), 3.55 (2H, m), 4.11-4.14 (2H, m), 4.18-4.20 (2H, m), 4.29 (2H, d, J=3.3 Hz), 4.65 (1H, m), 5.07 (2H, s), 6.96 (1H, d, J=8.6 Hz), 7.15 (1H, d, J=7.6 Hz), 7.30 (1H, d, J=9.0 Hz), 7.35 (1H, s), 7.39 (1H, d, J=8.5 Hz), 7.71 (1H, t, J=7.8 Hz), 8.31 (1H, d, J=8.0 Hz).	ESI-MS m/z: 527 [M+H]+
524		1H-NMR ($CDCl_3$) δ : 2.18 (2H, m), 2.50 (3H, s), 2.93-2.99 (1H, m), 3.19-3.25 (1H, q, J=7.34 Hz), 3.46 (2H, m), 4.09 (2H, m), 4.21-4.33 (2H, m), 4.62-4.69 (1H, m), 6.85 (1H, m), 6.95 (1H, m), 7.23 (1H, m), 7.21-7.38 (2H, m), 7.47 (1H, s), 7.54 (1H, m), 8.32 (1H, m).	ESI-MS m/z: 458 [M+H]+

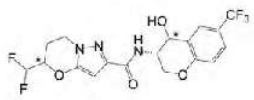
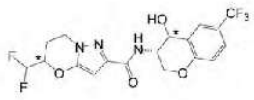
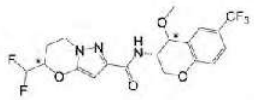
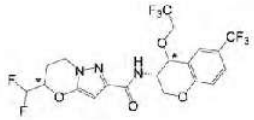
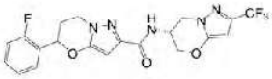
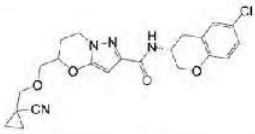
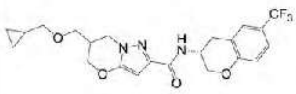
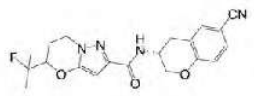
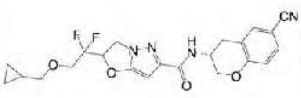
[1456]

[Table 68]

Example	Structural formula	NMR	MS
525		1H-NMR ($CDCl_3$) δ : 2.14-2.20 (2H, m), 2.89-2.94 (1H, m), 3.18-3.23 (1H, m), 3.44 (2H,m), 3.78-3.86 (2H, m), 4.07-4.11 (2H, m), 4.24 (2H, m), 4.59 (2H, s), 4.60-4.66 (2H, m), 6.83-6.88 (1H, m), 6.96-6.99 (1H, m), 7.04-7.06 (1H, m), 7.10-7.21 (1H, m), 7.31-7.40 (2H,m), 7.62-7.66 (1H, m), 8.40-8.41 (1H, m), 8.51-8.53 (1H, m).	ESI-MS m/z: 488 [M+H]+
526		1H-NMR ($CDCl_3$) δ : 2.96 (1H, d, J=16.8 Hz), 3.24 (1H, d, J=16.1 Hz), 3.90 (2H, s), 4.19-4.43 (6H, m), 4.69 (1H, s), 6.96 (1H, d, J=8.0 Hz), 7.30-7.62 (6H, m).	ESI-MS m/z: 529 [M+H]+
527		1H-NMR ($CDCl_3$) δ : 2.97 (1H, m), 3.23 (1H, m), 4.07-4.37 (6H, m), 4.65 (1H, m), 4.92-5.09 (4H, m), 6.97 (1H, d, J=8.8 Hz), 7.26-7.41 (4H, m), 7.82 (1H, t, J=7.8 Hz), 8.31 (1H, m).	ESI-MS m/z: 543 [M+H]+
528		1H-NMR ($CDCl_3$) δ : 2.03 (2H, m), 2.87 (1H, d, J=18.1 Hz), 3.18 (1H, dd, J=5.8, 16.5 Hz), 4.05 (2H, m), 4.21 (1H, d, J=5.5 Hz), 4.28 (1H, m), 4.54 (2H, m), 4.68 (3H, m), 6.94 (1H, d, J=8.5 Hz), 7.14 (1H, m), 7.32 (1H, s), 7.39 (1H, d, J=8.3 Hz), 7.48 (1H, d, J=7.9 Hz), 7.71 (1H, td, J=1.8, 7.8 Hz), 8.19 (1H, d, J=4.1 Hz), 8.84 (1H, d, J=7.6 Hz).	ESI-MS m/z: 459 [M+H]+
529		1H-NMR ($CDCl_3$) δ : 2.86 (1H, d, J=4.8 Hz), 3.91 (3H, s), 4.13-4.15 (2H, m), 4.21-4.27 (3H, m), 4.36 (1H, dd, J=3.8, 11.0 Hz), 4.67 (1H, m), 4.96 (1H, t, J=8.1 Hz), 5.18 (2H, d, J=3.0 Hz), 6.61 (1H, d, J=7.7 Hz), 6.98 (1H, d, J=8.8 Hz), 7.49 (1H, d, J=10.6 Hz), 7.55 (1H, d, J=7.7 Hz), 7.60 (1H, t, J=7.9 Hz), 7.66 (1H, d, J=1.6 Hz), 7.87 (1H, d, J=7.8 Hz).	ESI-MS m/z: 491 [M+H]+
530		1H-NMR ($CDCl_3$) δ : 2.92 (1H, m), 3.22 (1H, m), 4.01-4.13 (4H, m), 4.26 (2H, d, J=12.7 Hz), 4.59-4.65 (2H, m), 4.82 (1H, d, J=15.4 Hz), 6.02 (1H, s), 6.53 (1H, m), 6.95 (1H, d, J=8.2 Hz), 7.16 (1H, s), 7.27-7.40 (3H, m), 7.68 (2H, s), 8.45 (1H, s).	ESI-MS m/z: 475 [M+H]+
531		1H-NMR ($CDCl_3$) δ : 2.95 (1H, dd, J=4.1, 16.6 Hz), 3.07 (4H, s), 3.23 (1H, dd, J=5.4, 16.7 Hz), 3.93-3.96 (2H, m), 4.02-4.05 (2H, m), 4.28 (2H, m), 4.35 (2H, s), 4.67 (1H, m), 6.96 (1H, d, J=8.5 Hz), 7.05-7.12 (3H, m), 7.35 (1H, s), 7.39 (1H, d, J=8.6 Hz), 7.53 (1H, td, J=1.8, 7.6 Hz), 8.52 (1H, m).	ESI-MS m/z: 473 [M+H]+
532		1H-NMR ($CDCl_3$) δ : 0.71(2H, m), 1.11(2H, m), 2.16-2.36(2H, m), 2.90(1H, dd, J=16.8, 5.0 Hz), 3.17(1H, dd, J=16.6, 5.3 Hz), 3.77-3.84(3H, m), 3.89(1H, dd, J=10.5,5.1 Hz), 4.10(1H, m), 4.16-4.33(3H, m), 4.39(1H, m), 4.63(1H, m), 6.03(1H, s), 6.92(1H, m), 6.93(1H, d, J=8.5 Hz), 7.39(1H, m), 7.42(1H, dd, J=8.5, 2.0 Hz).	ESI-MS m/z: 427 [M+H]+
533		1H-NMR ($CDCl_3$) δ : 1.11(2H, m), 2.16-2.40(2H, m), 2.92(1H, dd, J=16.8, 4.4 Hz), 3.19(1H, dd, J=16.7, 5.3 Hz), 3.72-3.84(3H, m), 3.88(1H, dd, J=10.5,5.1 Hz), 4.09(1H, m), 4.16-4.29(3H, m), 4.39(1H, m), 4.65(1H, m), 6.03(1H, s), 6.95(1H, d, J=8.6 Hz), 6.97(1H, m), 7.33(1H, m), 7.38(1H, d, J=8.6 Hz).	ESI-MS m/z: 470 [M+H]+

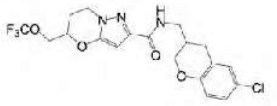
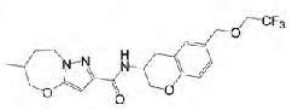
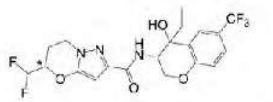
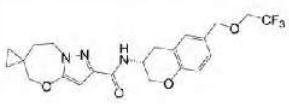
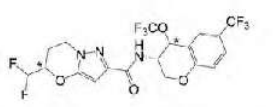
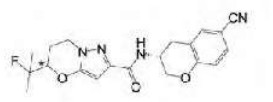
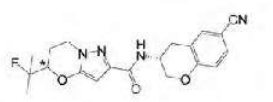
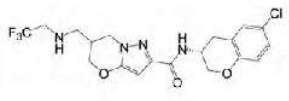
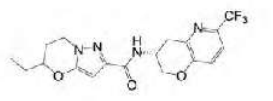
[1457]

[Table 69]

Example	Structural formula	NMR	MS
534 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.23-2.39 (2H, m), 3.18 (1H, s), 4.12 (1H, m), 4.18-4.26 (2H, m), 4.33-4.44 (2H, m), 4.63 (1H, m), 4.91 (1H, d, J = 3.5 Hz), 5.97 (1H, m), 6.10 (1H, s), 6.97 (1H, d, J = 8.6 Hz), 7.30 (1H, d, J = 8.8 Hz), 7.48 (1H, dd, J = 2.1, 8.6 Hz), 7.58 (1H, d, J = 1.6 Hz).	ESI-MS m/z: 434 [M+H]+
534 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.24-2.39 (2H, m), 3.12 (1H, s), 4.12 (1H, m), 4.23-4.32 (2H, m), 4.34-4.46 (2H, m), 4.50 (1H, dd, J = 2.2, 11.3 Hz), 4.76 (1H, t, J = 3.8 Hz), 5.96 (1H, m), 6.08 (1H, s), 6.97-7.03 (2H, m), 7.49 (1H, dd, J = 2.1, 8.7 Hz), 7.65 (1H, d, J = 1.8 Hz).	ESI-MS m/z: 434 [M+H]+
535		1H-NMR ($CDCl_3$) δ : 2.30(2H, m), 3.42(3H, m), 4.10(1H, m), 4.16-4.33(5H, m), 4.64(1H, m), 5.92(1H, td, J=, 54.5, 3.4 Hz), 6.09(1H, s), 6.90(1H, d, J=9.0 Hz), 7.12(1H, m), 7.44(1H, d, J=9.0 Hz), 7.45(1H, s).	ESI-MS m/z: 448 [M+H]+
536		1H-NMR ($CDCl_3$) δ : 1.56(3H, m), 1.68(3H, m), 2.33(1H, m), 4.07-4.44(3H, m), 4.49(1H, m), 5.95(1H, dd, J=49.3, 3.4 Hz), 6.06(1H, s), 7.04(1H, m), 7.05(1H, d, J=8.6 Hz), 7.52(1H, dd, J=8.6, 2.0 Hz), 7.55(1H, m).	ESI-MS m/z: 516 [M+H]+
537		1H-NMR ($CDCl_3$) δ : 2.38-2.50 (2H, m), 4.10-4.29 (2H, m), 4.34-4.37 (2H, m), 4.43-4.47 (2H, m), 4.86 (1H, m), 5.58 (1H, m), 5.86 (1H, s), 6.13 (1H, s), 7.11 (1H, m), 7.20-7.39 (3H, m), 7.47 (1H, m).	ESI-MS m/z: 452 [M+H]+
538		1H-NMR ($CDCl_3$) δ : 0.98(2H, m), 1.32(2H, m), 2.18-2.36(2H, m), 2.85(1H, dd, J=16.8, 4.3 Hz), 3.14(1H, dd, J=16.7, 5.3 Hz), 3.55(2H, m), 3.76(1H, ddd, J=10.5, 4.8, 1.2 Hz), 3.83(1H, dd, J=10.5, 5.1 Hz), 4.10(1H, m), 4.16-4.28(3H, m), 4.38(1H, m), 4.61(1H, m), 6.01(1H, s), 6.81(1H, d, J=8.7 Hz), 6.99(1H, d, J=7.8 Hz), 7.04(1H, d, J=2.6 Hz), 7.08(1H, dd, J=8.7, 2.6 Hz).	ESI-MS m/z: 443 [M+H]+
539		1H-NMR ($CDCl_3$) δ : 0.17-0.21 (2H, m), 0.50-0.56 (2H, m), 1.02 (1H, m), 2.60 (1H, m), 2.92 (1H, m), 3.20 (1H, dd, J = 5.4, 16.7 Hz), 3.28 (2H, dd, J = 2.8, 6.8 Hz), 3.51 (2H, dd, J = 2.1, 6.5 Hz), 4.00 (1H, m), 4.15-4.21 (2H, m), 4.24-4.26 (2H, m), 4.34 (1H, dd, J = 3.1, 11.2 Hz), 4.64 (1H, m), 6.02 (1H, s), 6.94-6.97 (2H, m), 7.33 (1H, s), 7.38 (1H, m).	ESI-MS m/z: 452 [M+H]+
540		1H-NMR ($CDCl_3$) δ : 1.47(3H, m), 1.51(3H, m), 2.17(1H, m), 2.31(1H, m), 2.91(1H, dd, J=16.7, 4.7 Hz), 3.17(1H, dd, J=16.7, 5.3 Hz), 4.08-4.13(2H, m), 4.21-4.34(3H, m), 4.63(1H, m), 6.04(1H, s), 6.92(1H, d, J=8.5 Hz), 6.96(1H, m), 7.38(1H, d, J=2.0 Hz), 7.42(1H, dd, J=8.5, 2.0 Hz).	ESI-MS m/z: 385 [M+H]+
541		1H-NMR ($CDCl_3$) δ : 0.16-0.22 (2H, m), 0.51-0.58 (2H, m), 1.01 (1H, m), 2.90 (1H, dd, J = 4.7, 16.6 Hz), 3.17 (1H, m), 3.32-3.42 (2H, m), 3.77-3.98 (2H, m), 4.23-4.30 (2H, m), 4.38 (1H, m), 4.49 (1H, dd, J = 6.2, 10.5 Hz), 4.63 (1H, m), 5.59 (1H, m), 5.96 (1H, s), 6.90-6.94 (2H, m), 7.38 (1H, s), 7.43 (1H, dd, J = 1.8, 8.5 Hz).	ESI-MS m/z: 445 [M+H]+

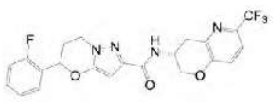
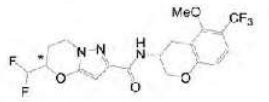
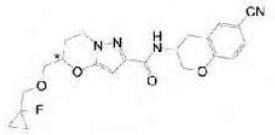
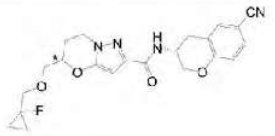
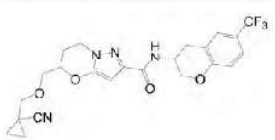
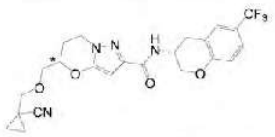
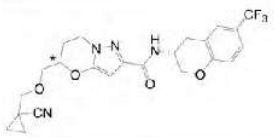
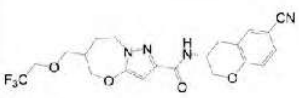
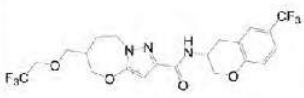
[1458]

[Table 70]

Example	Structural formula	NMR	MS
542		1H-NMR ($CDCl_3$) δ : 2.27-2.40 (3H, m), 2.59 (1H, m), 2.89 (1H, dd, J=5.1, 17.2 Hz), 3.39-3.48 (2H, m), 3.96 (1H, m), 4.16-4.30 (5H, m), 4.48 (1H, m), 6.06 (1H, s), 6.73 (1H, m), 6.96-7.05 (3H, m).	ESI-MS m/z: 446 [M+H]+
543		1H-NMR ($CDCl_3$) δ : 0.96-1.00 (3H, m), 1.96 (1H, m), 2.19 (1H, m), 2.85-2.96 (2H, m), 3.18 (1H, m), 3.44 (1H, m), 3.83 (2H, dq, J=1.4, 11.7 Hz), 4.04 (1H, m), 4.17-4.23 (3H, m), 4.29 (1H, m), 4.57 (2H, s), 4.62 (1H, m), 6.22 (1H, s), 6.88 (1H, d, J=8.3 Hz), 7.01 (1H, m), 7.05 (1H, s), 7.12 (1H, dd, J=2.1, 8.3 Hz).	ESI-MS m/z: 440 [M+H]+
544		1H-NMR ($CDCl_3$) δ : 1.06(3H, d, J=7.4 Hz), 1.88(1H, m), 2.06(1H, m), 2.35(2H, m), 4.13(1H, m), 4.23-4.31(2H, m), 4.33-4.45(2H, m), 4.52(1H, dd, J=10.8, 3.0 Hz), 4.64(1H, m), 5.97(1H, td, J=, 55.1, 3.4 Hz), 6.10(1H, s), 6.76(1H, d, J=9.2 Hz), 6.99(1H, 8.8 Hz), 7.49(1H, dd, J=8.6, 1.8 Hz), 7.79(1H, d, J=1.8 Hz).	ESI-MS m/z: 462 [M+H]+
545		1H-NMR ($CDCl_3$) δ : 0.58 (2H, t, J=5.2 Hz), 0.68 (2H, t, J=5.3 Hz), 1.66 (2H, m), 2.88 (1H, m), 3.18 (1H, dd, J=5.4, 16.7 Hz), 3.74 (2H, s), 3.82 (2H, q, J=8.7 Hz), 4.21-4.24 (4H, m), 4.57 (2H, s), 4.64 (1H, m), 6.24 (1H, s), 6.86 (1H, d, J=8.3 Hz), 7.00-7.05 (2H, m), 7.12 (1H, dd, J=2.0, 8.3 Hz).	ESI-MS m/z: 452 [M+H]+
546		1H-NMR ($CDCl_3$) δ : 2.39(2H, m), 4.18(1H, m), 4.27(1H, m), 4.31-4.47(3H, m), 4.85(1H, m), 5.39(1H, d, J=3.1Hz), 5.98(1H, td, J=, 55.1, 3.5 Hz), 6.11(1H, s), 7.01(1H, d, J=6.6 Hz), 7.04(1H, m), 7.56(1H, m), 7.57(1H, d, J=6.6 Hz).	ESI-MS m/z: 502 [M+H]+
547 (isomer A)		1H-NMR ($CDCl_3$) δ : 1.47(3H, m), 1.51(3H, m), 2.17(1H, m), 2.31(1H, m), 2.91(1H, dd, J=16.7, 4.7 Hz), 3.17(1H, dd, J=16.7, 5.3 Hz), 4.08-4.13(2H, m), 4.21-4.34(3H, m), 4.63(1H, m), 6.04(1H, s), 6.92(1H, d, J=8.5 Hz), 6.96(1H, m), 7.38(1H, d, J=2.0 Hz), 7.42(1H, dd, J=8.5, 2.0 Hz).	ESI-MS m/z: 365 [M+H]+
547 (isomer B)		1H-NMR ($CDCl_3$) δ : 1.47(3H, m), 1.51(3H, m), 2.17(1H, m), 2.31(1H, m), 2.91(1H, dd, J=16.7, 4.7 Hz), 3.17(1H, dd, J=16.7, 5.3 Hz), 4.08-4.13(2H, m), 4.21-4.34(3H, m), 4.63(1H, m), 6.04(1H, s), 6.92(1H, d, J=8.5 Hz), 6.96(1H, m), 7.38(1H, d, J=2.0 Hz), 7.42(1H, dd, J=8.5, 2.0 Hz).	ESI-MS m/z: 365 [M+H]+
548		1H-NMR ($CDCl_3$) δ : 1.37 (1H, m), 2.38 (1H, m), 2.80-2.90 (3H, m), 3.11-3.24 (3H, m), 3.93 (1H, m), 4.11-4.24 (4H, m), 4.35 (1H, dd, J = 3.0, 11.1 Hz), 4.60 (1H, m), 6.01 (1H, s), 6.81 (1H, d, J = 8.7 Hz), 6.98 (1H, d, J = 8.0 Hz), 7.04 (1H, d, J = 2.4 Hz), 7.08 (1H, dd, J = 2.5, 8.7 Hz).	ESI-MS m/z: 445 [M+H]+
549		1H-NMR ($CDCl_3$) δ : 1.06(3H, t, J=7.5 Hz), 1.67-1.88(2H, m), 2.07(1H, m), 2.16(1H, m), 3.10(1H, dd, J=17.6, 4.5 Hz), 3.39(1H, dd, J=17.6, 6.5 Hz), 4.02-4.19(3H, m), 4.22-4.36(2H, m), 4.75(1H, m), 6.00(1H, s), 6.90(1H, d, J=7.7 Hz), 7.28(1H, d, J=8.5 Hz), 7.48(1H, d, J=8.5 Hz).	ESI-MS m/z: 397 [M+H]+

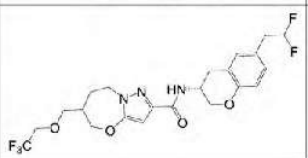
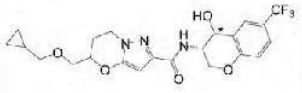
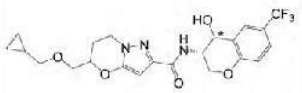
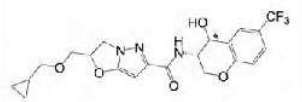
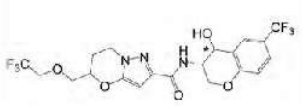
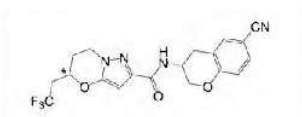
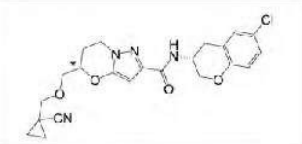
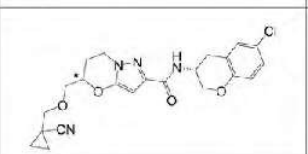
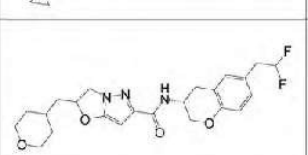
[1459]

[Table 71]

Example	Structural formula	NMR	MS
550		1H-NMR ($CDCl_3$) δ : 2.39(1H, m), 2.48(1H, m), 3.12(1H, dd, J=17.6, 4.8 Hz), 3.40(1H, dd, J=17.6, 5.6 Hz), 4.13-4.37(4H, m), 4.77(1H, m), 5.57(1H, dd, J=9.5, 2.4 Hz), 6.13(1H, s), 6.94(1H, d, J=7.4 Hz), 7.11(1H, dd, J=10.2, 8.5 Hz), 7.21(1H, d, J=7.4Hz), 7.29(1H, d, J=8.5 Hz), 7.37(1H, m), 7.44-7.52(2H, m).	ESI-MS m/z: 463 [M+H]+
551		1H-NMR ($CDCl_3$) δ : 2.34(2H, m), 2.98(1H, dd, J=17.7, 4.4 Hz), 3.11(1H, dd, J=17.7, 5.3 Hz), 3.83(3H, s), 4.19-4.32(3H, m), 4.39(1H, m), 4.66(1H, m), 5.97(1H, td, J=, 54.8, 3.4 Hz), 6.09(1H, s), 7.01(1H, d, J=8.6 Hz), 6.73(1H, d, J=8.8 Hz), 6.92(1H, d, J=7.2 Hz), 7.38(1H, d, J=8.8 Hz).	ESI-MS m/z: 448 [M+H]+
552 (isomer A)		1H-NMR ($CDCl_3$) δ : 0.71(2H, m), 1.11(2H, m), 2.16-2.36(2H, m), 2.90(1H, dd, J=16.8, 5.0 Hz), 3.17(1H, dd, J=16.6, 5.3 Hz), 3.77-3.84(3H, m), 3.89(1H, dd, J=10.5,5.1 Hz), 4.10(1H, m), 4.16-4.33(3H, m), 4.39(1H, m), 4.63(1H, m), 6.03(1H, s), 6.92(1H, m), 6.93(1H, d, J=8.5 Hz), 7.39(1H, m), 7.42(1H, dd, J=8.5, 2.0 Hz).	ESI-MS m/z: 427 [M+H]+
552 (isomer B)		1H-NMR ($CDCl_3$) δ : 0.71(2H, m), 1.11(2H, m), 2.16-2.36(2H, m), 2.90(1H, dd, J=16.8, 5.0 Hz), 3.17(1H, dd, J=16.6, 5.3 Hz), 3.77-3.84(3H, m), 3.89(1H, dd, J=10.5,5.1 Hz), 4.10(1H, m), 4.16-4.33(3H, m), 4.39(1H, m), 4.63(1H, m), 6.03(1H, s), 6.92(1H, m), 6.93(1H, d, J=8.5 Hz), 7.39(1H, m), 7.42(1H, dd, J=8.5, 2.0 Hz).	ESI-MS m/z: 427 [M+H]+
553		1H-NMR ($CDCl_3$) δ : 0.98(2H, m), 1.31(2H, m), 2.16-2.39(2H, m), 2.93(1H, dd, J=16.8, 4.6 Hz), 3.19(1H, dd, J=16.7, 5.4 Hz), 3.54(2H, m), 3.74(1H, dd J=20.4, 5.0 Hz), 3.84(1H, dd, J=10.4,4.8 Hz), 4.11(1H, m), 4.17-4.29(3H, m), 4.39(1H, m), 4.64(1H, m), 6.02(1H, s), 6.94(1H, d, J=8.5 Hz), 6.98(1H, d, J=7.9 Hz), 7.33(1H, d, J=1.4 Hz), 7.38(1H, dd, J=8.5, 1.4 Hz).	ESI-MS m/z: 477 [M+H]+
554 (isomer A)		1H-NMR ($CDCl_3$) δ : 0.98(2H, m), 1.31(2H, m), 2.16-2.39(2H, m), 2.93(1H, dd, J=16.8, 4.6 Hz), 3.19(1H, dd, J=16.7, 5.4 Hz), 3.54(2H, m), 3.74(1H, dd J=20.4, 5.0 Hz), 3.84(1H, dd, J=10.4,4.8 Hz), 4.11(1H, m), 4.17-4.29(3H, m), 4.39(1H, m), 4.64(1H, m), 6.02(1H, s), 6.94(1H, d, J=8.5 Hz), 6.98(1H, d, J=7.9 Hz), 7.33(1H, d, J=1.4 Hz), 7.38(1H, dd, J=8.5, 1.4 Hz).	ESI-MS m/z: 477 [M+H]+
554 (isomer B)		1H-NMR ($CDCl_3$) δ : 0.98(2H, m), 1.31(2H, m), 2.16-2.39(2H, m), 2.93(1H, dd, J=16.8, 4.6 Hz), 3.19(1H, dd, J=16.7, 5.4 Hz), 3.54(2H, m), 3.74(1H, dd J=20.4, 5.0 Hz), 3.84(1H, dd, J=10.4,4.8 Hz), 4.11(1H, m), 4.17-4.29(3H, m), 4.39(1H, m), 4.64(1H, m), 6.02(1H, s), 6.94(1H, d, J=8.5 Hz), 6.98(1H, d, J=7.9 Hz), 7.33(1H, d, J=1.4 Hz), 7.38(1H, dd, J=8.5, 1.4 Hz).	ESI-MS m/z: 477 [M+H]+
555		1H-NMR ($CDCl_3$) δ : 1.74 (1H, m), 2.02 (1H, m), 2.39 (1H, m), 2.91 (1H, dd, J=4.4, 16.4 Hz), 3.17 (1H, dd, J=5.3, 16.7 Hz), 3.59-3.68 (2H, m), 3.74-3.85 (3H, m), 4.09 (1H, m), 4.23-4.33 (4H, m), 4.64 (1H, m), 6.24 (1H, s), 6.90-6.95 (2H, m), 7.39 (1H, s), 7.43 (1H, dd, J=2.1, 8.5 Hz).	ESI-MS m/z: 451 [M+H]+
556		1H-NMR ($CDCl_3$) δ : 1.73 (1H, m), 2.00 (1H, m), 2.37 (1H, m), 2.92 (1H, dd, J=3.4, 16.2 Hz), 3.20 (1H, dd, J=5.2, 16.9 Hz), 3.60-3.68 (2H, m), 3.73-3.85 (3H, m), 4.09 (1H, m), 4.22-4.33 (4H, m), 4.65 (1H, m), 6.24 (1H, s), 6.94-6.98 (2H, m), 7.33 (1H, s), 7.38 (1H, d, J=8.6 Hz).	ESI-MS m/z: 493 [M+H]+

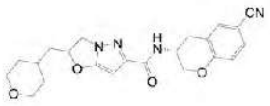
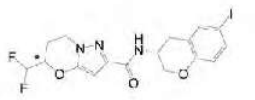
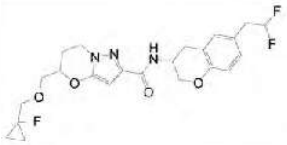
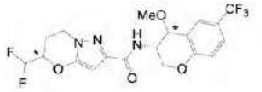
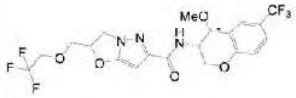
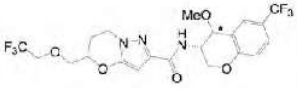
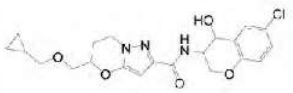
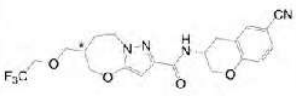
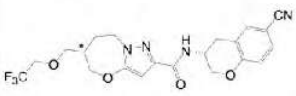
[1460]

[Table 72]

Example	Structural formula	NMR	MS
557		1H-NMR ($CDCl_3$) δ : 1.73 (1H, m), 2.02 (1H, m), 2.38 (1H, m), 2.87 (1H, m), 3.05 (1H, m), 3.02-3.08 (2H, m), 3.19 (1H, m), 3.64-3.68 (2H, m), 3.72-3.82 (3H, m), 4.08 (1H, m), 4.19 (2H, s), 4.28-4.33 (2H, m), 4.61 (1H, m), 5.88 (1H, dt, 4.7, 53.7 Hz), 6.23 (1H, s), 6.85 (1H, d, J=8.4 Hz), 6.93 (1H, s), 7.01 (2H, d, J=13.1 Hz).	ESI-MS m/z: 490 [M+H]+
558		1H-NMR ($CDCl_3$) δ : 0.20-0.24 (2H, m), 0.54-0.58 (2H, m), 1.07 (1H, m), 2.08-2.27 (2H, m), 3.37 (2H, d, J = 6.9 Hz), 3.53 (1H, m), 3.65 (1H, m), 3.76 (1H, dd, J = 5.2, 10.4 Hz), 3.93-4.23 (3H, m), 4.31-4.39 (2H, m), 4.62 (1H, m), 4.91 (1H, t, J = 4.0 Hz), 5.04 (1H, s), 6.96 (1H, d, J = 8.6 Hz), 7.32 (1H, d, J = 8.1 Hz), 7.47 (1H, dd, J = 2.1, 8.6 Hz), 7.55 (1H, s).	ESI-MS m/z: 468 [M+H]+
559		1H-NMR ($CDCl_3$) δ : 0.19-0.23 (2H, m), 0.54-0.57 (2H, m), 1.06 (1H, m), 1.61 (1H, s), 2.10-2.30 (2H, m), 3.36 (2H, dd, J = 1.6, 6.9 Hz), 3.65 (1H, m), 3.75 (1H, dd, J = 5.1, 10.5 Hz), 4.07 (1H, m), 4.18 (1H, m), 4.26-4.38 (2H, m), 4.44 (1H, m), 4.49 (1H, d, J = 11.4 Hz), 4.76 (1H, s), 6.01 (1H, s), 7.01 (2H, d, J = 8.5 Hz), 7.48 (1H, d, J = 7.9 Hz), 7.65 (1H, d, J = 1.9 Hz).	ESI-MS m/z: 468 [M+H]+
560		1H-NMR ($CDCl_3$) δ : 0.17-0.20 (2H, m), 0.52-0.57 (2H, m), 1.03 (1H, m), 3.07 (1H, m), 3.37 (2H, dd, J = 1.3, 6.9 Hz), 3.74-3.82 (2H, m), 4.14-4.36 (4H, m), 4.64 (1H, m), 4.92 (1H, s), 5.41 (1H, m), 5.92 (1H, d, J = 2.2 Hz), 6.97 (1H, d, J = 8.6 Hz), 7.28 (1H, m), 7.48 (1H, dd, J = 2.1, 8.7 Hz), 7.62 (1H, d, J = 8.4 Hz).	ESI-MS m/z: 454 [M+H]+
561		1H-NMR ($CDCl_3$) δ : 2.15-2.25 (2H, m), 3.54 (1H, m), 3.84-3.98 (4H, m), 4.05-4.23 (3H, m), 4.32-4.40 (2H, m), 4.62 (1H, m), 4.91 (1H, t, J = 4.0 Hz), 6.05 (1H, d, J = 1.0 Hz), 6.97 (1H, d, J = 8.6 Hz), 7.32 (1H, d, J = 8.7 Hz), 7.48 (1H, dd, J = 2.0, 8.7 Hz), 7.53 (1H, s).	ESI-MS m/z: 496 [M+H]+
562		1H-NMR ($CDCl_3$) δ : 2.19(1H, m), 2.36(1H, m), 2.50(1H, m), 2.71(1H, m), 2.91(1H, dd, J=16.7, 4.7 Hz), 3.17(1H, dd, J=16.8, 5.2 Hz), 4.09-4.33(4H, m), 4.53(1H, m), 4.62(1H, m), 6.03(1H, s), 6.93(1H, d, J=8.5 Hz), 6.94(1H, m), 7.38(1H, d, J=2.0 Hz), 7.42(1H, dd, J=8.5, 2.0 Hz).	ESI-MS m/z: 407 [M+H]+
563 (isomer A)		1H-NMR ($CDCl_3$) δ : 0.98(2H, m), 1.32(2H, m), 2.18-2.36(2H, m), 2.85(1H, dd, J=16.8, 4.3 Hz), 3.14(1H, dd, J=16.7, 5.3 Hz), 3.55(2H, m), 3.76(1H, ddd, J=10.5,4.8, 1.2 Hz), 3.83(1H, dd, J=10.5,5.1 Hz), 4.10(1H, m), 4.16-4.28(3H, m), 4.38(1H, m), 4.61(1H, m), 6.01(1H, s), 6.81(1H, d, J=8.7 Hz), 6.99(1H, d, J=7.8 Hz), 7.04(1H, d, J=2.6 Hz), 7.08(1H, dd, J=8.7, 2.6 Hz).	ESI-MS m/z: 443 [M+H]+
563 (isomer B)		1H-NMR ($CDCl_3$) δ : 0.98(2H, m), 1.32(2H, m), 2.18-2.36(2H, m), 2.85(1H, dd, J=16.8, 4.3 Hz), 3.14(1H, dd, J=16.7, 5.3 Hz), 3.55(2H, m), 3.76(1H, ddd, J=10.5,4.8, 1.2 Hz), 3.83(1H, dd, J=10.5,5.1 Hz), 4.10(1H, m), 4.16-4.28(3H, m), 4.38(1H, m), 4.61(1H, m), 6.01(1H, s), 6.81(1H, d, J=8.7 Hz), 6.99(1H, d, J=7.8 Hz), 7.04(1H, d, J=2.6 Hz), 7.08(1H, dd, J=8.7, 2.6 Hz).	ESI-MS m/z: 443 [M+H]+
564		1H-NMR ($CDCl_3$) δ : 1.30-1.45 (2H, m), 1.63-1.74 (3H, m), 1.86 (1H, m), 1.97 (1H, m), 2.85 (1H, dd, J = 4.1, 16.9 Hz), 3.04 (2H, dt, J = 4.5, 17.4 Hz), 3.17 (1H, dd, J = 5.5, 16.8 Hz), 3.39-3.44 (2H, m), 3.85 (1H, m), 3.95-4.01 (2H, m), 4.19 (2H, d, J = 2.9 Hz), 4.34 (1H, m), 4.62 (1H, m), 5.38 (1H, m), 5.88 (1H, m), 5.89 (1H, s), 6.83 (1H, d, J = 8.3 Hz), 6.93 (1H, s), 7.00 (2H, d, J = 8.2 Hz).	ESI-MS m/z: 448 [M+H]+

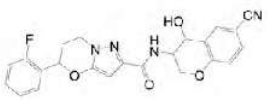
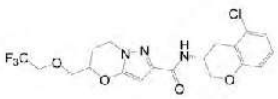
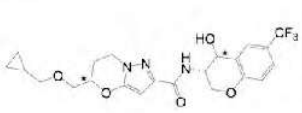
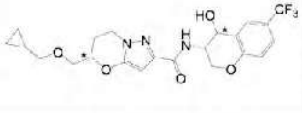
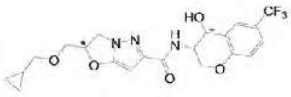
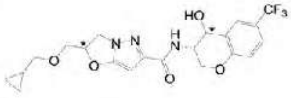
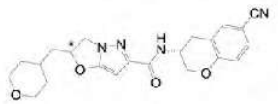
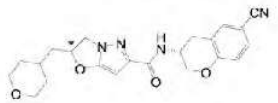
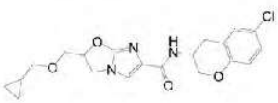
[1461]

[Table 73]

Example	Structural formula	NMR	MS
565		1H-NMR ($CDCl_3$) δ : 1.31-1.45 (2H, m), 1.63-1.74 (3H, m), 1.87 (1H, m), 1.99 (1H, m), 2.90 (1H, m), 3.17 (1H, dd, J = 5.2, 16.6 Hz), 3.38-3.45 (2H, m), 3.85 (1H, m), 3.95-4.01 (2H, m), 4.26-4.28 (2H, m), 4.34 (1H, m), 4.63 (1H, m), 5.39 (1H, m), 5.89 (1H, s), 6.90-6.94 (2H, m), 7.38 (1H, s), 7.42 (1H, dd, J = 2.0, 8.5 Hz).	ESI-MS m/z: 409 [M+H]+
566		1H-NMR ($CDCl_3$) δ : 2.25-2.40 (2H, m), 2.83 (1H, m), 3.14 (1H, dd, J = 5.3, 16.8 Hz), 4.08-4.22 (3H, m), 4.27 (1H, m), 4.38 (1H, m), 4.60 (1H, m), 5.96 (1H, m), 6.08 (1H, s), 6.65 (1H, d, J = 8.6 Hz), 6.96 (1H, d, J = 7.9 Hz), 7.37 (1H, s), 7.40 (1H, dd, J = 2.1, 8.6 Hz).	ESI-MS m/z: 476 [M+H]+
567		1H-NMR ($CDCl_3$) δ : 0.70(2H, m), 1.10(2H, m), 2.14-2.33(2H, m), 2.86(1H, dd, J=17.4, 4.4 Hz), 3.04(2H, td, 17.4, 4.5 Hz), 3.16(1H, dd, J=16.7, 5.5 Hz), 3.75-3.85(3H, m), 3.88(1H, dd, J=10.6,5.1 Hz), 4.08(1H, m), 4.14-4.27(3H, m), 4.39(1H, m), 4.81(1H, m), 5.88(1H, tt, J=56.4, 4.6 Hz), 6.02(1H, s), 6.83(1H, d, J=8.3 Hz), 6.94(1H, d, J=2.0 Hz), 7.00(1H, dd, J=8.3, 2.0 Hz), 7.03(1H, m).	ESI-MS m/z: 466 [M+H]+
568		1H-NMR ($CDCl_3$) δ : 2.36(2H, m), 3.49(3H, m), 4.18(1H, m), 4.24-4.46(5H, m), 4.67(1H, m), 5.98(1H, td, J=, 54.3, 3.5 Hz), 6.10(1H, s), 6.97(1H, d, J=8.3 Hz), 7.21(1H, d, J=8.5 Hz), 7.51(1H, d, J=8.3 Hz), 7.52(1H, m).	ESI-MS m/z: 448 [M+H]+
569		1H-NMR ($CDCl_3$) δ : 3.49 (3H, d, J = 1.1 Hz), 3.91-4.00 (4H, m), 4.21-4.29 (3H, m), 4.34-4.40 (2H, m), 4.70 (1H, m), 5.44 (1H, m), 5.94 (1H, s), 6.97 (1H, d, J = 9.0 Hz), 7.20 (1H, d, J = 8.6 Hz), 7.50-7.51 (2H, m).	ESI-MS m/z: 496 [M+H]+
570		1H-NMR ($CDCl_3$) δ : 2.23-2.29 (2H, m), 3.49 (3H, s), 3.86-3.99 (4H, m), 4.14 (1H, m), 4.24-4.32 (3H, m), 4.34 (1H, d, J = 3.6 Hz), 4.39 (1H, m), 4.70 (1H, m), 6.05 (1H, s), 6.97 (1H, d, J = 9.2 Hz), 7.21 (1H, d, J = 8.4 Hz), 7.50-7.51 (2H, m).	ESI-MS m/z: 510 [M+H]+
571		1H-NMR ($CDCl_3$) δ : 0.22(2H, m), 0.55(2H, m), 1.06(1H, m), 1.46(1H, m), 2.09-2.33(2H, m), 3.35-3.39(2H, m), 3.66(1H, m), 3.76(1H, m), 3.96-4.31(3.5H, m), 4.31-4.46(2H, m), 4.60(0.5H,m), 4.67(0.5H, m), 4.84(0.5H, m), 5.99(0.5H, s), 6.04(0.5H, s), 6.78-6.89(1H, m), 7.03(1H, m), 7.14-7.22(1H, m), 7.24-7.37(1H, m).	ESI-MS m/z: 434 [M+H]+
572 (Isomer A)		1H-NMR ($CDCl_3$) δ : 1.73 (1H, m), 2.01 (1H, m), 2.38 (1H, m), 2.91 (1H, dd, J=5.0, 17.0 Hz), 3.17 (1H, dd, J=4.9, 16.8 Hz), 3.59-3.67 (2H, m), 3.74-3.85 (3H, m), 4.09 (1H, m), 4.24-4.34 (4H, m), 4.63 (1H, m), 6.24 (1H, s), 6.91-7.00 (2H, m), 7.39 (1H, s), 7.43 (1H, dd, J=2.0, 8.5 Hz).	ESI-MS m/z: 451 [M+H]+
572 (Isomer B)		1H-NMR ($CDCl_3$) δ : 1.74 (1H, m), 2.01 (1H, m), 2.38 (1H, m), 2.90 (1H, dd, J=4.8, 16.5 Hz), 3.17 (1H, dd, J=5.2, 16.7 Hz), 3.60-3.68 (2H, m), 3.75-3.85 (3H, m), 4.09 (1H, m), 4.23-4.33 (4H, m), 4.63 (1H, m), 6.24 (1H, s), 6.90-6.94 (2H, m), 7.39 (1H, s), 7.43 (1H, dd, J=2.0, 8.5 Hz).	ESI-MS m/z: 451 [M+H]+

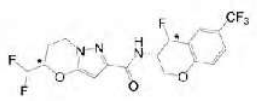
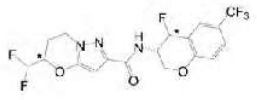
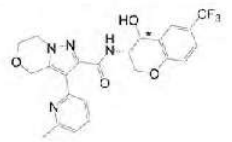
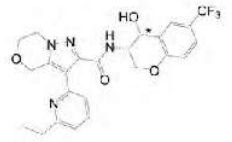
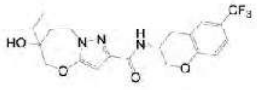
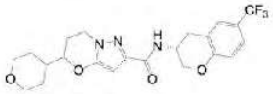
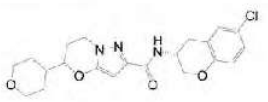
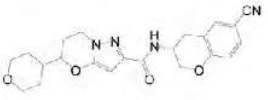
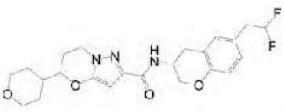
[1462]

[Table 74]

Example	Structural formula	NMR	MS
573		1H-NMR ($CDCl_3$) δ : 2.44(2H, m), 4.11-4.67(5H, m), 4.53(0.5H, m), 4.65(0.5H, m), 4.75(0.5H, m), .4.92(0.5H, m), 5.56(1H, m), 6.06-6.14(1H, m), 6.92-7.01(1H, m), 7.04-7.15(2H, m), 7.16-7.22(1H, m), 7.37(1H, m), 7.42-7.54(2H, m), 7.70(1H, m).	ESI-MS m/z: 435 [M+H]+
574		1H-NMR ($CDCl_3$) δ : 2.25(2H, m), 2.78-2.94(1H, m), 2.95-3.17(1H, m), 3.84-3.99(4H, m), 4.02-4.40(5H, m), 4.51-4.74(1H, m), 6.04(1H, s), 6.82(1H, m), 6.95-7.03(2H, m), 7.09(1H, m).	ESI-MS m/z: 446 [M+H]+
575 (Isomer A)		1H-NMR ($CDCl_3$) δ : 0.20-0.24 (2H, m), 0.54-0.59 (2H, m), 1.07 (1H, m), 2.11-2.30 (2H, m), 3.25 (1H, s), 3.38 (2H, d, J = 6.9 Hz), 3.65 (1H, dd, J = 5.2, 10.4 Hz), 3.76 (1H, dd, J = 5.2, 10.4 Hz), 4.04-4.28 (3H, m), 4.33-4.40 (2H, m), 4.64 (1H, m), 4.91 (1H, s), 6.04 (1H, s), 6.97 (1H, d, J = 8.6 Hz), 7.29 (1H, m), 7.48 (1H, dd, J = 2.1, 8.6 Hz), 7.59 (1H, s).	ESI-MS m/z: 468 [M+H]+
575 (Isomer B)		1H-NMR ($CDCl_3$) δ : 0.20-0.24 (2H, m), 0.53-0.59 (2H, m), 1.07 (1H, m), 2.15-2.29 (2H, m), 3.23 (1H, s), 3.38 (2H, d, J = 6.9 Hz), 3.66 (1H, dd, J = 5.2, 10.5 Hz), 3.76 (1H, dd, J = 5.1, 10.5 Hz), 4.04 (1H, m), 4.18-4.23 (2H, m), 4.33-4.39 (2H, m), 4.64 (1H, m), 4.92 (1H, s), 6.04 (1H, s), 6.97 (1H, d, J = 8.6 Hz), 7.29 (1H, m), 7.48 (1H, dd, J = 2.1, 8.6 Hz), 7.60 (1H, s).	ESI-MS m/z: 468 [M+H]+
576 (Isomer A)		1H-NMR ($CDCl_3$) δ : 0.17-0.21 (2H, m), 0.52-0.57 (2H, m), 1.03 (1H, m), 2.95 (1H, s), 3.37 (2H, d, J = 6.9 Hz), 3.75-3.83 (2H, m), 4.17-4.23 (2H, m), 4.29-4.36 (2H, m), 4.65 (1H, m), 4.93 (1H, s), 5.42 (1H, m), 5.92 (1H, s), 6.97 (1H, d, J = 8.6 Hz), 7.25 (1H, m), 7.48 (1H, dd, J = 2.2, 8.6 Hz), 7.65 (1H, d, J = 2.0 Hz).	ESI-MS m/z: 454 [M+H]+
576 (Isomer B)		1H-NMR ($CDCl_3$) δ : 0.17-0.21 (2H, m), 0.52-0.57 (2H, m), 1.03 (1H, m), 3.03 (1H, s), 3.38 (2H, d, J = 6.9 Hz), 3.79 (2H, dd, J = 1.5, 4.7 Hz), 4.17-4.36 (4H, m), 4.64 (1H, m), 4.92 (1H, t, J = 4.0 Hz), 5.41 (1H, m), 5.92 (1H, s), 6.97 (1H, d, J = 8.6 Hz), 7.28 (1H, m), 7.48 (1H, dd, J = 2.0, 8.8 Hz), 7.62 (1H, d, J = 1.6 Hz).	ESI-MS m/z: 454 [M+H]+
577 (Isomer A)		1H-NMR ($CDCl_3$) δ : 1.31-1.45 (2H, m), 1.62-1.74 (3H, m), 1.87 (1H, m), 1.98 (1H, m), 2.90 (1H, dd, J = 4.7, 16.7 Hz), 3.17 (1H, dd, J = 5.1, 16.8 Hz), 3.41 (2H, dt, J = 2.2, 11.8 Hz), 3.85 (1H, dd, J = 7.9, 9.8 Hz), 3.95-4.01 (2H, m), 4.26-4.37 (3H, m), 4.64 (1H, m), 5.39 (1H, m), 5.89 (1H, s), 6.90-6.94 (2H, m), 7.38 (1H, d, J = 1.8 Hz), 7.42 (1H, dd, J = 2.1, 8.5 Hz).	ESI-MS m/z: 409 [M+H]+
577 (Isomer B)		1H-NMR ($CDCl_3$) δ : 1.31-1.46 (2H, m), 1.63-1.75 (3H, m), 1.87 (1H, m), 1.99 (1H, m), 2.90 (1H, dd, J = 4.5, 16.9 Hz), 3.17 (1H, dd, J = 5.4, 16.9 Hz), 3.42 (1H, dt, J = 2.2, 11.8 Hz), 3.85 (1H, dd, J = 8.0, 9.8 Hz), 3.96-4.01 (2H, m), 4.26-4.36 (3H, m), 4.64 (1H, m), 5.38 (1H, m), 5.89 (1H, s), 6.90-6.94 (2H, m), 7.38 (1H, d, J = 1.8 Hz), 7.42 (1H, dd, J = 2.0, 8.5 Hz).	ESI-MS m/z: 409 [M+H]+
578		1H-NMR ($CDCl_3$) δ : 0.14-0.19 (2H, m), 0.49-0.56 (2H, m), 1.00 (1H, m), 2.82 (1H, d, J =4.6, 16.7 Hz), 3.12 (1H, m), 3.33-3.38 (2H, m), 3.76-3.78 (2H, m), 4.11-4.15 (2H, m), 4.18-4.25 (2H, m), 4.57 (1H, m), 5.35 (1H, m), 6.78 (1H, d, J = 8.7 Hz), 7.02-7.08 (3H, m), 7.27 (1H, s).	ESI-MS m/z: 404 [M+H]+

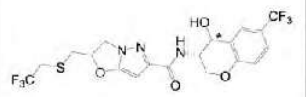
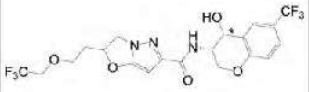
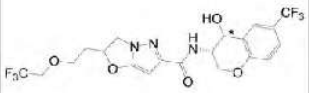
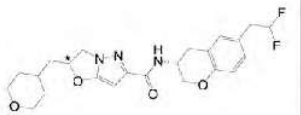
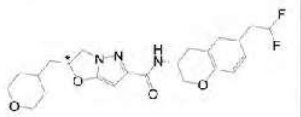
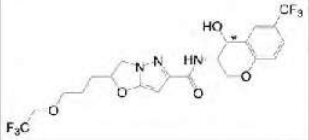
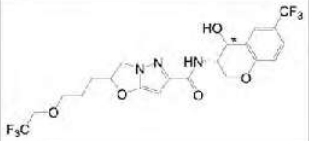
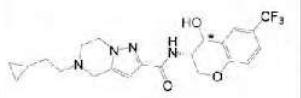
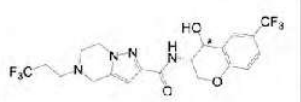
[1463]

[Table 75]

Example	Structural formula	NMR	MS
579 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.39(2H, m), 4.06-4.15(1H, m), 4.20(1H, m), 4.33-4.40(2H, m), 4.42(1H, m), 4.78(1H, m), 5.51(1H, dd, J=54.9, 2.0 Hz), 6.00(1H, m), 6.13(1H, s), 7.02(1H, d, J=8.6 Hz), 7.17(1H, d, J=8.8 Hz), 7.58(1H, d, J=8.6 Hz), 7.63(1H, m).	ESI-MS m/z: 436 [M+H]+
579 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.17-2.44(2H, m), 4.11(1H, m), 4.24(1H, m), 4.33-4.48(3H, m), 4.70(1H, m), 5.42(1H, dd, J=54.9, 2.0 Hz), 5.95(1H, m), 6.08(1H, s), 6.93(1H, d, J=8.8 Hz), 7.08(1H, d, J=8.6 Hz), 7.58(1H, d, J=8.6 Hz), 7.65(1H, m).	ESI-MS m/z: 436 [M+H]+
580		1H-NMR ($CDCl_3$) δ : 2.53 (3H, s), 3.31 (1H, s), 4.07-4.35 (6H, m), 4.67 (1H, m), 4.94 (1H, d, J=3.6 Hz), 5.03 (2H, s), 6.95 (1H, d, J=8.6 Hz), 7.01 (1H, d, J=7.6 Hz), 7.47 (1H, dd, J=2.1, 8.7 Hz), 7.60 (1H, t, J=7.8 Hz), 7.63 (1H, d, J=1.8 Hz), 7.77 (1H, d, J=7.9 Hz), 8.05 (1H, d, J=8.0 Hz).	ESI-MS m/z: 475 [M+H]+
581		1H-NMR ($CDCl_3$) δ : 1.30 (3H, t, J=7.6 Hz), 2.80 (2H, q, J=7.6 Hz), 3.01 (1H, s), 4.12-4.37 (6H, m), 4.67 (1H, m), 4.95 (1H, m), 5.09 (2H, d, J=3.3 Hz), 6.99 (2H, m), 7.46 (1H, dd, J=2.3, 8.7 Hz), 7.61 (1H, t, J=7.8 Hz), 7.65 (1H, m), 7.80 (1H, d, J=8.4 Hz), 7.91 (1H, d, J=7.7 Hz).	ESI-MS m/z: 489 [M+H]+
582		1H-NMR ($CDCl_3$) δ : 0.98 (3H, dt, J=3.6, 11.4 Hz), 1.26-1.61 (2H, m), 1.80 (1H, m), 1.91 (1H, m), 2.22 (1H, d, J=4.7 Hz), 2.92 (1H, m), 3.20 (1H, m), 3.71 (1H, dd, J=4.8, 12.2 Hz), 4.02 (1H, d, J=12.3 Hz), 4.15 (1H, m), 4.25 (2H, s), 4.33 (1H, m), 4.65 (1H, m, J=4.0 Hz), 6.26 (1H, s), 6.94-7.00 (2H, m), 7.33 (1H, s), 7.39 (1H, d, J=8.5 Hz).	ESI-MS m/z: 425 [M+H]+
583		1H-NMR ($CDCl_3$) δ : 1.41-1.61(3H, m), 1.88(2H, m), 2.08(1H, m), 2.19(1H, m), 2.92(1H, dd, J=16.7, 4.4 Hz), 3.20(1H, dd, J=16.7, 4.9 Hz), 3.41(2H, m), 3.95(1H, m), 4.04(3H, m), 4.14-4.29(3H, m), 4.64(1H, m), 5.99(1H, s), 6.94(1H, d, J=8.5 Hz), 6.97(1H, m), 7.33(1H, m), 7.37(1H, d, J=8.5 Hz).	ESI-MS m/z: 452 [M+H]+
584		1H-NMR ($CDCl_3$) δ : 1.41-1.64(3H, m), 1.88(2H, m), 2.06(1H, m), 2.20(1H, m), 2.84(1H, dd, J=16.3, 4.4 Hz), 3.15(1H, dd, J=16.3, 4.9 Hz), 3.41(2H, m), 3.94(1H, m), 4.04(3H, m), 4.14-4.25(3H, m), 4.59(1H, m), 5.98(1H, s), 6.80(1H, d, J=8.7 Hz), 6.99(1H, m), 7.04(1H, d, J=2.1 Hz), 7.06(1H, d, J=8.7 Hz).	ESI-MS m/z: 418 [M+H]+
585		1H-NMR ($CDCl_3$) δ : 1.44-1.63(3H, m), 1.88(2H, m), 2.07(1H, m), 2.20(1H, m), 2.90(1H, dd, J=16.7, 4.7 Hz), 3.17(1H, dd, J=16.7, 4.6 Hz), 3.41(2H, m), 3.98(1H, m), 4.05(3H, m), 4.14-4.34(3H, m), 4.64(1H, m), 6.00(1H, s), 6.93(1H, d, J=8.5 Hz), 6.94(1H, m), 7.38(1H, d, J=2.0 Hz), 7.42(1H, dd, J=8.5, 2.0 Hz).	ESI-MS m/z: 409 [M+H]+
586		1H-NMR ($CDCl_3$) δ : 1.45-1.63(3H, m), 1.89(2H, m), 2.07(1H, m), 2.19(1H, m), 2.90(1H, dd, J=16.7, 4.2 Hz), 3.04(2H, td, J=17.4, 4.4 Hz), 3.16(1H, dd, J=16.7, 4.8 Hz), 3.42(2H, m), 3.94(1H, m), 4.04(3H, m), 4.13-4.24(3H, m), 4.61(1H, m), 5.88(1H, tt, J=53.3, 4.5 Hz), 5.99(1H, s), 6.83(1H, d, J=8.3 Hz), 6.95(1H, d, J=1.8 Hz), 7.00(1H, dd, J=8.3, 1.8 Hz), 7.03(1H, m).	ESI-MS m/z: 448 [M+H]+

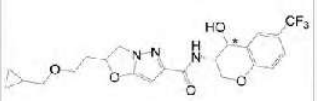
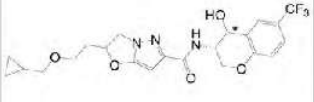
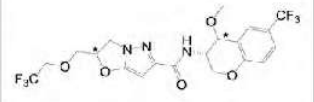
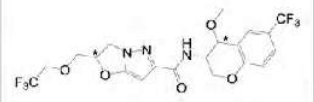
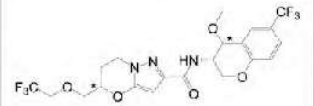
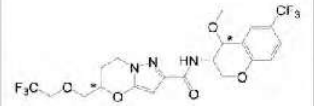
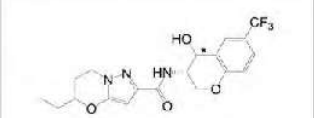
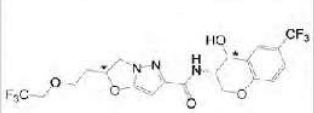
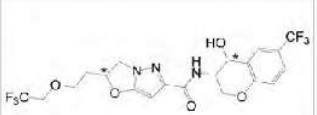
[1464]

[Table 76]

Example	Structural formula	NMR	MS
587		1H-NMR ($CDCl_3$) δ : 2.99 (1H, m), 3.09-3.15 (2H, m), 3.21 (2H, q, J = 9.7 Hz), 4.11 (1H, m), 4.20 (1H, m), 4.33-4.41 (2H, m), 4.64 (1H, m), 4.92 (1H, s), 5.51 (1H, m), 5.94 (1H, d, J = 1.9 Hz), 6.97 (1H, d, J = 8.6 Hz), 7.29 (1H, m), 7.49 (1H, dd, J = 2.2, 8.7 Hz), 7.63 (1H, dd, J = 1.8, 6.5 Hz).	ESI-MS m/z: 498 [M+H]+
588		1H-NMR ($CDCl_3$) δ : 2.18-2.22 (2H, m), 3.01 (1H, m), 3.81-3.87 (4H, m), 3.97 (1H, m), 4.20 (1H, t, J = 9.8 Hz), 4.35 (2H, dd, J = 3.6, 10.8 Hz), 4.64 (1H, m), 4.92 (1H, m), 5.45 (1H, m), 5.91 (1H, s), 6.97 (1H, d, J = 8.7 Hz), 7.29 (1H, m), 7.48 (1H, dd, J = 2.1, 8.6 Hz), 7.62 (1H, s).	ESI-MS m/z: 496 [M+H]+
589		1H-NMR ($CDCl_3$) δ : 2.15-2.23 (2H, m), 3.49 (1H, m), 3.79-3.86 (4H, m), 3.96 (1H, m), 4.28-4.37 (2H, m), 4.47-4.51 (2H, m), 4.75 (1H, m), 5.43 (1H, m), 5.89 (1H, s), 6.99-7.02 (2H, m), 7.48 (1H, dd, J = 2.1, 8.6 Hz), 7.64 (1H, s).	ESI-MS m/z: 496 [M+H]+
590 (Isomer A)		1H-NMR ($CDCl_3$) δ : 1.30-1.45 (2H, m), 1.63-1.74 (3H, m), 1.86 (1H, m), 1.98 (1H, m), 2.85 (1H, dd, J = 4.1, 15.7 Hz), 3.04 (2H, dt, J = 4.5, 17.4 Hz), 3.17 (1H, dd, J = 5.5, 16.8 Hz), 3.41 (2H, dt, J = 2.2, 11.8 Hz), 3.84 (1H, dd, J = 7.9, 9.7 Hz), 3.95-4.00 (2H, m), 4.19 (2H, d, J = 2.9 Hz), 4.34 (1H, dd, J = 6.2, 9.7 Hz), 4.62 (1H, m), 5.38 (1H, m), 5.88 (1H, m), 5.89 (1H, s), 6.83 (1H, d, J = 8.3 Hz), 6.93 (1H, s), 7.01 (2H, d, J = 8.1 Hz).	ESI-MS m/z: 448 [M+H]+
590 (Isomer B)		1H-NMR ($CDCl_3$) δ : 1.31-1.46 (2H, m), 1.63-1.74 (3H, m), 1.86 (1H, m), 1.99 (1H, m), 2.85 (1H, dd, J = 4.0, 15.7 Hz), 3.04 (2H, dt, J = 4.6, 17.4 Hz), 3.17 (1H, dd, J = 5.3, 16.8 Hz), 3.40 (2H, dt, J = 2.1, 17.7 Hz), 3.85 (1H, dd, J = 8.0, 9.7 Hz), 3.95-4.00 (2H, m), 4.18 (2H, d, J = 2.8 Hz), 4.33 (1H, dd, J = 6.2, 9.7 Hz), 4.62 (1H, m), 5.37 (1H, m), 5.87 (1H, m), 5.89 (1H, s), 6.83 (1H, d, J = 8.3 Hz), 6.93 (1H, s), 7.00 (2H, d, J = 8.4 Hz).	ESI-MS m/z: 496 [M+H]+
591		1H-NMR ($CDCl_3$) δ : 1.84(2H, m), 1.99(2H, m), 3.26(1H, m), 3.69(2H, m), 3.77-4.01(3H, m), 4.17-4.36(3H, m), 4.61(1H, m), 4.91(1H, t, J=4.2 Hz), 5.32(1H, m), 5.89(1H, m), 6.94(1H, d, J=8.6 Hz), 7.29(1H, d, J=8.3 Hz), 7.47(1H, dd, J=8.7, 1.9 Hz), 7.61(1H, m).	ESI-MS m/z: 510 [M+H]+
592		1H-NMR ($CDCl_3$) δ : 1.81(2H, m), 1.99(2H, m), 3.53(1H, m), 3.68(2H, m), 3.77-3.93(3H, m), 4.26-4.37(3H, m), 4.44(1H, m), 4.49(1H, m), 4.75(1H, t, J=3.9 Hz), 5.32(1H, m), 5.87(1H, s), 7.00(1H, d, J=8.7 Hz), 7.01(1H, m), 7.48(1H, dd, J=8.7, 1.9 Hz), 7.64(1H, d, J=2.0 Hz).	ESI-MS m/z: 510 [M+H]+
593		1H-NMR ($CDCl_3$) δ : 0.05-0.08 (2H, m), 0.45-0.48 (2H, m), 0.71 (1H, m), 1.45-1.51 (2H, m), 2.64-2.68 (2H, m), 2.86 (1H, d, J=4.8 Hz), 2.93-2.94 (2H, m), 3.69 (2H, d, J=4.2 Hz), 4.15-4.25 (3H, m), 4.35 (1H, m), 4.67 (1H, m), 4.93 (1H, m), 6.53 (1H, s), 6.97 (1H, m), 7.28 (1H, m), 7.49 (1H, m), 7.63 (1H, m).	ESI-MS m/z: 451 [M+H]+
594		1H-NMR ($CDCl_3$) δ : 2.36-2.42 (2H, m), 2.79-2.86 (3H, m), 2.96-2.99 (2H, m), 3.74 (2H, s), 4.17-4.24 (3H, m), 4.36 (1H, dd, J=3.8, 11.5 Hz), 4.67 (1H, m), 4.94 (1H, t, J=3.9 Hz), 6.55 (1H, s), 6.98 (1H, m), 7.30 (1H, m), 7.50 (1H, m), 7.64 (1H, m).	ESI-MS m/z: 478 [M+H]+

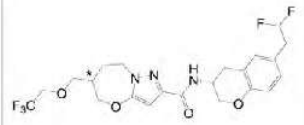
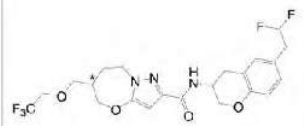
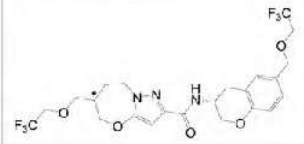
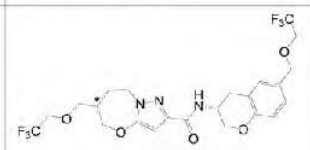
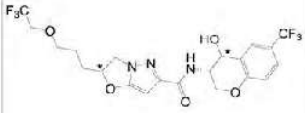
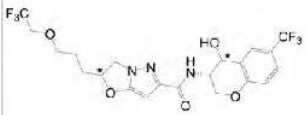
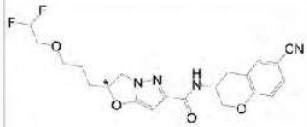
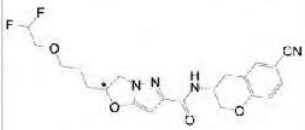
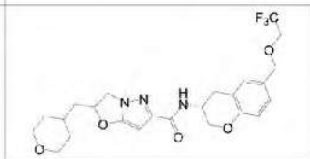
[1465]

[Table 77]

Example	Structural formula	NMR	MS
595		1H-NMR ($CDCl_3$) δ : 0.17-0.21 (2H, m), 0.51-0.56 (2H, m), 1.03 (1H, m), 2.10-2.23 (2H, m), 3.10 (1H, m), 3.27 (2H, d, J = 6.9 Hz), 3.63 (2H, t, J = 6.1 Hz), 3.99 (1H, m), 4.20 (1H, dd, J = 9.1, 10.6 Hz), 4.31-4.36 (2H, m), 4.64 (1H, m), 4.92 (1H, s), 5.46 (1H, m), 5.90 (1H, s), 6.97 (1H, d, J = 8.6 Hz), 7.29 (1H, s), 7.48 (1H, dd, J = 2.1, 8.7 Hz), 7.62 (1H, s).	ESI-MS m/z: 468 [M+H]+
596		1H-NMR ($CDCl_3$) δ : 0.15-0.20 (2H, m), 0.48-0.55 (2H, m), 1.02 (1H, m), 2.09-2.22 (2H, m), 3.21-3.33 (3H, m), 3.62 (2H, q, J = 5.5 Hz), 4.00 (1H, m), 4.28-4.35 (2H, m), 4.44 (1H, m), 4.50 (1H, dd, J = 1.8, 11.4 Hz), 4.75 (1H, s), 5.45 (1H, m), 5.88 (1H, s), 6.98-7.01 (2H, m), 7.48 (1H, m), 7.64 (1H, s).	ESI-MS m/z: 468 [M+H]+
597 (isomer A)		1H-NMR ($CDCl_3$) δ : 3.49 (3H, s), 3.94 (2H, q, J = 8.5 Hz), 3.99 (2H, d, J = 4.2 Hz), 4.23-4.29 (3H, m), 4.34-4.39 (2H, m), 4.70 (1H, m), 5.44 (1H, m), 5.94 (1H, s), 6.97 (1H, d, J = 8.6 Hz), 7.20 (1H, d, J = 8.2 Hz), 7.49-7.52 (2H, m).	ESI-MS m/z: 496 [M+H]+
597 (isomer B)		1H-NMR ($CDCl_3$) δ : 3.49 (3H, s), 3.94 (2H, q, J = 8.5 Hz), 3.99 (2H, d, J = 4.2 Hz), 4.21-4.29 (3H, m), 4.32-4.41 (2H, m), 4.69 (1H, m), 5.44 (1H, m), 5.94 (1H, s), 6.97 (1H, d, J = 9.0 Hz), 7.20 (1H, d, J = 8.4 Hz), 7.49-7.51 (2H, m).	ESI-MS m/z: 496 [M+H]+
598 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.23-2.29 (2H, m), 3.49 (3H, s), 3.86-4.00 (4H, m), 4.14 (1H, m), 4.25-4.32 (3H, m), 4.34 (1H, d, J = 3.6 Hz), 4.39 (1H, m), 4.70 (1H, m), 6.05 (1H, s), 6.97 (1H, d, J = 9.2 Hz), 7.21 (1H, d, J = 8.8 Hz), 7.49-7.51 (2H, m).	ESI-MS m/z: 510 [M+H]+
598 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.23-2.29 (2H, m), 3.49 (3H, s), 3.86-3.99 (4H, m), 4.15 (1H, m), 4.24-4.32 (3H, m), 4.34 (1H, d, J = 3.6 Hz), 4.39 (1H, m), 4.70 (1H, m), 6.05 (1H, s), 6.97 (1H, d, J = 9.3 Hz), 7.21 (1H, d, J = 8.6 Hz), 7.50-7.51 (2H, m).	ESI-MS m/z: 510 [M+H]+
599		1H-NMR ($CDCl_3$) δ : 1.06(3H, t, J=7.5 Hz), 1.72(1H, m), 1.81(1H, m), 2.01(1H, m), 2.13(1H, m), 3.84(1H, m), 4.00(1H, m), 4.04-4.25(3H, m), 4.35(1H, dd, J=10.7, 3.5 Hz), 4.62(1H, m), 4.90(1H, t, J=3.9 Hz), 6.02(1H, s), 6.92(1H, d, J=8.6 Hz), 7.34(1H, d, J=8.1 Hz), 7.47(1H, dd, J=8.7, 2.1 Hz), 7.51(1H, d, J=2.1 Hz).	ESI-MS m/z: 412 [M+H]+
600 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.15-2.25 (2H, m), 2.92 (1H, m), 3.79-3.87 (4H, m), 3.96 (1H, t, J = 8.9 Hz), 4.21 (1H, dd, J = 6.8, 10.8 Hz), 4.33-4.39 (2H, m), 4.65 (1H, m), 4.93 (1H, s), 5.46 (1H, m), 5.91 (1H, s), 6.97 (1H, d, J = 8.5 Hz), 7.27 (1H, m), 7.48 (1H, dd, J = 2.1, 8.7 Hz), 7.64 (1H, s).	ESI-MS m/z: 496 [M+H]+
600 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.16-2.26 (2H, m), 2.97 (1H, m), 3.81-3.87 (4H, m), 3.99 (1H, dd, J = 7.8, 10.1 Hz), 4.20 (1H, dd, J = 9.0, 10.8 Hz), 4.33-4.37 (2H, m), 4.64 (1H, m), 4.92 (1H, s), 5.45 (1H, m), 5.91 (1H, s), 6.97 (1H, d, J = 8.6 Hz), 7.28 (1H, m), 7.48 (1H, dd, J = 2.1, 8.7 Hz), 7.62 (1H, d, J = 1.7 Hz).	ESI-MS m/z: 496 [M+H]+

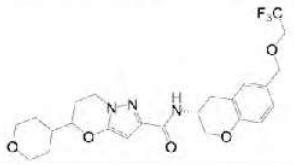
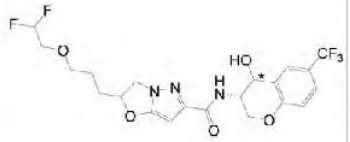
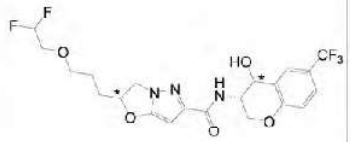
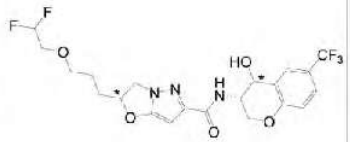
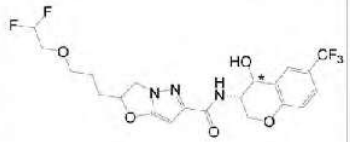
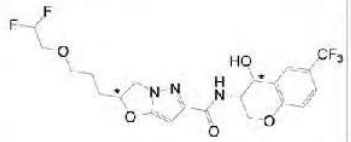
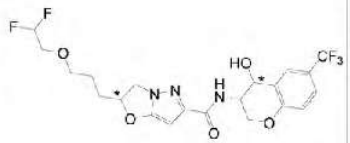
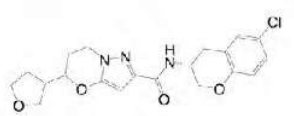
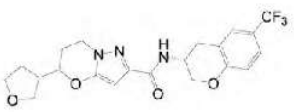
[1466]

[Table 78]

Example	Structural formula	NMR	MS
601 (isomer A)		1H-NMR ($CDCl_3$) δ : 1.73 (1H, m), 1.99 (1H, m), 2.38 (1H, m), 2.86 (1H, dd, J=4.4, 16.9 Hz), 3.04 (2H, dt, J=4.5, 17.4 Hz), 3.17 (1H, dd, J=5.4, 16.8 Hz), 3.59-3.67 (2H, m), 3.74-3.85 (3H, m), 4.08 (1H, m), 4.18-4.19 (2H, m), 4.28-4.34 (2H, m), 4.61 (1H, m), 5.81 (1H, tt, J=4.5, 85.1 Hz), 6.23 (1H, s), 6.85 (1H, d, J=8.3 Hz), 6.94 (1H, s), 7.01 (2H, dd, J=2.2, 8.4 Hz).	ESI-MS m/z: 490 [M+H]+
601 (isomer B)		1H-NMR ($CDCl_3$) δ : 1.73 (1H, m), 2.00 (1H, m), 2.38 (1H, m), 2.86 (1H, dd, J=4.4, 16.7 Hz), 2.99-3.09 (2H, m, J=7.9 Hz), 3.17 (1H, dd, J=5.4, 16.8 Hz), 3.58-3.67 (2H, m), 3.73-3.85 (3H, m), 4.09 (1H, m), 4.18-4.19 (2H, m), 4.28-4.34 (2H, m), 4.61 (1H, m), 5.88 (1H, tt, J=4.5, 56.6 Hz), 6.23 (1H, s), 6.85 (1H, d, J=8.3 Hz), 6.94 (1H, s), 7.00-7.04 (2H, m).	ESI-MS m/z: 490 [M+H]+
602 (isomer A)		1H-NMR ($CDCl_3$) δ : 1.73 (1H, m), 2.00 (1H, m), 2.38 (1H, m), 2.87 (1H, dd, J=4.3, 16.8 Hz), 3.18 (1H, dd, J=5.4, 16.6 Hz), 3.59-3.67 (2H, m), 3.75-3.85 (5H, m), 4.08 (1H, m), 4.20 (2H, d, J=2.9 Hz), 4.27-4.33 (2H, m), 4.57 (2H, s), 4.62 (1H, m), 6.23 (1H, s), 6.86 (1H, d, J=8.3 Hz), 7.01 (1H, d, J=8.8 Hz), 7.05 (1H, m), 7.12 (1H, dd, J=2.1, 8.4 Hz).	ESI-MS m/z: 538 [M+H]+
602 (isomer B)		1H-NMR ($CDCl_3$) δ : 1.72 (1H, m), 1.99 (1H, m), 2.38 (1H, m), 2.88 (1H, dd, J=4.1, 16.4 Hz), 3.18 (1H, dd, J=5.3, 16.8 Hz), 3.58-3.66 (2H, m), 3.73-3.86 (5H, m), 4.09 (1H, m), 4.21 (2H, d, J=2.8 Hz), 4.27-4.33 (2H, m), 4.57 (2H, s), 4.62 (1H, m), 6.23 (1H, s), 6.86 (1H, d, J=8.3 Hz), 7.00-7.05 (2H, m), 7.12 (1H, dd, J=2.0, 8.4 Hz).	ESI-MS m/z: 538 [M+H]+
603 (isomer A)		1H-NMR ($CDCl_3$) δ : 1.84(2H, m), 1.99(2H, m), 3.42(1H, d, J=4.9 Hz), 3.69(2H, m),3.77-3.87(3H, m), 4.20(1H, dd, J=10.7, 9.2 Hz), 4.27(1H, dd, J=10.7, 9.8 Hz), 4.34(1H, dd, J=10.8, 3.0 Hz), 4.61(1H, m), 4.91(1H, t, J=4.2 Hz), 5.32(1H, m), 5.89(1H, s), 6.94(1H, d, J=8.6 Hz), 7.29(1H, d, J=8.3 Hz), 7.47(1H, dd, J=8.7, 1.9 Hz), 7.61(1H, d, J=1.9 Hz).	ESI-MS m/z: 510 [M+H]+
603 (isomer B)		1H-NMR ($CDCl_3$) δ : 1.84(2H, m), 1.99(2H, m), 3.42(1H, d, J=4,9 Hz), 3.69(2H, m),3.77-3.87(3H, m), 4.17-4.28(2H, m), 4.34(1H, dd, J=10.8, 3.0 Hz), 4.61(1H, m), 4.91(1H, t, J=4.2 Hz), 5.32(1H, m), 5.89(1H, s), 6.94(1H, d, J=8.6 Hz), 7.29(1H, d, J=8.3 Hz), 7.47(1H, dd, J=8.7, 1.9 Hz), 7.61(1H, d, J=1.9 Hz).	ESI-MS m/z: 510 [M+H]+
604 (isomer A)		1H-NMR ($CDCl_3$) δ : 1.79(2H, m), 1.99(2H, m), 2.89(1H, dd, J=16.8, 4.5 Hz), 3.17(1H, dd, J=16.9, 5.1 Hz), 3.52-3.73(4H, m), 3.89(1H, dd, J=9.8, 7.7 Hz), 4.23-4.30(2H, m), 4.33(1H, dd, J=9.6, 8.3 Hz), 4.64(1H, m), 5.38(1H, m), 5.85(1H, tt, J=55.4, 4.0 Hz), 5.89(1H, s), 6.92(1H, d, J=7.7 Hz), 6.93(1H, d, J=8.5 Hz), 7.38(1H, d, J=2.1 Hz), 7.42(1H, dd, J=8.5, 2.1 Hz).	ESI-MS m/z: 433 [M+H]+
604 (isomer B)		1H-NMR ($CDCl_3$) δ : 1.79(2H, m), 1.99(2H, m), 2.89(1H, dd, J=16.8, 4.5 Hz), 3.17(1H, dd, J=16.9, 5.1 Hz), 3.52-3.73(4H, m), 3.89(1H, dd, J=9.8, 7.7 Hz), 4.23-4.30(2H, m), 4.33(1H, dd, J=9.8, 8.3 Hz), 4.64(1H, m), 5.38(1H, m), 5.85(1H, tt, J=55.4, 4.0 Hz), 5.89(1H, s), 6.92(1H, d, J=7.7 Hz), 6.93(1H, d, J=8.5 Hz), 7.38(1H, d, J=2.1 Hz), 7.42(1H, dd, J=8.5, 2.1 Hz).	ESI-MS m/z: 433 [M+H]+
605		1H-NMR ($CDCl_3$) δ : 1.33-1.43 (2H, m), 1.62-1.75 (3H, m), 1.86 (1H, m), 1.98 (1H, m), 2.86 (1H, dd, J = 4.0, 16.7 Hz), 3.18 (1H, dd, J = 5.6, 16.6 Hz), 3.41 (2H, t, J = 11.2 Hz), 3.78-3.87 (3H, m), 3.97-4.01 (2H, m), 4.20 (2H, d, J = 2.9 Hz), 4.33 (1H, m), 4.56 (2H, s), 4.63 (1H, m), 5.38 (1H, m), 5.89 (1H, s), 6.87 (1H, d, J = 8.3 Hz), 7.00 (1H, d, J = 7.5 Hz), 7.04 (1H, s), 7.11 (1H, dd, J = 2.0, 8.4 Hz).	ESI-MS m/z: 496 [M+H]+

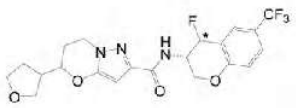
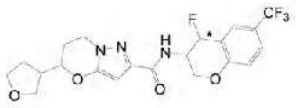
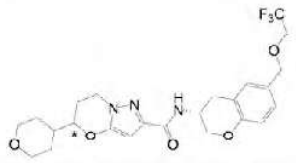
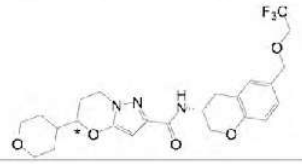
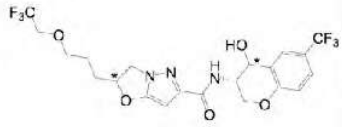
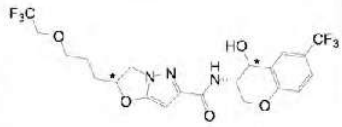
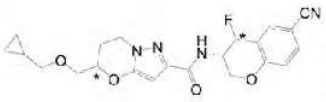
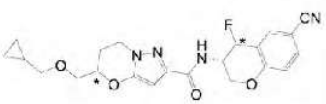
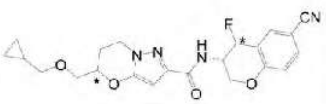
[1467]

[Table 79]

Example	Structural formula	NMR	MS
606		1H-NMR ($CDCl_3$) δ: 1.44-1.66(3H, m), 1.82-1.97(2H, m), 2.07(1H, m), 2.19(1H, m), 2.87(1H, dd, J=16.7, 4.2 Hz), 3.17(1H, dd, J=16.7, 5.4 Hz), 3.35-3.45(2H, m), 3.79(1H, d, J=8.7 Hz), 3.85(1H, d, J=8.7 Hz), 3.94(1H, m), 3.99-4.08(3H, m), 4.14-4.24(3H, m), 4.57(2H, s), 4.62(1H, m), 5.98(1H, s), 6.94(1H, d, J=8.5 Hz), 6.87(1H, d, J=8.3 Hz), 7.05(1H, d, J=1.8 Hz), 7.12(1H, dd, J=8.3, 1.8 Hz).	ESI-MS m/z: 496 [M+H]+
607		1H-NMR ($CDCl_3$) δ: 1.80(2H, m), 2.00(2H, m), 3.55-3.72(4H, m), 3.76(1H, m), 3.83-3.96(1H, m), 4.07-4.24(2H, m), 4.34(1H, dd, J=10.7, 3.6 Hz), 4.63(1H, m), 4.92(1H, m), 5.33(1H, m), 5.86(1H, tt, J=55.6, 4.0), 5.88(1H, s), 6.96(1H, d, J=8.6 Hz), 7.28(1H, m), 7.48(1H, dd, J=8.6, 1.8 Hz), 7.60(0.5H, d, J=1.8 Hz), 7.63(0.5H, d, J=1.8 Hz).	ESI-MS m/z: 492 [M+H]+
608 (isomer A)		1H-NMR ($CDCl_3$) δ: 1.80(2H, m), 2.00(2H, m), 3.36(1H, br s), 3.55-3.72(4H, m), 3.84(1H, dd, J=9.9, 7.7 Hz), 4.15-4.39(3H, m), 4.62(1H, m), 4.92(1H, m), 5.33(1H, m), 5.86(1H, tt, J=55.6, 4.0), 5.89(1H, s), 6.96(1H, d, J=8.6 Hz), 7.28(1H, d, J=8.1 Hz), 7.48(1H, dd, J=8.6, 1.8 Hz), 7.63(1H, d, J=1.8 Hz).	ESI-MS m/z: 492 [M+H]+
608 (isomer B)		1H-NMR ($CDCl_3$) δ: 1.80(2H, m), 2.00(2H, m), 3.44(1H, br s), 3.55-3.72(4H, m), 3.84(1H, dd, J=9.9, 7.7 Hz), 4.15-4.39(3H, m), 4.62(1H, m), 4.92(1H, m), 5.33(1H, m), 5.86(1H, tt, J=55.6, 4.0), 5.89(1H, s), 6.96(1H, d, J=8.6 Hz), 7.28(1H, d, J=8.1 Hz), 7.48(1H, dd, J=8.6, 1.8 Hz), 7.63(1H, d, J=1.8 Hz).	ESI-MS m/z: 492 [M+H]+
609		1H-NMR ($CDCl_3$) δ: 1.57-1.80(2H, m), 1.90(2H, m), 3.46-3.65(4H, m), 3.74-3.85(2H, m), 4.20-4.30(2H, m), 4.38(1H, m), 4.67(1H, m), 4.92(1H, m), 5.25(1H, m), 5.78(1H, m), 5.80(1H, s), 6.93(1H, d, J=8.6 Hz), 6.96(1H, m), 7.40(1H, dd, J=8.6, 1.8 Hz), 7.58(1H, m).	ESI-MS m/z: 492 [M+H]+
610 (isomer A)		1H-NMR ($CDCl_3$) δ: 1.80(2H, m), 2.00(2H, m), 3.55-3.72(4H, m), 3.84(1H, br s), 3.84(1H, dd, J=9.9, 7.7 Hz), 4.20(1H, dd, J=10.8, 9.1 Hz), 4.29(1H, dd, J=8.7, 8.3 Hz), 4.34(1H, dd, J=10.7, 3.6 Hz), 4.62(1H, m), 4.92(1H, m), 5.33(1H, m), 5.86(1H, tt, J=55.6, 4.0), 5.89(1H, s). 6.96(1H, d, J=8.6 Hz), 7.28(1H, d, J=8.1 Hz), 7.48(1H, dd, J=8.6, 1.8 Hz), 7.63(1H, d, J=1.8 Hz).	ESI-MS m/z: 492 [M+H]+
610 (isomer B)		1H-NMR ($CDCl_3$) δ: 1.80(2H, m), 2.00(2H, m), 3.55-3.72(4H, m), 3.84(1H, dd, J=9.9, 7.7 Hz), 4.06(1H, br s), 4.20(1H, dd, J=10.8, 9.1 Hz), 4.29(1H, dd, J=8.7, 8.3 Hz), 4.34(1H, dd, J=10.7, 3.6 Hz), 4.62(1H, m), 4.92(1H, m), 5.33(1H, m), 5.86(1H, tt, J=55.6, 4.0), 5.89(1H, s). 6.96(1H, d, J=8.6 Hz), 7.28(1H, d, J=8.1 Hz), 7.48(1H, dd, J=8.6, 1.8 Hz), 7.63(1H, d, J=1.8 Hz).	ESI-MS m/z: 492 [M+H]+
611		1H-NMR ($CDCl_3$) δ: 1.66(1H, m), 1.90-2.29(3H, m), 2.56(1H, m), 2.64(1H, dd, J=16.9, 4.2 Hz), 3.14(1H, dd, J=16.8, 5.3 Hz), 3.60-3.99(4H, m), 4.00-4.23(5H, m), 4.60(1H, m), 5.97-6.01(1H, m), 6.94(1H, d, J=8.5 Hz), 7.00(1H, d, J=8.7 Hz), 7.03(1H, d, J=2.5 Hz), 7.07(1H, dd, J=8.5, 2.5 Hz).	ESI-MS m/z: 404 [M+H]+
612		1H-NMR ($CDCl_3$) δ: 1.66(1H, m), 1.90-2.29(3H, m), 2.55(1H, m), 2.91(1H, dd, J=16.8, 4.4 Hz), 3.19(1H, dd, J=16.8, 5.2 Hz), 3.60-3.99(4H, m), 4.00-4.29(5H, m), 4.64(1H, m), 5.98-6.02(1H, m), 6.94(1H, d, J=8.5 Hz), 6.98(1H, d, J=7.8 Hz), 7.33(1H, d, J=1.8 Hz), 7.38(1H, dd, J=8.5, 1.8 Hz).	ESI-MS m/z: 438 [M+H]+

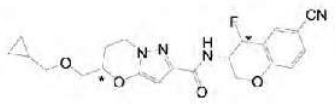
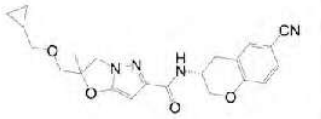
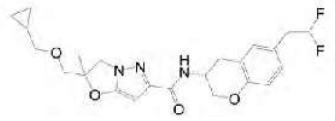
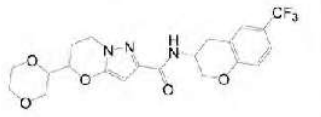
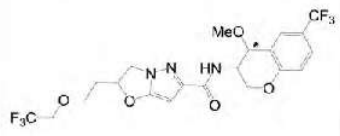
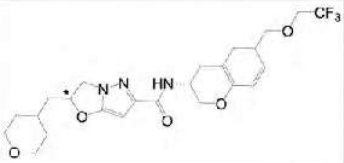
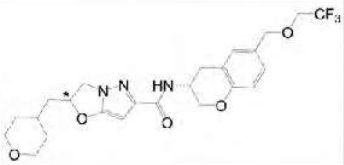
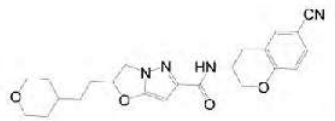
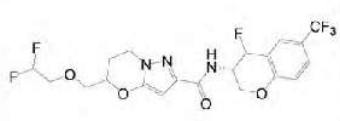
[1468]

[Table 80]

Example	Structural formula	NMR	MS
613		1H-NMR ($CDCl_3$) δ: 1.6(1H, m), 1.87-2.33(3H, m), 2.56(1H, m), 3.58-4.20(8H, m), 4.21-4.50(2H, m), 4.65-4.87(1H, m), 5.33-5.62(1H, m), 5.96-6.07(1H, m), 6.95(0.5H, m), 7.00-7.10(1H, m), 7.18(0.5H, m), 7.55-7.68(1H, m).	ESI-MS m/z: 456 [M+H]+
614		1H-NMR ($CDCl_3$) δ: 1.6(1H, m), 1.87-2.33(3H, m), 2.56(1H, m), 3.58-4.20(8H, m), 4.21-4.50(2H, m), 4.65-4.87(1H, m), 5.33-5.62(1H, m), 5.96-6.07(1H, m), 6.93(0.5H, m), 6.99-7.09(1H, m), 7.18(0.5H, m), 7.56-7.68(1H, m).	ESI-MS m/z: 456 [M+H]+
615 (isomer A)		1H-NMR ($CDCl_3$) δ: 1.44-1.66(3H, m), 1.82-1.97(2H, m), 2.07(1H, m), 2.19(1H, m), 2.87(1H, dd, J=16.7, 4.2 Hz), 3.17(1H, dd, J=16.7, 5.4 Hz), 3.35-3.45(2H, m), 3.79(1H, d, J=8.7 Hz), 3.85(1H, d, J=8.7 Hz), 3.94(1H, m), 3.99-4.08(3H, m), 4.14-4.24(3H, m), 4.57(2H, s), 4.62(1H, m), 5.98(1H, s), 6.94(1H, d, J=8.5 Hz), 6.87(1H, d, J=8.3 Hz), 7.05(1H, d, J=1.8 Hz), 7.12(1H, dd, J=8.3, 1.8 Hz).	ESI-MS m/z: 496 [M+H]+
615 (isomer B)		1H-NMR ($CDCl_3$) δ: 1.44-1.66(3H, m), 1.82-1.97(2H, m), 2.07(1H, m), 2.19(1H, m), 2.87(1H, dd, J=16.7, 4.2 Hz), 3.17(1H, dd, J=16.7, 5.4 Hz), 3.35-3.45(2H, m), 3.79(1H, d, J=8.7 Hz), 3.85(1H, d, J=8.7 Hz), 3.94(1H, m), 3.99-4.08(3H, m), 4.14-4.24(3H, m), 4.57(2H, s), 4.62(1H, m), 5.98(1H, s), 6.94(1H, d, J=8.5 Hz), 6.87(1H, d, J=8.3 Hz), 7.05(1H, d, J=1.8 Hz), 7.12(1H, dd, J=8.3, 1.8 Hz).	ESI-MS m/z: 496 [M+H]+
616 (isomer A)		1H-NMR ($CDCl_3$) δ: 1.70-1.92(2H, m), 1.96-2.07(2H, m), 3.60-3.75(2H, m), 3.80(2H, m), 3.88(1H, m), 4.07(1H, br s), 4.27-4.34(2H, m), 4.43-4.54(2H, m), 4.75(1H, m), 5.31(1H, m), 5.87(1H, s), 6.96(1H, d, J=8.6 Hz), 7.03(1H, d, J=7.6 Hz), 7.48(1H, dd, J=8.6, 1.8 Hz), 7.64(1H, d, J=1.8 Hz).	ESI-MS m/z: 510 [M+H]+
616 (isomer B)		1H-NMR ($CDCl_3$) δ: 1.70-1.92(2H, m), 1.96-2.07(2H, m), 3.60-3.75(2H, m), 3.80(2H, m), 3.88(1H, m), 4.07(1H, br s), 4.27-4.34(2H, m), 4.43-4.54(2H, m), 4.75(1H, m), 5.31(1H, m), 5.87(1H, s), 6.96(1H, d, J=8.6 Hz), 7.03(1H, d, J=7.6 Hz), 7.48(1H, dd, J=8.6, 1.8 Hz), 7.64(1H, d, J=1.8 Hz).	ESI-MS m/z: 510 [M+H]+
617 (isomer A)		1H-NMR ($CDCl_3$) δ: 0.23(2H, m), 0.57(2H, m), 1.07(1H, m), 2.14-2.37(2H, m), 3.39(2H, d, J=6.9 Hz), 3.68(1H, dd, J=10.2, 5.2 Hz), 3.78(1H, dd, J=10.2, 5.2 Hz), 4.05-4.48(5H, m), 4.62-4.98(1H, m), 5.48(1H, dd, J=54.2, 1.7 Hz), 6.06(1H, s), 7.02(1H, d, J=8.8 Hz), 7.16(1H, m), 7.60(1H, dt, J=8.8, 1.7 Hz), 7.68(1H, t, J=1.7 Hz).	ESI-MS m/z: 427 [M+H]+
617 (isomer B)		1H-NMR ($CDCl_3$) δ: 0.23(2H, m), 0.57(2H, m), 1.07(1H, m), 2.14-2.37(2H, m), 3.39(2H, d, J=6.9 Hz), 3.68(1H, dd, J=10.2, 5.2 Hz), 3.78(1H, dd, J=10.2, 5.2 Hz), 4.05-4.48(5H, m), 4.62-4.98(1H, m), 5.48(1H, dd, J=54.2, 1.7 Hz), 6.06(1H, s), 7.02(1H, d, J=8.8 Hz), 7.16(1H, m), 7.60(1H, dt, J=8.8, 1.7 Hz), 7.68(1H, t, J=1.7 Hz).	ESI-MS m/z: 427 [M+H]+
617 (isomer C)		1H-NMR ($CDCl_3$) δ: 0.23(2H, m), 0.57(2H, m), 1.07(1H, m), 2.14-2.37(2H, m), 3.39(2H, d, J=6.9 Hz), 3.68(1H, dd, J=10.2, 5.2 Hz), 3.78(1H, dd, J=10.2, 5.2 Hz), 4.05-4.48(5H, m), 4.62-4.98(1H, m), 5.48(1H, dd, J=54.2, 1.7 Hz), 6.06(1H, s), 7.02(1H, d, J=8.8 Hz), 7.16(1H, m), 7.60(1H, dt, J=8.8, 1.7 Hz), 7.68(1H, t, J=1.7 Hz).	ESI-MS m/z: 427 [M+H]+

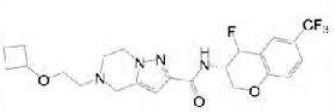
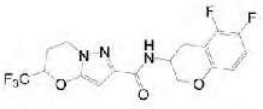
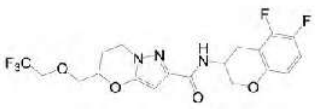
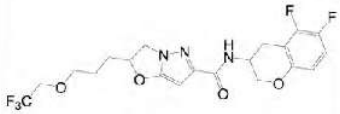
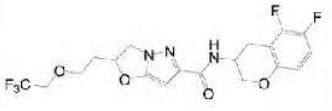
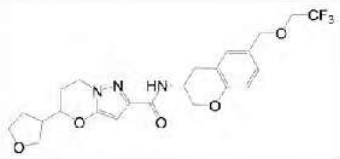
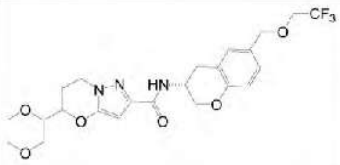
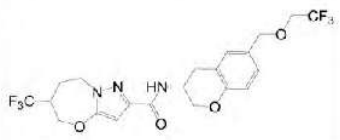
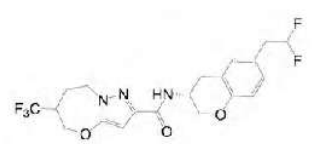
[1469]

[Table 81]

Example	Structural formula	NMR	MS
617 (isomer D)		1H-NMR ($CDCl_3$) δ : 0.23(2H, m), 0.57(2H, m), 1.07(1H, m), 2.14-2.37(2H, m), 3.39(2H, d, J=6.9 Hz), 3.68(1H, dd, J=10.2, 5.2 Hz), 3.78(1H, dd, J=10.2, 5.2 Hz), 4.05-4.48(5H, m), 4.62-4.98(1H, m), 5.48(1H, dd, J=54.2, 1.7 Hz), 6.06(1H, s), 7.02(1H, d, J=8.8 Hz), 7.16(1H, m), 7.60(1H, dt, J=8.8, 1.7 Hz), 7.68(1H, t, J=1.7 Hz).	ESI-MS m/z: 427 [M+H]+
618		1H-NMR ($CDCl_3$) δ : 0.11-0.20 (2H, m), 0.46-0.55 (2H, m), 0.99 (1H, m), 1.60 (3H, s), 2.90 (1H, dd, J = 4.5, 16.8 Hz), 3.17 (1H, dd, J = 5.2, 16.8 Hz), 3.35 (2H, dd, J = 3.9, 6.8 Hz), 3.58 (1H, dd, J = 2.0, 10.4 Hz), 3.64 (1H, dd, J = 3.6, 10.4 Hz), 3.89 (1H, dd, J = 1.9, 9.8 Hz), 4.23-4.35 (3H, m), 4.64 (1H, m), 5.88 (1H, s), 6.93 (2H, d, J = 8.5 Hz), 7.38 (1H, s), 7.42 (1H, dd, J = 2.0, 8.5 Hz).	ESI-MS m/z: 409 [M+H]+
619		1H-NMR ($CDCl_3$) δ : 0.11-0.20 (2H, m), 0.46-0.55 (2H, m), 0.99 (1H, m), 1.60 (3H, s), 2.85 (1H, dd, J = 4.2, 16.8 Hz), 3.04 (2H, dt, J = 4.5, 17.4 Hz), 3.17 (1H, dd, J = 5.4, 16.8 Hz,), 3.34 (2H, dd, J = 4.8, 6.8 Hz), 3.56-3.65 (2H, m), 3.89 (1H, dd, J = 3.8, 9.8 Hz), 4.19 (2H, s), 4.32 (1H, dd, J = 3.4, 9.8 Hz), 4.62 (1H, m), 5.72-6.03 (2H, m), 6.83 (1H, d, J = 8.3 Hz), 6.93 (1H, s), 7.00 (2H, dd, J = 2.0, 8.2 Hz).	ESI-MS m/z: 448 [M+H]+
620		1H-NMR ($CDCl_3$) δ : 2.13(1H, m), 2.32(1H, m), 2.91(1H, dd, J=16.8, 4.4 Hz), 3.19(1H, dd, J=16.8, 5.4 Hz), 3.60-3.91(7H, m), 4.07(1H, m), 4.15-4.30(4H, m), 4.64(1H, m), 6.04(1H, s), 6.94(1H, d, J=8.6 Hz), 6.98(1H, d, J=8.0 Hz), 7.32(1H, d, J=1.8 Hz), 7.36(1H, dd, J=8.6, 1.8 Hz).	ESI-MS m/z: 454 [M+H]+
621		1H-NMR ($CDCl_3$) δ : 2.17-2.28 (2H, m), 3.49 (3H, s), 3.81-3.88 (4H, m), 4.02 (1H, m), 4.25-4.29 (2H, m), 4.34 (1H, d, J = 3.6 Hz), 4.41 (1H, m), 4.69 (1H, m), 5.46 (1H, m), 5.92 (1H, s), 6.97 (1H, d, J = 9.3 Hz), 7.21 (1H, d, J = 8.4 Hz), 7.49-7.51 (2H, m).	ESI-MS m/z: 510 [M+H]+
622 (isomer A)		1H-NMR ($CDCl_3$) δ : 1.30-1.45 (2H, m), 1.63-1.74 (3H, m), 1.85 (1H, m), 1.98 (1H, m), 2.86 (1H, m), 3.18 (1H, dd, J = 5.5, 16.7 Hz), 3.41 (2H, dt, J = 2.2, 11.8 Hz), 3.78-3.86 (3H, m), 3.95-4.01 (2H, m), 4.20 (2H, d, J = 2.9 Hz), 4.34 (1H, dd, J = 8.2, 9.7 Hz), 4.56 (2H, s), 4.62 (1H, m), 5.38 (1H, m), 5.89 (1H, s), 6.87 (1H, d, J = 8.3 Hz), 7.00 (1H, d, J = 8.2 Hz), 7.04 (1H, s), 7.11 (1H, dd, J = 2.0, 8.3 Hz).	ESI-MS m/z: 496 [M+H]+
622 (isomer B)		1H-NMR ($CDCl_3$) δ : 1.31-1.45 (2H, m), 1.63-1.74 (3H, m), 1.86 (1H, m), 1.99 (1H, m), 2.86 (1H, m), 3.18 (1H, dd, J = 5.5, 16.8 Hz), 3.42 (2H, dt, J = 2.2, 11.8 Hz), 3.78-3.87 (3H, m), 3.95-4.01 (2H, m), 4.20 (2H, d, J = 2.9 Hz), 4.34 (1H, dd, J = 8.2, 9.7 Hz), 4.56 (2H, s), 4.62 (1H, m), 5.37 (1H, m), 5.89 (1H, s), 6.87 (1H, d, J = 8.3 Hz), 7.00 (1H, d, J = 7.9 Hz), 7.04 (1H, s), 7.11 (1H, dd, J = 2.0, 8.3 Hz).	ESI-MS m/z: 496 [M+H]+
623		1H-NMR ($CDCl_3$) δ : 1.23-1.38 (4H, m), 1.45-1.54 (3H, m), 1.82-1.97 (2H, m), 2.90 (1H, dd, J = 4.5, 17.0 Hz), 3.17 (1H, dd, J = 5.2, 16.8 Hz), 3.37 (2H, t, J = 11.7 Hz), 3.88 (1H, m), 3.96 (2H, dd, J = 4.0, 11.3 Hz), 4.24-4.34 (3H, m), 4.64 (1H, m), 5.27 (1H, m), 5.89 (1H, s), 6.90-6.94 (2H, m), 7.38 (1H, s), 7.42 (1H, dd, J = 2.0, 8.5 Hz).	ESI-MS m/z: 423 [M+H]+
624		1H-NMR ($CDCl_3$) δ : 2.18-2.31(2H, m), 3.70-3.92(4H, m), 4.02-4.21(2H, m), 4.22-4.46(3H, m), 4.66-4.83(1H, m), 5.35-5.59(1H, m), 5.70-6.06(1H, m), 6.03(0.5H, s), 6.07(0.5H, s), 6.93(0.5H, m), 7.03(0.5H, m), 7.07(0.5H, m), 7.18(0.5H, m), 7.53-7.69(2H, m).	ESI-MS m/z: 480 [M+H]+

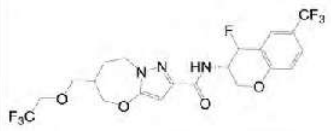
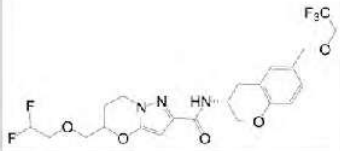
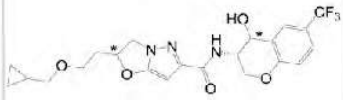
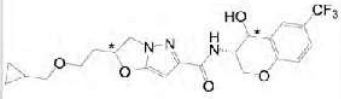
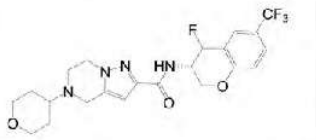
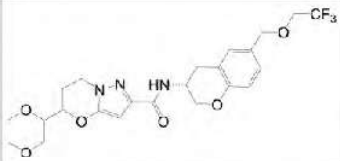
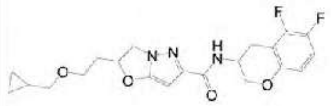
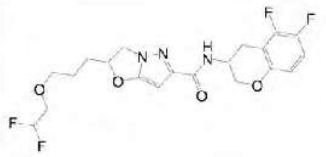
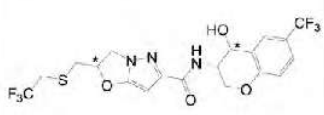
[1470]

[Table 82]

Example	Structural formula	NMR	MS
625		1H-NMR ($CDCl_3$) δ : 1.45-1.57 (1H, m), 1.66-1.75 (2H, m), 1.87-1.99 (2H, m), 2.16-2.25 (2H, m), 2.74-2.81 (2H, m), 2.93-3.07 (2H, m), 3.49-3.55 (2H, m), 3.73-3.79 (2H, m), 3.88-3.98 (1H, m), 4.09-4.15 (1H, m), 4.21 (1H, m), 4.35-4.45 (1H, m), 4.69-4.86 (1H, m), 5.38-5.59 (1H, m), 6.51-6.55 (1H, m), 6.95-7.22 (2H, m), 7.57-7.65 (2H, m).	ESI-MS m/z: 483 [M+H]+
626		1H-NMR ($CDCl_3$) δ : 2.35-2.54(2H, m), 2.92(1H, dd, J=16.8, 3.9 Hz), 3.11(1H, dd, J=16.8, 5.7 Hz), 4.10-4.21(3H, m), 4.27(1H, m), 4.53-4.69(2H, m), 6.14(1H, s), 6.62(1H, m), 6.95(1H, q, J=9.3 Hz), 7.00(1H, m).	ESI-MS m/z: 404 [M+H]+
627		1H-NMR ($CDCl_3$) δ : 2.19-2.29(2H, m), 2.92(1H, dd, J=16.8, 4.1 Hz), 3.11(1H, dd, J=16.8, 5.7 Hz), 3.83-3.99(4H, m), 4.06-4.25(4H, m), 4.37(1H, m), 4.63(1H, m), 6.04(1H, s), 6.61(1H, m), 6.94(1H, q, J=9.3 Hz), 7.00(1H, m).	ESI-MS m/z: 448 [M+H]+
628		1H-NMR ($CDCl_3$) δ : 1.69-1.94(2H, m), 1.95-2.11(2H, m), 2.92(1H, dd, J=16.8, 3.6 Hz), 3.10(1H, dd, J=16.8, 5.7 Hz), 3.82(2H, m), 3.69(2H, m), 3.89(1H, m), 4.10-4.21(2H, m), 4.34(1H, m), 4.64(1H, m), 5.33(1H, m), 5.89(1H, s), 6.61(1H, m), 6.94(1H, q, J=9.3 Hz), 6.98(1H, m).	ESI-MS m/z: 462 [M+H]+
629		1H-NMR ($CDCl_3$) δ : 2.14-2.24(2H, m), 2.91(1H, dd, J=16.8, 3.9 Hz), 3.10(1H, dd, J=16.8, 5.6 Hz), 3.78-3.88(4H, m), 3.98(1H, m), 4.10-4.21(2H, m), 4.36(1H, m), 4.64(1H, m), 5.45(1H, m), 5.91(1H, s), 6.61(1H, m), 6.94(1H, q, J=9.3 Hz), 6.99(1H, m).	ESI-MS m/z: 448 [M+H]+
630		1H-NMR ($CDCl_3$) δ : 1.69(1H, m), 1.91-2.31(3H, m), 2.57(1H, m), 2.88(1H, dd, J=16.7, 4.3 Hz), 3.19(1H, dd, J=16.7, 5.4 Hz), 3.60-4.26(11H, m), 4.55-4.72(3H, m), 5.98-6.04(1H, m), 6.88(1H, m), 7.04(1H, m), 7.06(1H, s), 7.13(1H, m).	ESI-MS m/z: 482 [M+H]+
631		1H-NMR ($CDCl_3$) δ : 2.16(1H, m), 2.40(1H, m), 2.88(1H, dd, J=16.7, 4.3 Hz), 3.95(1H, dd, J=16.7, 5.4 Hz), 3.46-3.90 (8H, m), 3.99-4.28(6H, m), 4.58(2H, s), 4.63(1H, m), 6.02(1H, s), 6.88(1H, m), 7.04(1H, m), 7.07(1H, s). 7.13(1H, m).	ESI-MS m/z: 498 [M+H]+
632		1H-NMR ($CDCl_3$) δ : 1.91 (1H, m), 2.30 (1H, m), 2.78-2.90 (2H, m), 3.19 (1H, dd, J=5.1, 17.0 Hz), 3.76-3.86 (3H, m), 4.08 (1H, m), 4.20-4.21 (2H, m), 4.45 (1H, m), 4.53-4.57 (3H, m), 4.62 (1H, m), 6.28 (1H, s), 6.88 (1H, d, J=8.4 Hz), 7.00-7.06 (2H, m), 7.12 (1H, dd, J=2.1, 8.3 Hz).	ESI-MS m/z: 494 [M+H]+
633		1H-NMR ($CDCl_3$) δ : 1.91 (1H, m), 2.30 (1H, m), 2.78-2.88 (2H, m), 3.04 (2H, dt, J=4.5, 17.5 Hz), 3.17 (1H, dd, J=5.4, 16.7 Hz), 3.80 (1H, m), 4.10 (1H, m), 4.19 (2H, d, J=2.8 Hz), 4.46 (1H, m), 4.55 (1H, m), 4.62 (1H, m), 5.88 (1H, m), 6.28 (1H, s), 6.85 (1H, d, J=8.4 Hz), 6.94 (1H, s), 7.00-7.02 (2H, m).	ESI-MS m/z: 446 [M+H]+

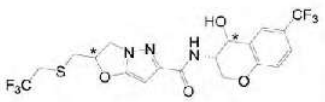
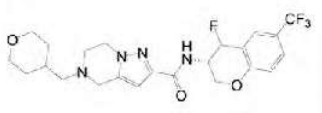
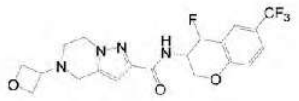
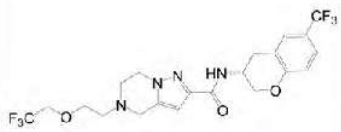
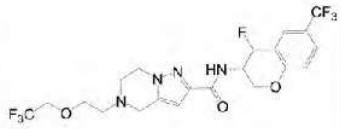
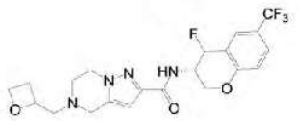
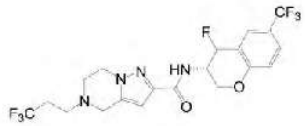
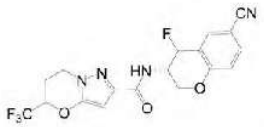
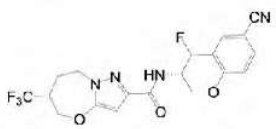
[1471]

[Table 83]

Example	Structural formula	NMR	MS
634		1H-NMR ($CDCl_3$) δ : 1.77 (1H, m), 2.03 (1H, m), 2.37 (1H, m), 3.58-4.85 (11H, m), 5.47 (1H, m), 6.25 (1H, m), 6.91-7.19 (2H, m), 7.57-7.66 (2H, m).	ESI-MS m/z: 512 [M+H]+
635		1H-NMR ($CDCl_3$) δ : 2.16-2.27(2H, m), 2.87(1H, dd, J=16.7, 4.3 Hz), 3.18(1H, dd, J=16.7, 5.4 Hz), 3.71-3.88(6H, m), 4.02-4.25(4H, m), 4.36(1H, m), 4.57(2H, s), 4.62(1H, m), 5.70-6.06(1H, m), 6.02(1H, s), 6.87(1H, d, J=8.3 Hz), 7.01(1H, m), 7.04(1H, d, J=1.8 Hz), 7.12(1H, dd, J=8.6, 1.8 Hz).	ESI-MS m/z: 506 [M+H]+
636 (isomer A)		1H-NMR ($CDCl_3$) δ : 0.17-0.21 (2H, m), 0.49-0.56 (2H, m), 1.03 (1H, m), 2.09-2.23 (2H, m), 3.08 (1H, s), 3.23-3.31 (2H, m), 3.60-3.66 (2H, m), 3.96 (1H, m), 4.21 (1H, dd, J = 8.9, 10.9 Hz), 4.31-4.36 (2H, m), 4.64 (1H, m), 4.92 (1H, d, J = 3.8 Hz), 5.46 (1H, m), 5.90 (1H, s), 6.96 (1H, d, J = 8.6 Hz), 7.28 (1H, s), 7.48 (1H, dd, J = 2.2, 8.6 Hz), 7.63 (1H, s).	ESI-MS m/z: 468 [M+H]+
636 (isomer B)		1H-NMR ($CDCl_3$) δ : 0.18-0.21 (2H, m), 0.52-0.56 (2H, m), 1.03 (1H, m), 2.10-2.24 (2H, m), 3.09 (1H, s), 3.24-3.31 (2H, m), 3.62-3.65 (2H, m), 4.01 (1H, dd, J = 7.9, 10.0 Hz), 4.20 (1H, dd, J = 9.1, 10.8 Hz), 4.28-4.36 (2H, m), 4.64 (1H, m), 4.92 (1H, d, J = 3.8 Hz), 5.45 (1H, m), 5.90 (1H, s), 6.97 (1H, d, J = 8.6 Hz), 7.29 (1H, s), 7.46 (1H, dd, J = 2.1, 8.7 Hz), 7.61 (1H, d, J = 1.9 Hz).	ESI-MS m/z: 468 [M+H]+
637		1H-NMR ($CDCl_3$) δ : 1.68-1.74 (3H, m), 1.84-1.91 (3H, m), 2.83 (1H, m), 3.10-3.16 (2H, m), 3.38-3.46 (2H, m), 3.90-4.54 (6H, m), 4.68-4.86 (1H, m), 5.38-5.59 (1H, m), 6.56-6.60 (1H, m), 6.96-7.22 (2H, m), 7.57-7.65 (2H, m).	ESI-MS m/z: 469 [M+H]+
638		1H-NMR ($CDCl_3$) δ : 2.13(1H, m), 2.34(1H, m), 2.88(1H, dd, J=16.7, 4.3 Hz), 3.95(1H, dd, J=16.7, 5.4 Hz), 3.46-3.90 (8H, m), 3.59-4.28(6H, m), 4.58(2H, s), 4.63(1H, m), 6.05(1H, s), 6.88(1H, m), 7.04(1H, m), 7.07(1H, s), 7.13(1H, m).	ESI-MS m/z: 498 [M+H]+
639		1H-NMR ($CDCl_3$) δ : 0.18(2H, m), 0.53(2H, m), 1.02(1H, m), 2.06-2.25(2H, m), 2.92(1H, dd, J=16.8, 3.9 Hz), 3.10(1H, dd, J=16.8, 5.7 Hz), 3.22-3.31(2H, m), 3.58-3.66(2H, m), 4.02(1H, m), 4.09-4.21(2H, m), 4.34(1H, m), 4.63(1H, m), 5.45(1H, m), 5.90(1H, s), 6.61(1H, m), 6.94(1H, q, J=9.3 Hz), 6.99(1H, m).	ESI-MS m/z: 420 [M+H]+
640		1H-NMR ($CDCl_3$) δ : 1.70-1.89(2H, m), 1.90-2.06(2H, m), 2.92(1H, dd, J=16.8, 3.6 Hz), 3.10(1H, dd, J=16.8, 5.7 Hz), 3.55-3.71(4H, m), 3.89(1H, m), 4.09-4.21(2H, m), 4.33(1H, m), 4.64(1H, m), 5.33(1H, m), 5.68-6.02(1H, m), 5.89(1H, s), 6.61(1H, m), 6.94(1H, q, J=9.3 Hz), 6.98(1H, m).	ESI-MS m/z: 444 [M+H]+
641 (isomer A)		1H-NMR ($CDCl_3$) δ : 2.95 (1H, s), 3.14 (2H, t, J = 5.4 Hz), 3.21 (2H, q, J = 9.8 Hz), 4.12 (1H, dd, J = 7.1, 10.1 Hz), 4.20 (1H, dd, J = 9.0, 10.8 Hz), 4.33-4.39 (2H, m), 4.64 (1H, m), 4.92 (1H, d, J = 3.8 Hz), 5.51 (1H, m), 5.95 (1H, s), 6.97 (1H, d, J = 8.7 Hz), 7.29 (1H, s), 7.49 (1H, dd, J = 2.1, 8.6 Hz), 7.62 (1H, d, J = 1.8 Hz).	ESI-MS m/z: 498 [M+H]+

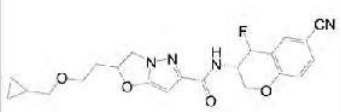
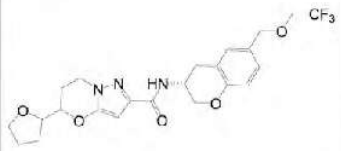
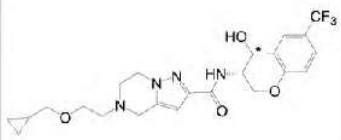
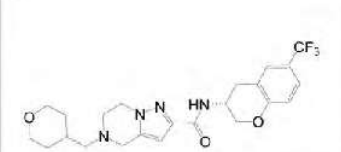
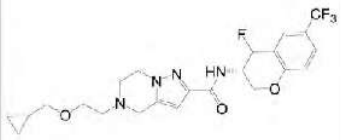
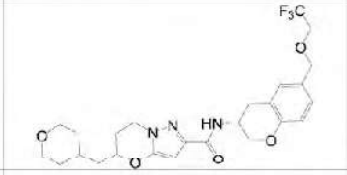
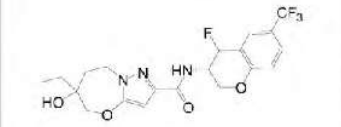
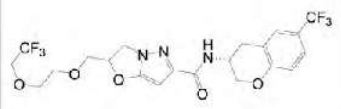
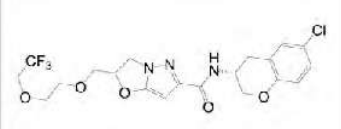
[1472]

[Table 84]

Example	Structural formula	NMR	MS
641 (isomer B)		1H-NMR ($CDCl_3$) δ : 2.95 (1H, s), 3.13 (2H, dd, J = 1.9, 5.6 Hz), 3.21 (2H, q, J = 9.7 Hz), 4.12 (1H, m), 4.20 (1H, dd, J = 8.9, 10.9 Hz), 4.33-4.41 (2H, m), 4.64 (1H, m), 4.93 (1H, d, J = 3.8 Hz), 5.51 (1H, m), 5.94 (1H, s), 6.97 (1H, d, J = 8.6 Hz), 7.28 (1H, s), 7.49 (1H, dd, J = 2.2, 8.7 Hz), 7.64 (1H, d, J = 1.9 Hz).	ESI-MS m/z: 498 [M+H]+
642		1H-NMR ($CDCl_3$) δ : 1.26-1.84 (5H, m), 2.47 (2H, m), 3.02 (2H, m), 3.36-3.44 (2H, m), 3.76 (2H, m), 3.98 (2H, m), 4.09-4.46 (4H, m), 4.69-4.87 (1H, m), 5.38-5.58 (1H, m), 6.53-6.58 (1H, m), 6.95-7.22 (2H, m), 7.57-7.65 (2H, m).	ESI-MS m/z: 483 [M+H]+
643		1H-NMR ($CDCl_3$) δ : 2.89-2.95 (2H, m), 3.65-3.71 (2H, m), 3.84 (1H, m), 4.09-4.44 (5H, m), 4.69-4.82 (4H, m), 5.39-5.59 (1H, m), 6.55-6.59 (1H, m), 6.96-7.23 (2H, m), 7.57-7.66 (2H, m).	ESI-MS m/z: 441 [M+H]+
644		1H-NMR ($CDCl_3$) δ : 2.83 (2H, t, J=5.2 Hz), 2.93 (1H, dd, J=4.7, 17.4 Hz), 3.03 (2H, m), 3.21 (1H, dd, J=5.5, 16.8 Hz), 3.78 (2H, s), 3.81-3.90 (4H, m), 4.14 (2H, m), 4.26 (2H, m), 4.66 (1H, m), 6.52 (1H, s), 6.95 (1H, d, J=8.5 Hz), 7.00 (1H, d, J=8.5 Hz), 7.33 (1H, s), 7.38 (1H, d, J=8.6 Hz).	ESI-MS m/z: 493 [M+H]+
645		1H-NMR ($CDCl_3$) δ : 2.81-2.88 (2H, m), 2.95-3.09 (2H, m), 3.71-3.91 (6H, m), 4.09-4.49 (4H, m), 4.69-4.87 (1H, m), 5.38-5.59 (1H, m), 6.51-6.56 (1H, m), 6.95-7.22 (2H, m), 7.57-7.65 (2H, m).	ESI-MS m/z: 511 [M+H]+
646		1H-NMR ($CDCl_3$) δ : 2.42-2.53 (1H, m), 2.63-2.80 (2H, m), 2.91-3.08 (3H, m), 3.69-3.85 (2H, m), 4.08-4.57 (5H, m), 4.66-4.86 (2H, m), 5.04-5.13 (1H, m), 5.38-5.58 (1H, m), 6.48-6.55 (1H, m), 6.95-7.22 (2H, m), 7.57-7.65 (2H, m).	ESI-MS m/z: 455 [M+H]+
647		1H-NMR ($CDCl_3$) δ : 2.31-2.46 (2H, m), 2.79-3.02 (4H, m), 3.70-3.76 (2H, m), 4.09-4.48 (4H, m), 4.69-4.87 (1H, m), 5.38-5.59 (1H, m), 6.53-6.57 (1H, m), 6.95-7.22 (2H, m), 7.57-7.65 (2H, m).	ESI-MS m/z: 481 [M+H]+
648		1H-NMR ($CDCl_3$) δ : 2.39-2.54(2H, m),4.06-4.28(2H, m), 4.28-4.46(2H, m), 4.62(1H, m), 4.78(1H, m), 5.50(1H, dd, J=54.1, 1.8 Hz), 6.17(1H, s), 7.02(1H, d, J=8.6 Hz), 7.15(1H, d, J=8.8 Hz), 7.61(1H, dt, J=8.6, 2.0 Hz), 7.68(1H, t, J=2.0 Hz).	ESI-MS m/z: 411 [M+H]+
649		1H-NMR ($CDCl_3$) δ : 1.91-2.03(2H, m), 2.36(1H, m), 2.85(1H, m), 3.86(1H, m), 4.07-4.24(2H, m), 4.39(1H, m), 4.48-4.64(1H, m), 4.79(1H, m), 5.50(1H, dd, J=54.0, 1.8 Hz), 6.32(1H, s), 7.02(1H, d, J=8.6 Hz), 7.15(1H, d, J=8.8 Hz), 7.61(1H, dt, J=8.6, 2.0 Hz), 7.69(1H, t, J=2.0 Hz).	ESI-MS m/z: 425 [M+H]+

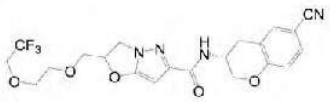
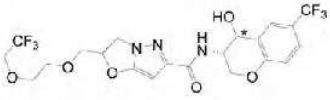
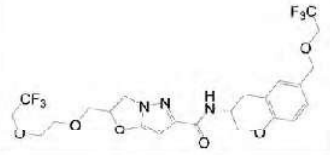
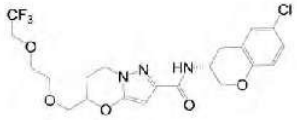
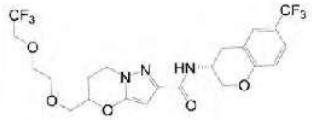
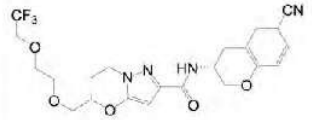
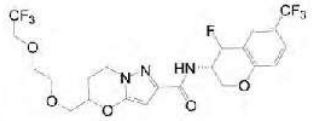
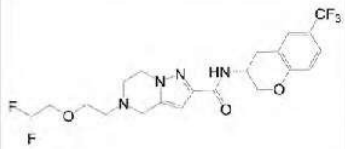
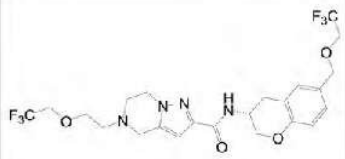
[1473]

[Table 85]

Example	Structural formula	NMR	MS
650		1H-NMR ($CDCl_3$) δ : 0.23(2H, m), 0.57(2H, m), 1.08(1H, m), 2.14-2.37(2H, m), 3.39(2H, d, J=6.9 Hz), 3.68(1H, dd, J=10.2, 5.2 Hz), 3.78(1H, dd, J=10.2, 5.2 Hz), 4.05-4.48(5H, m), 4.69-4.85(1H, m), 5.48(1H, dd, J=54.0, 2.0 Hz), 6.06(1H, s), 7.01(1H, d, J=8.6 Hz), 7.16(1H, d, J=8.9 Hz), 7.60(1H, dt, J=8.6, 2.0 Hz), 7.68(1H, t, J=2.0 Hz).	ESI-MS m/z: 427 [M+H]+
651		1H-NMR ($CDCl_3$) δ : 1.86-1.99(3H, m), 2.03-2.18(2H, m), 2.70-2.90(1H, m), 3.15(1H, m), 3.77-4.24(11H, m), 4.46-4.65(3H, m), 5.80-6.04(1H, m), 6.86(1H, dd, J=8.2, 7.0Hz), 7.02(1H, m), 7.04(1H, br s), 7.12(1H, m).	ESI-MS m/z: 482 [M+H]+
652		1H-NMR ($CDCl_3$) δ : 0.20 (2H, m), 0.55 (2H, m), 1.07 (1H, m), 2.82 (2H, t, J=5.4 Hz), 2.98-3.06 (3H, m), 3.31 (2H, d, J=6.9 Hz), 3.66 (2H, t, J=5.4 Hz), 3.79 (2H, d, J=3.9 Hz), 4.16-4.24 (3H, m), 4.35 (1H, m), 4.66 (1H, m), 4.93 (1H, t, J=4.2 Hz), 6.53 (1H, s), 6.97 (1H, d, J=8.4 Hz), 7.29 (1H, m), 7.48 (1H, m), 7.63 (1H, m).	ESI-MS m/z: 481 [M+H]+
653		1H-NMR ($CDCl_3$) δ : 1.29 (2H, m), 1.68 (2H, m), 1.78 (1H, m), 2.40 (2H, d, J=7.2 Hz), 2.89-2.95 (3H, m), 3.21 (1H, dd, J=5.3, 16.5 Hz), 3.39 (2H, td, J=1.9, 11.8 Hz), 3.65 (2H, s), 3.97 (2H, dd, J=3.5, 12.0 Hz), 4.12 (2H, t, J=5.4 Hz), 4.22-4.29 (2H, m), 4.66 (1H, m), 6.51 (1H, s), 6.95 (1H, d, J=8.6 Hz), 7.00 (1H, d, J=7.9 Hz), 7.33 (1H, s), 7.38 (1H, d, J=8.7 Hz).	ESI-MS m/z: 465 [M+H]+
654		1H-NMR ($CDCl_3$) δ : 0.17-0.23 (2H, m), 0.51-0.58 (2H, m), 1.06 (1H, m), 2.78-2.84 (2H, m), 2.95-3.08 (2H, m), 3.29-3.33 (2H, m), 3.63-3.71 (2H, m), 3.75-3.81 (2H, m), 4.09-4.45 (4H, m), 4.69-4.87 (1H, m), 5.38-5.59 (1H, m), 6.51-6.55 (1H, m), 6.95-7.22 (2H, m), 7.57-7.65 (2H, m).	ESI-MS m/z: 483 [M+H]+
655		1H-NMR ($CDCl_3$) δ : 1.24-1.42 (2H, m), 1.49 (1H, m), 1.63 (1H, m), 1.69-1.93 (3H, m), 2.00-2.19 (2H, m), 2.87 (1H, dd, J = 4.0, 16.9 Hz), 3.18 (1H, dd, J = 5.6, 17.0 Hz), 3.39-3.45 (2H, m), 3.82 (2H, q, J = 8.7 Hz), 3.96-3.98 (2H, m), 4.02-4.22 (4H, m), 4.29 (1H, m), 4.55-4.63 (3H, m), 5.99 (1H, s), 6.87 (1H, d, J = 8.3 Hz), 7.00-7.04 (2H, m), 7.11 (1H, dd, J = 1.9, 9.3 Hz).	ESI-MS m/z: 510 [M+H]+
656		1H-NMR ($CDCl_3$) δ : 0.93-1.01 (3H, m), 1.52-1.63 (2H, m), 1.75-1.99 (2H, m), 2.29 (1H, m), 3.72 (1H, m), 3.99-4.47 (5H, m), 4.76 (1H, m), 5.43 (0.4H, m), 5.51 (0.6H, d, J = 54.4 Hz), 6.25 (0.4H, s), 6.29 (0.6H, s), 6.91-7.19 (2H, m), 7.52-7.66 (2H, m).	ESI-MS m/z: 444 [M+H]+
657		1H-NMR ($CDCl_3$) δ : 2.88 (1H, m), 3.19 (1H, m), 3.70-3.85 (8H, m), 4.14-4.33 (4H, m), 4.64 (1H, m), 5.40 (1H, m), 5.91 (1H, s), 6.93-6.97 (2H, m), 7.33 (1H, s), 7.38 (1H, m).	ESI-MS m/z: 510 [M+H]+
658		1H-NMR ($CDCl_3$) δ : 2.83 (1H, dd, J=4.2, 16.9 Hz), 3.14 (1H, dd, J=5.3, 16.5 Hz), 3.71-3.85 (8H, m), 4.14-4.19 (3H, m), 4.30 (1H, dt, J=2.9, 9.3 Hz), 4.60 (1H, m), 5.41 (1H, m), 5.90 (1H, s), 6.80 (1H, m), 6.99 (1H, m), 7.03 (1H, m), 7.08 (1H, m).	ESI-MS m/z: 476 [M+H]+

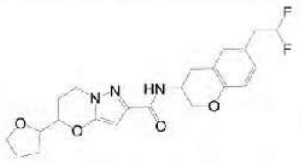
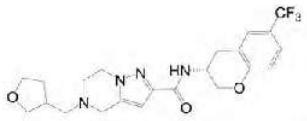
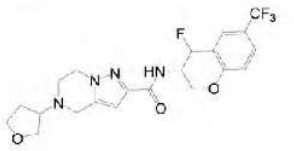
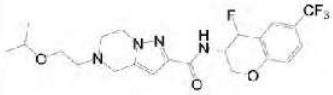
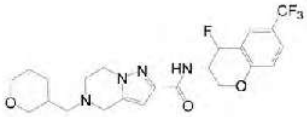
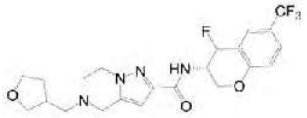
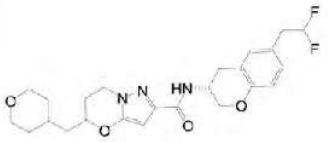
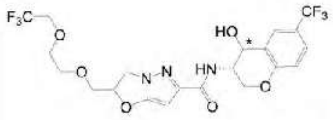
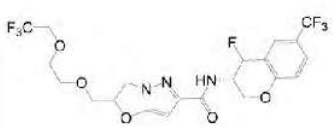
[1474]

[Table 86]

Example	Structural formula	NMR	MS
659		1H-NMR ($CDCl_3$) δ : 2.89 (1H, dd, J=4.4, 16.9 Hz), 3.17 (1H, dd, J=5.3, 16.8 Hz), 3.71-3.86 (8H, m), 4.18-4.33 (4H, m), 4.63 (1H, m), 5.41 (1H, m), 5.91 (1H, s), 6.92-6.94 (2H, m), 7.38 (1H, s), 7.42 (1H, m).	ESI-MS m/z: 467 [M+H]+
660		1H-NMR ($CDCl_3$) δ : 2.88 (1H, d, J=4.9 Hz), 3.74-3.76 (4H, m), 3.80-3.87 (4H, m), 4.17-4.23 (2H, m), 4.30-4.35 (2H, m), 4.65 (1H, m), 4.92 (1H, m), 5.42 (1H, m), 5.92 (1H, s), 6.97 (1H, d, J=8.7 Hz), 7.24 (1H, m), 7.48 (1H, m), 7.65 (1H, m).	ESI-MS m/z: 526 [M+H]+
661		1H-NMR ($CDCl_3$) δ : 2.84 (1H, m), 3.16 (1H, m), 3.71-3.85 (10H, m), 4.09-4.32 (4H, m), 4.56-4.64 (3H, m), 5.40 (1H, m), 5.90 (1H, s), 6.86 (1H, m), 6.99-7.14 (3H, m).	ESI-MS m/z: 554 [M+H]+
662		1H-NMR ($CDCl_3$) δ : 2.14-2.27(2H, m), 2.84(1H, dd, J=17.8, 4.6Hz), 3.14(1H, dd, J=17.8, 7.7Hz), 3.72(3H, m), 3.79(3H, m), 3.88(2H, m), 4.04-4.13(1H, m), 4.15-4.26(3H, m), 4.36(1H, m), 4.60(1H, m), 6.02(1H, s), 6.81(1H, d, J=8.7 Hz), 7.00(1H, d, J=8.8 Hz), 7.04(1H, d, J=2.6 Hz), 7.08(1H, dd, J=8.7, 2.6 Hz).	ESI-MS m/z: 490 [M+H]+
663		1H-NMR ($CDCl_3$) δ : 2.14-2.28(2H, m), 2.92(1H, dd, J=16.6, 4.4Hz), 3.20(1H, dd, J=16.6, 5.3Hz), 3.72(3H, m), 3.79(3H, m), 3.88(2H, m), 4.04-4.13(1H, m), 4.15-4.29(3H, m), 4.36(1H, m), 4.63(1H, m), 6.02(1H, s), 6.94(1H, d, J=8.6 Hz), 6.97(1H, d, J=7.8 Hz), 7.33(1H, d, J=1.8 Hz), 7.38(1H, dd, J=8.6, 1.8 Hz).	ESI-MS m/z: 524 [M+H]+
664		1H-NMR ($CDCl_3$) δ : 2.14-2.28(2H, m), 2.92(1H, dd, J=16.6, 5.1Hz), 3.15(1H, dd, J=16.6, 5.4Hz), 3.72(3H, m), 3.79(3H, m), 3.89(2H, m), 4.04-4.13(1H, m), 4.15-4.29(3H, m), 4.36(1H, m), 4.63(1H, m), 6.02(1H, s), 6.93(1H, d, J=8.4 Hz), 6.94(1H, m), 7.38(1H, d, J=2.0 Hz), 7.42(1H, dd, J=8.5, 2.0 Hz).	ESI-MS m/z: 481 [M+H]+
665		1H-NMR ($CDCl_3$) δ : 2.12-2.32(2H, m), 3.66-3.97(9H, m), 4.03-4.21(2H, m), 4.22-4.27(3H, m), 4.63-4.87(1H, m), 5.33-5.61(1H, m), 6.01(0.5H, s), 6.06(0.5H, s), 6.94(0.5H, m), 6.99-7.10(1H, m), 7.18(0.5H, m), 7.54-7.67(1H, m).	ESI-MS m/z: 542 [M+H]+
666		1H-NMR ($CDCl_3$) δ : 2.81 (2H, t, J=5.3 Hz), 2.93 (1H, dd, J=4.5, 16.8 Hz), 3.02 (2H, td, J=2.0, 5.4 Hz), 3.21 (1H, dd, J=5.4, 16.8 Hz), 3.66-3.77 (6H, m), 4.14 (2H, t, J=5.5 Hz), 4.21-4.30 (2H, m), 4.65 (1H, m), 5.88 (1H, m), 6.52 (1H, s), 6.95 (1H, d, J=8.6 Hz), 7.00 (1H, d, J=7.8 Hz), 7.33 (1H, s), 7.38 (1H, m).	ESI-MS m/z: 475 [M+H]+
667		1H-NMR ($CDCl_3$) δ : 2.82-2.91 (3H, m), 3.02 (2H, d, J=5.6 Hz), 3.18 (1H, dd, J=5.0, 17.0 Hz), 3.77-3.90 (8H, m), 4.14 (2H, t, J=5.6 Hz), 4.17-4.24 (2H, m), 4.57 (2H, s), 4.64 (1H, m), 6.52 (1H, s), 6.87 (1H, d, J=8.3 Hz), 7.05 (2H, s), 7.12 (1H, dd, J=1.9, 8.4 Hz).	ESI-MS m/z: 537 [M+H]+

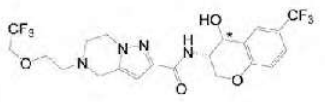
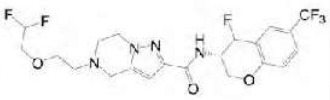
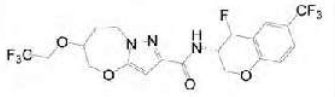
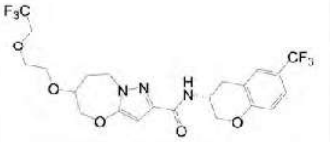
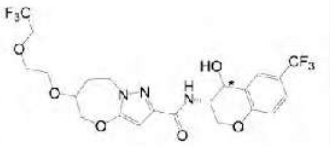
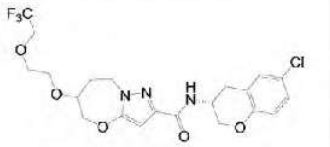
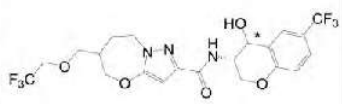
[1475]

[Table 87]

Example	Structural formula	NMR	MS
668		1H-NMR ($CDCl_3$) δ : 1.86-2.40(5H, m), 2.71-2.88(2H, m), 2.96-3.20(3H, m), 3.15(1H, m), 3.76-4.24(7H, m), 4.43-4.45(1H, m), 5.69-6.03(1H, m), 5.99-6.03(1H, m), 6.83(1H, m), 6.93(1H, br s), 6.97-7.06(2H, m).	ESI-MS m/z: 434 [M+H]+
669		1H-NMR ($CDCl_3$) δ : 1.63 (1H, m), 2.04 (1H, m), 2.46-2.55 (3H, m), 2.87-2.99 (3H, m), 3.21 (1H, dd, J=5.5, 16.6 Hz), 3.56 (1H, dd, J=4.8, 8.7 Hz), 3.69 (2H, t, J=4.3 Hz), 3.75 (1H, q, J=8.2 Hz), 3.82-3.90 (2H, m), 4.13 (2H, t, J=5.5 Hz), 4.22-4.29 (2H, m), 4.66 (1H, m), 6.52 (1H, s), 6.95 (1H, d, J=8.6 Hz), 7.00 (1H, d, J=8.0 Hz), 7.33 (1H, s), 7.38 (1H, d, J=8.5 Hz).	ESI-MS m/z: 451 [M+H]+
670		1H-NMR ($CDCl_3$) δ : 1.87-1.99 (1H, m), 2.08-2.19 (1H, m), 2.81-3.07 (2H, m), 3.26 (1H, m), 3.62-4.04 (6H, m), 4.09-4.48 (4H, m), 4.69-4.85 (1H, m), 5.38-5.59 (1H, m), 6.52-6.56 (1H, m), 6.95-7.22 (2H, m), 7.57-7.65 (2H, m).	ESI-MS m/z: 455 [M+H]+
671		1H-NMR ($CDCl_3$) δ : 1.15-1.19 (6H, m), 2.75-2.82 (2H, m), 2.96-3.08 (2H, m), 3.54-3.65 (3H, m), 3.74-3.80 (2H, m), 4.09-4.45 (4H, m), 4.69-4.87 (1H, m), 5.38-5.59 (1H, m), 6.50-6.55 (1H, m), 6.95-7.22 (2H, m), 7.57-7.65 (2H, m).	ESI-MS m/z: 471 [M+H]+
672		1H-NMR ($CDCl_3$) δ : 1.18-1.30 (2H, m), 1.64 (1H, m), 1.81-1.95 (2H, m), 2.33-2.46 (2H, m), 2.78-3.00 (2H, m), 3.13-3.21 (1H, m), 3.38-3.46 (1H, m), 3.56-3.73 (2H, m), 3.83-3.98 (2H, m), 4.07-4.47 (4H, m), 4.69-4.87 (1H, m), 5.38-5.59 (1H, m), 6.50-6.54 (1H, m), 6.95-7.22 (2H, m), 7.57-7.65 (2H, m).	ESI-MS m/z: 483 [M+H]+
673		1H-NMR ($CDCl_3$) δ : 1.63 (1H, m), 2.03 (1H, m), 2.48-2.57 (3H, m), 2.87-2.99 (2H, m), 3.54-3.91 (6H, m), 4.09-4.45 (4H, m), 4.68-4.87 (1H, m), 5.38-5.59 (1H, m), 6.51-6.55 (1H, m), 6.95-7.22 (2H, m), 7.57-7.65 (2H, m).	ESI-MS m/z: 469 [M+H]+
674		1H-NMR ($CDCl_3$) δ : 1.24-1.42 (2H, m), 1.49 (1H, m), 1.62 (1H, m), 1.71 (1H, m), 1.76-1.93 (2H, m), 2.00-2.19 (2H, m), 2.86 (1H, m), 3.04 (2H, dt, J = 4.4, 17.4 Hz), 3.16 (1H, dd, J = 5.3, 17.0 Hz), 3.42 (2H, tt, J = 1.8, 11.8 Hz), 3.95-3.99 (2H, m), 4.03-4.21 (4H, m), 4.30 (1H, m), 4.61 (1H, m), 5.88 (1H, tt, J = 4.5, 56.7 Hz), 5.99 (1H, s), 6.84 (1H, d, J = 8.3 Hz), 6.93 (1H, s), 6.99-7.01 (2H, m).	ESI-MS m/z: 462 [M+H]+
675		1H-NMR ($CDCl_3$) δ : 3.39 (1H, m), 3.71-3.85 (8H, m), 4.18 (1H, m), 4.26-4.32 (1H, m), 4.42 (1H, m), 4.49 (1H, m), 4.74 (1H, m), 5.40 (1H, m), 5.89 (1H, s), 6.99-7.02 (2H, m), 7.48 (1H, m), 7.65 (1H, m).	ESI-MS m/z: 526 [M+H]+
676		1H-NMR ($CDCl_3$) δ : 3.72-3.91 (8H, m), 4.07-4.44 (4H, m), 4.68-4.84 (1H, m), 5.36-5.58 (2H, m), 5.92 (1H, m), 6.89-7.13 (2H, m), 7.57-7.65 (2H, m).	ESI-MS m/z: 528 [M+H]+

[1476]

[Table 88]

Example	Structural formula	NMR	MS
677		1H-NMR ($CDCl_3$) δ : 2.85 (2H, t, J=5.2 Hz), 3.02-3.08 (3H, m), 3.76-3.90 (6H, m), 4.16 (2H, m), 4.22 (1H, m), 4.35 (1H, m), 4.66 (1H, m), 4.92 (1H, t, J=4.2 Hz), 6.54 (1H, s), 6.97 (1H, d, J=8.6 Hz), 7.30 (1H, d, J=8.3 Hz), 7.48 (1H, dd, J=2.2, 8.6 Hz), 7.62 (1H, s).	ESI-MS m/z: 509 [M+H]+
678		1H-NMR ($CDCl_3$) δ : 2.79-2.86 (2H, m), 2.97-3.08 (2H, m), 3.65-3.80 (6H, m), 4.08-4.47 (4H, m), 4.69-4.87 (1H, m), 5.38-5.59 (1H, m), 5.72-6.04 (1H, m), 6.51-6.55 (1H, m), 6.95-7.22 (2H, m), 7.57-7.65 (2H, m).	ESI-MS m/z: 493 [M+H]+
679		1H-NMR ($CDCl_3$) δ : 2.01-2.15 (2H, m), 3.90-4.21 (7H, m), 4.34-4.54 (2H, m), 4.76 (1H, m), 5.43 (0.4H, m), 5.51 (0.6H, m), 6.26 (0.4H, s), 6.30 (0.6H, s), 6.90-7.18 (2H, m), 7.57-7.65 (2H, m).	ESI-MS m/z: 498 [M+H]+
680		1H-NMR ($CDCl_3$) δ : 1.96-2.07(2H, m), 2.92(1H, dd, J=16.7, 6.1 Hz), 3.21(1H, br d, J=16.7 Hz), 3.73-4.17(10H, m), 4.19-4.28(2H, m), 4.42(1H, m), 4.65(1H, m), 6.49(1H, s), 6.92-7.02(2H, m), 7.33(1H, br s), 7.39(1H, m).	ESI-MS m/z: 524 [M+H]+
681		1H-NMR ($CDCl_3$) δ : 1.96-2.11(2H, m), 3.03-3.19(1H, m), 3.69-3.85(5H, m), 3.87-4.25(6H, m), 4.29-4.47(2H, m), 4.64(1H, m), 4.92(1H, m), 6.25-6.26(1H, m), 6.97(1H, d, J=8.6 Hz), 7.25-7.32(1H, m), 7.48(1H, dd, J=8.6, 1.8 Hz), 7.64(1H, d, J=1.8 Hz).	ESI-MS m/z: 540 [M+H]+
682		1H-NMR ($CDCl_3$) δ : 1.96-2.11(2H, m), 2.85(1H, m), 3.15(1H, m), 3.72-3.83(5H, m), 3.85-4.23(7H, m), 4.40(1H, m), 4.60(1H, m), 6.24(1H, s), 6.81(1H, dd, J=8.6, 2.0 Hz), 6.99(1H, m), 7.04(1H, m), 7.08(1H, m).	ESI-MS m/z: 490 [M+H]+
683		1H-NMR ($CDCl_3$) δ : 1.75 (1H, m), 2.02 (1H, m), 2.39 (1H, m), 2.79 (1H, dd, J=4.7, 18.5 Hz), 3.62-3.67 (2H, m), 3.76-3.86 (3H, m), 4.13 (1H, m), 4.21 (1H, m), 4.33-4.36 (3H, m), 4.65 (1H, m), 4.93 (1H, brs), 6.25 (1H, s), 6.97 (1H, d, J=8.6 Hz), 7.26-7.31 (1H, m), 7.49 (1H, m), 7.65 (1H, s).	ESI-MS m/z: 510 [M+H]+

[1477]

Test Example 1: Human Nav1.7 inhibitory activity evaluation

A cell line in which human Nav1.7 and human Navβ1 subunits were stably expressed in HEK293A cells was used. Dulbecco's Modified Eagle Medium (DMEM) supplemeted with 10% fetal bovine serum, 600 μg/ml geneticin, and 2 μg/ml blasticidin S were used as culture medium under the conditions of 37°C and 5% CO_2 in T175 flasks to carry out culturing. When 60-80% confluence was reached, the cells were detached and a cell suspension of about 0.5-5.0x10^6 cells / mL was prepared. The amount of current through human Nav1.7 was recorded using a fully automatic patch clamp device QPatch16X (Sophion Biosciences) at room temperature. As the extracellular solution, the solution of 145 mM NaCl, 4 mM KCl, 1 mM

$MgCl_2$, 2 mM $CaCl_2$, 10 mM Glucose, 10 mM 4-(2-hydroxyethyl) -1-piperazine ethanesulfonic acid (HEPES) at pH 7.4 was used. As the intracellular solution, the solution of 135 mM CsF, 1/5 mM glycol ether diaminetetraacetic acid (EGTA)/CsOH, 10 mM HEPES, 10 mM NaCl at pH 7.3 was used. The test compounds were dissolved in dimethyl sulfoxide (DMSO) and diluted with the extracellular solution to attain the DMSO concentration of 0.1% at the time of assay.

[1478]

The current response was obtained at a sampling frequency of 25 kHz, and noise was removed with a 3 kHz low-pass filter. The holding potential was -100 mV. Correction of the leakage current was carried out by applying a step pulse of -120 mV before the test pulse. In order to investigate inhibitory action of the test compound, the following test pulse was given: Namely, after depolarizing pulse of -10 mV was applied for 50 milliseconds, it was fixed at -120 mV for 500 milliseconds; a potential at which about 30-40% of the channel was inactivated was maintained for 15 seconds, then fixed again at -120 mV for 100 milliseconds, and finally a -10 mV depolarization pulse was given for 50 milliseconds. Test pulses were given before and after the test compound addition.

The inhibitory activity of the test compound was determined based on the amount of inward current generated by the second depolarization pulse, and the 50% inhibitory concentration (IC_{50}) was calculated from the concentration-response curve. IC_{50} values are shown in Tables 89 to 98 below.

Compounds with IC_{50} values of less than 1 μM are indicated by the letter “A”, and compounds with IC_{50} values less than 10 μM are indicated by the letter “B”.

Meanwhile, unless otherwise stated, “Example“ in the table refers to the compound intended for production in each Example; for example, the evaluation result for Example 1 shows the evaluation result of the compound intended for production in Example 1.

[1479]

Test Example 2: Human Nav1.5 inhibitory activity evaluation

A cell line in which human Nav1.5 was stably expressed in HEK293 cells was used. DMEM supplemeted with 15% fetal bovine serum, 500 μg/ml geneticin, 100 units/ml penicillin, 100 μg/ml streptomycin, 20 mM HEPES was used as culture medium under the conditions of 37°C and 5% CO_2 in T175 flasks to carry out culturing. When 60-80% confluence was reached, a cell suspension of about 0.5-5.0x10^6 cells/mL was prepared. The amount of current through human Nav1.5 was recorded using a fully automatic patch clamp device QPatch16X at room temperature. As the extracellular solution, 145 mM NaCl, 4 mM KCl, 1 mM $MgCl_2$, 2 mM $CaCl_2$, 10 mM Glucose, and 10 mM HEPES at pH 7.4 was used. As the intracellular

solution, 135 mM CsF, 1/5 mM EGTA/CsOH, 10 mM HEPES, and 10 mM NaCl at pH 7.3 was used. The test compounds were dissolved in DMSO and diluted with the extracellular solution to attend the DMSO concentration of 0.1% at the time of assay.

[1480]

The current response was obtained at a sampling frequency of 25 kHz, and noise was removed with a 3 kHz low-pass filter. The holding potential was -80 mV. Correction of the leakage current was carried out by applying a step pulse of -100 mV before the test pulse. In order to investigate human Nav1.5 inhibitory effect of the test compound, test pulses imitating the action potential of cardiomyocytes were continuously given 20 times. The test pulses were given before and after the test compound addition.

[1481]

The inhibitory activity of the test compound was determined based on the amount of inward current generated by the 20th depolarization pulse, and the 50% inhibitory concentration (IC_{50}) was calculated from the concentration-response curve.

The IC_{50} values of inhibitory action of the test compounds are shown in Tables 89 to 98 below.

Compounds with an IC_{50} value of less than 1 μM are indicated by the letter "A", compounds with an IC_{50} value of 1 μM or more and less than 3 μM are indicated by the letter "B" and compounds with an IC_{50} value of 3 μM or more is indicated by the letter "C".

[1482]

Test Example 3: Effect on acute pain

Six-week old male ICR mice were used for the test. Test compounds were orally administered at 1-10 mg/kg and the mice were habituated to a clear observation cage for 60 minutes. The mice were lightly restrained under no anesthesia and 20 μL of 80 μg/mL (0.8% ethanol-saline) capsaicin solution was injected subcutaneously into the plantar surface of rihgt hind paw of mice. The mice were returned to the observation cage and, from just after that, the duration of pain-related behavior (licking, shaking) occurring in the right hind limb was measured as the reaction time for 5 minutes.

The inhibition rate of the test compound was determined by the following calculation formula.

Test compound inhibition rate (%) = 100 × [1- (response time of test compound administered group/ response time of vehicle control group)]

The effect of the test compound on an acute pain is shown in Table 99 below. Compounds with an inhibition rate of 30% or more are indicated by the letter “A”, and compounds with an inhibition rate of 20% or more and less than 30% are indicated by the letter “B” and compounds with an inhibition rate of 10% or more but less than 20% is indicated by the letter “C”.

[1483]

Test Example 4: Effect on a neuropathic pain

Five-week old male ICR mice were used for the test. The skin and muscles were incised to expose the sixth lumbar vertebra under isoflurane anesthesia, and the right transverse process was removed. The L5 spinal nerve was isolated from the surrounding tissue to cut out, and then the incision site was sutured.

The 50% pain threshold of the plantar surface was determined by referring to the method of Chaplan SR et al. (J Neurosci Methods 1994, 53: 55-63) using von Frey filaments (0.008 g, 0.02 g, 0.04 g, 0.07 g, 0.16 g, 0.4 g and 0.6 g). First, the mice were placed in a measurement case with a lattice scaffold and habituatedd until the animal settled; 0.07 g of filament was pressed against the plantar surface for about 3 seconds. If withdrawal behavior was observed, the filament with the stimulation intensity one level lower was used to apply stimulation, and conversely, if the withdrawal behavior was not detected, the filament with the stimulation intensity one level higher was used to apply stimulation. By repeating this operation, starting from 2 times before and after the presence or absence of escape behavior changed, the results for a total of 6 times were recorded, to calculate a 50% pain threshold using the following calculation formula.

$$50\%\ \text{pain threshold (g)} = (10^{[Xf+\kappa\delta]}/10000)$$

Xf is the value of the stimulus intensity of the filament used in the last stimulation (log value), κ is the value derived from the pattern of presence/absence of withdrawal behavior for 6 times, and δ is the difference in stimulus intensity (log value) between the filaments used (here 0.365).

Animals that showed as a 50% pain threshold of the affected limb plantar surface of 0.16 g or more before the surgery and 0.08 g or less after 1 week after the surgery were used as allodynia-developed animals for evaluation of the test substance.

Each of the present inventive compounds, for example, Example 70, isomer A of Example 103, isomer A of Example 134, isomer A of Example 161, Example 288, and Example

290, increased the 50% pain threshold at a dose of 10 mg/kg or less in single oral administration, and showed antiallodynic effect.

[1484]

[Table 89]

Example	NaV1.7 IC_{50}	NaV1.5 IC_{50}	Example	NaV1.7 IC_{50}	NaV1.5 IC_{50}
1	B	C	38	B	C
2 (isomer A)	A	B	39 (isomer A)	B	B
2 (isomer B)	A	C	39 (isomer B)	B	C
3	A	B	40	B	C
4	B	C	41	B	C
5	A	B	42	B	
6	B	B	43	B	C
7 (isomer A)	A	B	44	B	C
7 (isomer B)	A	C	45	B	
8	A	C	46	B	B
9 (isomer A)	B	C	47	B	C
9 (isomer B)	A	C	48	B	C
10	B		49	B	C
11	A	C	50	B	
12	A	B	51	A	B
13	B		52	A	B
14	B	C	53	B	
15	A		54	B	
16	A	A	55	A	B
17	A	B	56	B	
18	A		57	A	A
19	A	A	58	B	C
20	A	A	59	B	C
21	A	A	60	B	C
22	B	C	61	B	C
23	B	C	62	B	C
24	A		63	B	
25	B	B	64	B	A
26	B	C	65	A	A
27	A	A	66	B	A
28	B	C	67	A	A
29	B	B	68	B	C
30	B	C	69	B	
31	A		70	A	B
32	B	B	71	A	A
33	A	B	72	A	C
34	B	C	73	B	
35	A	B	74 (isomer A)	A	C
36	A	C	74 (isomer B)	A	
37	B	C	75	A	C

[1485]

[Table 90]

Example	NaV1.7 IC_{50}	NaV1.5 IC_{50}	Example	NaV1.7 IC_{50}	NaV1.5 IC_{50}
76	A	C	110	A	C
77	A	C	111 (isomer A)	A	B
78	B	C	111 (isomer B)	A	B
79	B	C	112	A	C
80	A	C	113 (isomer A)	A	B
81	A	C	113 (isomer B)	A	A
82	B		114	B	C
83	A	B	115 (isomer A)	B	C
84	B	C	115 (isomer B)	B	
85	A	C	116	A	
86	A	C	117	A	A
87	B	C	118	A	A
88	A		119	A	
89	A		120	B	
90	A	B	121	B	
91	B	C	122	B	C
92 (isomer A)	A	C	123	B	C
92 (isomer B)	A	C	124 (isomer A)	A	C
93	A		124 (isomer B)	B	C
94	A	B	125	B	C
95 (isomer A)	A	C	126	A	B
95 (isomer B)	A	C	127 (isomer A)	A	C
96	A	B	127 (isomer B)	A	C
97 (isomer A)	A		128	A	B
97 (isomer B)	A	C	129 (isomer A)	A	C
98	A		129 (isomer B)	A	B
99	A		130	B	C
100	B	C	131 (isomer A)	A	B
101 (isomer A)	A	C	131 (isomer B)	B	C
101 (isomer B)	B	C	132	B	
102	A	C	133	A	B
103 (isomer A)	A	C	134 (isomer A)	A	B
103 (isomer B)	B	C	134 (isomer B)	B	C
104	A		135	A	B
105	A	A	136 (isomer A)	A	A
106	A		136 (isomer B)	A	B
107	B		137	A	C
108	A	B	138 (isomer A)	A	
109 (isomer A)	A	B	138 (isomer B)	B	
109 (isomer B)	B	C	139	A	C

[1486]

[Table 91]

Example	NaV1.7 IC_{50}	NaV1.5 IC_{50}	Example	NaV1.7 IC_{50}	NaV1.5 IC_{50}
140 (isomer A)	A	C	167	A	B
140 (isomer B)	A	B	168	B	C
141	A	C	169	A	B
142 (isomer A)	A	B	170 (isomer A)	A	B
142 (isomer B)	A	C	170 (isomer B)	A	A
143	A	C	171	A	B
144 (isomer A)	A		172	B	C
144 (isomer B)	A	C	173 (isomer A)	A	C
145	A	C	173 (isomer B)	B	
146 (isomer A)	B		174	A	C
146 (isomer B)	A	C	175	B	C
147	A	C	176	B	
148 (isomer A)	A		177	A	B
148 (isomer B)	A	C	178	B	C
149	A	B	179	B	
150 (isomer A)	A		180	B	
150 (isomer B)	A	B	181	A	C
151	A	B	182	B	C
152 (isomer A)	A	C	183	B	
152 (isomer B)	A	C	184 (isomer A)	A	B
153 (isomer A)	A	B	184 (isomer B)	B	
153 (isomer B)	A		185	A	C
154 (isomer A)	B		186 (isomer A)	B	C
155	B	C	186 (isomer B)	A	B
156 (isomer A)	A	C	187	A	C
156 (isomer B)	B		188 (isomer A)	A	A
157	B	C	188 (isomer B)	A	C
158 (isomer A)	A	C	189	A	C
158 (isomer B)	B		190 (isomer A)	A	C
159	A	C	190 (isomer B)	A	
160	A	C	191	A	
161 (isomer A)	A	C	192 (isomer B)	A	
161 (isomer B)	B		193	B	
162	A	C	194 (isomer A)	B	
163 (isomer A)	A	B	194 (isomer B)	A	C
163 (isomer B)	B		195	A	C
164	A	C	196 (isomer A)	A	B
165 (isomer A)	A		196 (isomer B)	A	C
165 (isomer B)	B		197	A	C
166	A		198 (isomer A)	B	

[1487]

[Table 92]

Example	NaV1.7 IC_{50}	NaV1.5 IC_{50}	Example	NaV1.7 IC_{50}	NaV1.5 IC_{50}
198 (isomer B)	A	C	224 (isomer B)	A	B
199	B	C	225	A	B
200 (isomer A)	B	C	226 (isomer A)	A	C
200 (isomer B)	A	C	226 (isomer B)	A	B
201	A	B	227	A	B
202 (isomer A)	A	C	228 (isomer A)	A	C
202 (isomer B)	A	A	228 (isomer B)	B	
203	A	C	229	A	B
204 (isomer A)	A	C	230 (isomer A)	A	C
204 (isomer B)	A	B	230 (isomer B)	B	
205	B	C	231	A	C
206 (isomer A)	A		232 (isomer A)	A	B
206 (isomer B)	A	C	232 (isomer B)	A	C
207 (isomer B)	A	B	233	A	A
208	A	A	234 (isomer A)	A	C
209 (isomer A)	B		234 (isomer B)	A	A
209 (isomer B)	A	A	235	B	
210	A		236 (isomer A)	A	B
211 (isomer A)	A		236 (isomer B)	A	B
211 (isomer B)	A	A	237	A	
212	A	C	238 (isomer A)	A	
213 (isomer A)	A	C	238 (isomer B)	A	
213 (isomer B)	A	C	239	A	
214	A	B	240 (isomer A)	B	
215 (isomer A)	A	B	240 (isomer B)	B	
215 (isomer B)	A	B	241 (isomer A)	A	
216	A		242 (isomer A)	A	
217 (isomer A)	A	B	242 (isomer B)	A	
217 (isomer B)	A	A	243	A	C
218	A	C	244 (isomer A)	A	B
219 (isomer A)	B	C	244 (isomer B)	A	A
219 (isomer B)	A	B	245	A	B
220	B	B	246 (isomer A)	A	B
221 (isomer A)	B	C	246 (isomer B)	A	C
221 (isomer B)	A	B	247 (isomer A)	A	B
222	A	C	247 (isomer B)	A	B
223 (isomer A)	B		248 (isomer A)	A	B
223 (isomer B)	A	B	248 (isomer B)	B	
224 (isomer A)	A	C	249	B	

[1488]

[Table 93]

Example	NaV1.7 IC_{50}	NaV1.5 IC_{50}	Example	NaV1.7 IC_{50}	NaV1.5 IC_{50}
250	B		268	A	C
251	A	C	269	A	
252	A	C	270	B	
253 (isomer A)	B		271	B	
253 (isomer B)	B		272	B	C
255 (isomer A)	B		273	A	C
256 (isomer A)	A	C	274	B	
256 (isomer B)	A	B	275	A	B
257 (isomer A)	A	C	276	B	C
257 (isomer B)	A	C	277	B	C
258	A	A	278	A	B
259	A		279	A	C
260	A	C	280	B	A
261	A	A	281	B	C
262	B	C	282	A	B
263	A	B	283	A	A
264	A		284	A	A
265	A	C	285	A	B
266	A	C	286	B	
267	B	A	287	B	C

[1489]

[Table 94]

Example	NaV1.7 IC_{50}	NaV1.5 IC_{50}	Example	NaV1.7 IC_{50}	NaV1.5 IC_{50}
291	B	C	331	B	B
292	A	B	332	B	C
293	B		333	B	C
294	B	C	334	B	B
295	A	C	335	B	
296	B		336	B	B
297	B		337	B	C
298	A	B	338	B	C
299	A		339	B	
300	B		340	B	C
301	B		341	A	
302	B		342	A	
303	A	B	343	A	B
304	B	C	344	A	
305	A	B	345	A	B
306	A		346	B	
307	B	B	347	B	
308	B	B	348	A	
309	B		349	A	B
310	B		350	B	C
311	B	C	351	A	C
312	B	C	352	A	C
313	B	C	353	B	C
314	A		354	B	
315	B		355	A	
316	B	B	356	A	C
317	B	C	357	A	C
318	B	C	358	B	C
319	B		359	A	C
320	B		360	A	C
321	B	C	361	A	C
322	B		362	B	C
323	B		363	B	
324	B	C	364	A	B
325	A	C	365	B	
326	B	C	366	A	B
327	B	C	367	A	
328	B	B	368	B	
329	A		369	B	
330	B		370	B	

[1490]

[Table 95]

Example	NaV1.7 IC_{50}	NaV1.5 IC_{50}	Example	NaV1.7 IC_{50}	NaV1.5 IC_{50}
371	A		411	A	C
372	A		412	A	B
373	B	C	413	A	
374	A	C	414	B	
375	A	C	415	A	B
376	B		416	B	
377	B		417	B	
378	B	C	418	B	
379	A		419	B	
380	B		420	A	
381	B		421	A	C
382	B	C	422	B	C
383	A	C	423	A	
384	A		424	B	
385	B		425	A	C
386	A	C	426	B	C
387	A		427	A	B
388	A		428	A	C
389	A	B	429	B	C
390	B		430	A	
391	A	C	431	A	
392	A	B	432	A	B
393	B		433	A	
394	B		434	A	
395	A		435	A	
396	A		436	A	
397	A		437	A	B
398	B		438	A	
399	A		439	B	
400	A	C	440	B	
401	B	C	441	A	
402	A	C	442	A	
403	A		443	A	
404	A		444	A	
405	A		445	A	C
406	A		446	B	
407	A		447	A	C
408	B		448	A	B
409	A		449	A	
410	A		450	B	C

[1491]

[Table 96]

Example	NaV1.7 IC_{50}	NaV1.5 IC_{50}	Example	NaV1.7 IC_{50}	NaV1.5 IC_{50}
451	A	B	491	B	C
452	B		492	B	C
453	B		493	A	B
454	B	C	494	A	B
455	A		495	A	C
456	A	B	496	A	B
457	A	C	497	A	C
458	A		498	A	
459	A	C	499	A	B
460	A	C	500	B	B
461	A	B	501	B	
462	A	C	502	B	B
463	A		503	B	
464	A	C	504	A	B
465	A		505	A	
466	A	B	506	A	B
467	A		507	A	C
468	A	C	508	A	
469	A		509	B	
470	A	B	510	B	
471	A		511	B	
472	A		512	B	
473	A		513	A	
474	A		514	A	
475	A		515	A	
476	A		516	B	
477	A		517	B	
478	A		518	A	B
479	A		519	B	
480	B		520	A	
481	A	C	521	A	
482	A		522	A	
483	B		523	A	
484	A		524	B	
485	A		525	B	
486	A		526	B	
487	A	B	527	A	
488	B	C	528	B	
489	B	C	529	A	
490	B	C	530	B	C

[1492]

[Table 97]

Example	NaV1.7 IC_{50}	NaV1.5 IC_{50}	Example	NaV1.7 IC_{50}	NaV1.5 IC_{50}
531	B	B	566	A	
532	B	C	567	A	
533	A		568	A	C
534 (isomer A)	B		569	A	
534 (isomer B)	B		570	A	
535	A	C	571	B	
536	B		572(isomer A)	B	C
537	B		572(isomer B)	B	C
538	A	C	573	B	
539	B		574	A	
540	A	B	575(isomer A)	A	B
541	A	C	575(isomer B)	B	
542	B		576(isomer A)	A	C
543	B	C	576(isomer B)	A	C
544	B		577(isomer A)	B	
545	A		577(isomer B)	B	
546	A		578	B	
547 (isomer A)	B	C	579(isomer A)	A	B
547 (isomer B)	B		579(isomer B)	A	
548	B		580	A	
549	B		581	A	
550	A		582	B	
551	B		583	A	
552 (isomer A)	B	C	584	A	
552 (isomer B)	B		585	B	
553	B		586	A	
554 (isomer A)	A	C	587	B	
554 (isomer B)	B		588	A	
555	A		589	B	
556	A		590(isomer A)	A	
557	A		590(isomer B)	A	
558	A		591	A	
559	B		592	B	
560	A		593	B	B
561	B		594	B	
562	B		595	A	
563 (isomer A)	B	B	596	A	
563 (isomer B)	A	C	597(isomer A)	A	C
564	B		597(isomer B)	A	B
565	A		598(isomer A)	A	

[1493]

[Table 98]

Example	NaV1.7 IC_{50}	NaV1.5 IC_{50}	Example	NaV1.7 IC_{50}	NaV1.5 IC_{50}
598 (isomer B)	A	B	625	A	
599	A		626	B	
600 (isomer A)	B		627	B	
600 (isomer B)	A	B	628	A	
601 (isomer A)	B		629	A	
601 (isomer B)	B	C	630	A	
602 (isomer A)	A	C	631	A	
602 (isomer B)	A		632	A	
603 (isomer A)	A		633	A	
603 (isomer B)	A	C	634	A	
604 (isomer A)	A	B	635	A	
604 (isomer B)	B		636 (isomer A)	A	
605	A		636 (isomer B)	A	
606	A		637	B	
607	A		638	B	
608 (isomer A)	A	C	639	A	
608 (isomer B)	A	C	640	A	
609	B		641 (isomer A)	B	
610 (isomer A)	A	C	641 (isomer B)	B	
610 (isomer B)	B		642	B	
611	A		643	B	
612	B		644	A	
613	A		645	A	
614	A		646	A	
615 (isomer A)	A	B	647	A	
615 (isomer B)	A	C	648	B	
616 (isomer A)	A	B	649	B	
616 (isomer B)	B		650	A	
617 (isomer A)	A	C	651	A	
617 (isomer B)	B		652	B	
617 (isomer C)	B	C	653	B	
617 (isomer D)	B		654	A	
618	B		655	A	
619	B		656	B	
620	A		657	A	
621	A		658	A	
622 (isomer A)	A	C	659	B	
622 (isomer B)	A	C	660	B	
623	A		661	A	
624	A		662	A	

Example	NaV1.7 IC_{50}	NaV1.5 IC_{50}	Example	NaV1.7 IC_{50}	NaV1.5 IC_{50}
663	A		674	B	
664	B		675	B	
665	A		676	A	
666	B		677	B	
667	A		678	A	
668	B		679	A	
669	B		680	B	
670	A		681	B	
671	A		682	B	
672	A		683	B	C
673	A				

[1494]

[Table 99]

Example	Inhibition rate (%)
37	B
40	B
44	A
48	A
60	B
61	B
70	A
74 (isomer A)	A
92 (isomer A)	A
92 (isomer B)	A
101 (isomer A)	C
103 (isomer A)	A
115 (isomer A)	A
129 (isomer A)	A
134 (isomer A)	A
144 (isomer B)	A
161 (isomer A)	A
204 (isomer A)	A
213 (isomer B)	B
244 (isomer A)	B
260	A
288	A
289	C
290	A

[Industrial applicability]

[1495]

The present inventive heteroaromatic amide derivative represented by the general formula (I) or the general formula (I-E2) or a salt thereof has a strong Nav1.7 inhibitory effect

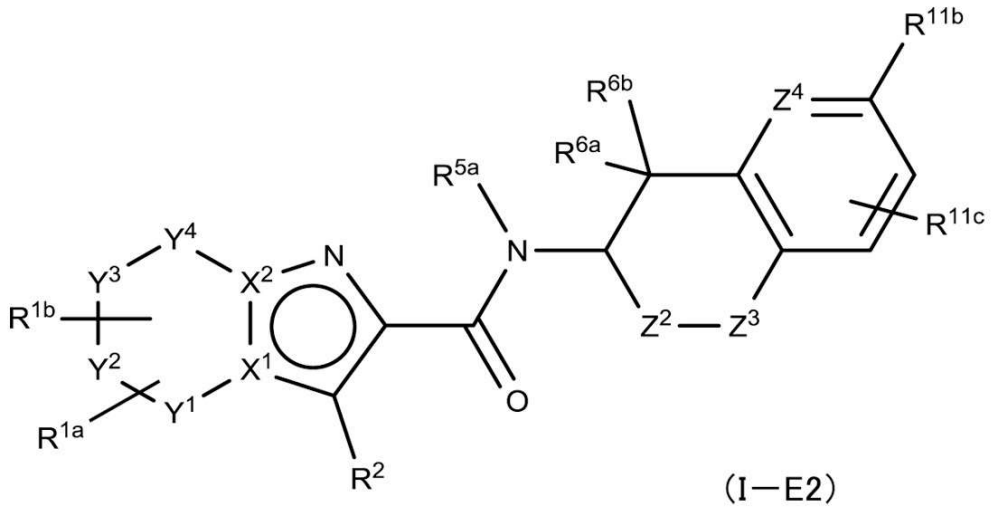
and a lower Nav1.5 inhibitory effect, so that it is useful as an active ingredient of a therapeutic agent and/or prophylactic for various diseases associated with Nav1.7 with less concern about side effects derived from Nav1.5. For example, the present inventive heteroaromatic amide derivative or a salt thereof is useful as an analgesic for various diseases with pain.

CLAIMS

[Claim 1]

A heteroaromatic amide derivative or salt thereof represented by the general formula (I-E2):

[Chem 1]



(I—E2)

[wherein,

X^1-X^2 is N-C or C-N,

Y^1, Y^2, Y^3 and Y^4 together form

$-OCH_2CH_2CH_2-$, $-OCR^{4a}HCH_2CH_2-$, $-OCR^{4a}R^{4b}CH_2CH_2-$

$-OCH_2CH_2-$, $-OCR^{4a}HCH_2-$, $-OCR^{4a}R^{4b}CH_2-$,

$-OCH_2CH_2CH_2CH_2-$, $-OCR^{4a}HCH_2CH_2CH_2-$, $-OCR^{4a}R^{4b}CH_2CH_2CH_2-$,

$-OCH_2CR^{4a}HCH_2CH_2-$, $-OCH_2CR^{4a}R^{4b}CH_2CH_2-$,

$-CH_2OCH_2CH_2-$, $-CH_2OCH_2CH_2CH_2-$, $-CH_2CH_2OCH_2-$, $-CH_2CR^{4a}HOCH_2-$

$-CH_2CH_2CH_2CH_2-$, $-CH_2CR^{4a}HCH_2CH_2-$, $-CH_2CR^{4a}R^{4b}CH_2CH_2-$,

$-CH_2CH_2CR^{4a}HCH_2-$, $-CH_2CH_2CR^{4a}R^{4b}CH_2-$,

$-CH_2SCH_2CH_2-$, $-CH_2SO_2CH_2CH_2-$,

$-NHCH_2CH_2CH_2-$, $-NR^{4c}CH_2CH_2CH_2-$, $-NR^{4c}CR^{4a}HCH_2CH_2-$,

$-NHCR^{4a}HCH_2CH_2-$,

$-CH_2NR^{4c}CH_2CH_2-$, $-CH_2NR^{4c}CR^{4a}HCH_2-$, $-CH_2NHCR^{4a}HCH_2-$,

$-CH_2CH_2NR^{4c}CH_2-$, $-CH_2CR^{4a}HNR^{4c}CH_2-$, or $-CH_2CR^{4a}HNHCH_2$

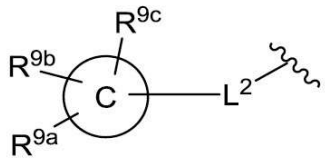
R^{1a} and R^{1b} are, independently each other, a hydrogen atom, a halogen atom, a hydroxy group, a cyano group, a C_1-C_4 alkyl group, a C_1-C_4 haloalkyl group, a C_1-C_4 alkoxy group, a C_1-C_4 haloalkoxy group, a C_3-C_7 cycloalkyl group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group, or a C_1-C_4 haloalkoxy-C_1-C_4 alkyl group,

R^2 is a hydrogen atom, a halogen atom, a hydroxy group, a cyano group, an optionally substituted C_1-C_6 alkyl group, an optionally substituted C_1-C_6 haloalkyl group, an optionally substituted C_2-C_6 alkenyl group, an optionally substituted C_2-C_6 alkynyl group, or an optionally substituted saturated, partially saturated or unsaturated 3- to 7-membered monocyclic ring,

R^{4a}, R^{4b} and R^{4c} are, independently each other, a halogen atom, a cyano group, a cyanomethyl group, a formyl group, a nitro group, a carboxamide group, a hydroxy group, an optionally substituted C_1-C_6 alkyl group, an optionally substituted C_1-C_6 haloalkyl group, an optionally substituted C_1-C_6 alkoxy group, an optionally substituted C_1-C_6 haloalkoxy group, an optionally substituted C_1-C_4 alkoxy-C_1-C_4 alkyl group, an optionally substituted C_1-C_4 haloalkoxy-C_1-C_4 alkyl group, an optionally substituted C_1-C_4 alkoxy-C_1-C_4 haloalkyl group, an optionally substituted C_1-C_4 haloalkoxy-C_1-C_4 haloalkyl group, an optionally substituted C_1-C_6 alkylcarbonyl group, an optionally substituted C_1-C_6 alkoxycarbonyl group, an optionally substituted C_1-C_6 alkylcarbonyloxy group, an optionally substituted C_1-C_6 haloalkylcarbonyl group, an optionally substituted C_1-C_6 haloalkoxycarbonyl group, an optionally substituted C_1-C_6 haloalkylcarbonyloxy group, an optionally substituted C_3-C_7 cycloalkyl group, an optionally substituted heterocycloalkyl group, an optionally substituted C_3-C_7 cycloalkyloxy group, an optionally substituted heterocycloalkyloxy group, an optionally substituted C_2-C_6 alkenyl group, an optionally substituted C_2-C_6 alkenyloxy group, an optionally substituted C_2-C_6 alkenyloxy-C_1-C_4 alkyl group, an optionally substituted C_2-C_6 alkenyloxy-C_1-C_4 haloalkyl group, an optionally substituted C_2-C_6 alkynyl group, an optionally substituted C_2-C_6 alkynyloxy group, an optionally substituted C_2-C_6 alkynyloxy-C_1-C_4 alkyl group, an optionally substituted C_2-C_6 alkynyloxy-C_1-C_4 haloalkyl group, an optionally substituted C_1-C_4 alkoxy-C_1-C_4 alkoxy group, an optionally substituted C_1-C_4 haloalkoxy-C_1-C_4 alkoxy group, an optionally substituted C_2-C_6 alkenyloxy-C_1-C_4 alkoxy group, an optionally substituted C_2-C_6 alkynyloxy-C_1-C_4 alkoxy group, an optionally substituted C_2-C_6 alkenyloxy-C_1-C_4 haloalkoxy group, an optionally substituted C_2-C_6 alkynyloxy-C_1-C_4 haloalkoxy group, an optionally substituted C_1-C_6 alkylthio group, an optionally substituted C_1-C_6 haloalkylthio group, an optionally substituted C_1-C_4 alkylthio-C_1-C_4 alkyl group, an optionally substituted C_1-C_4 haloalkylthio-C_1-C_4 alkyl group, an optionally substituted C_1-C_4 alkylthio-C_1-C_4 haloalkyl group, an optionally substituted C_1-C_4 haloalkylthio-C_1-C_4 haloalkyl group, a pentafluorosulfanyl group, $-(CH_2)_qNR^{b1}R^{b2}$ (R^{b1} and R^{b2} are,

independently each other, a hydrogen atom, a C_1-C_4 alkyl group, or a C_1-C_4 haloalkyl group, and q is 0, 1, 2, or 3.), or a group represented by the general formula (I-B)

[Chem 2]



(I-B)

{wherein,

ring C is a saturated, partially saturated or unsaturated 3- to 7-membered monocyclic ring, or a saturated, partially saturated or unsaturated 7- to 12-membered bicyclic ring,

L^2 is a single bond, -CH=CH-, -C≡C-,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}-$,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}O\ (CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}-$,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}NR^{c}\ (CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}-$,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}CO\ (CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}-$,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}CONR^{c}\ (CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}-$,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}NR^{c}CO\ (CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}-$,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}S\ (CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}-$,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}SO\ (CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}-$,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}SO_2\ (CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}-$,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}SO_2NR^{c}\ (CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}-$, or

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}NR^{c}SO_2\ (CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}-$

(R^c is a hydrogen atom, a C_1-C_4 alkyl group, or a C_1-C_4 haloalkyl group,

R^{10a}, R^{10b}, R^{10c}, R^{10d}, R^{10e}, R^{10f}, R^{10g}, and R^{10h} are, independently each other, a hydrogen atom, a halogen atom, a C_1-C_4 alkyl group, or a C_3-C_7 cycloalkyl group,

R^{10a} and R^{10b} optionally form, together with the carbon atom bonded thereto, a 3- to 7-membered monocyclic ring,

R^{10c} and R^{10d} optionally form, together with the carbon atom bonded thereto, a 3- to 7-membered monocyclic ring,

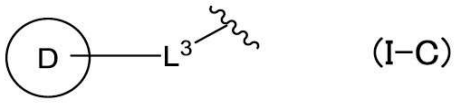
R^{10e} and R^{10f} optionally form, together with the carbon atom bonded thereto, a 3- to 7-membered monocyclic ring,

R^{10g} and R^{10h} optionally form, together with the carbon atom bonded thereto, a 3- to 7-membered monocyclic ring,

r1, r2, r3 and r4 are, independently each other, 0, 1, or 2.),

R^{9a}, R^{9b} and R^{9c} are, independently each other, a hydrogen atom, a halogen atom, a hydroxy group, a cyano group, a formyl group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group, a C_1-C_4 haloalkoxy-C_1-C_4 alkyl group, a C_1-C_4 alkoxy-C_1-C_4 haloalkyl group, a C_1-C_6 alkylcarbonyl group, a C_1-C_6 alkoxycarbonyl group, a C_1-C_6 haloalkylcarbonyl group, a C_3-C_7 cycloalkyl group, a heterocycloalkyl group, a C_3-C_7 cycloalkyloxy group, a heterocycloalkyloxy group, a C_2-C_6 alkenyl group, -$(CH_2)_sNR^{d1}R^{d2}$ (R^{d1} and R^{d2} are, independently each other, a hydrogen atom, a C_1-C_4 alkyl group, or a C_1-C_4 haloalkyl group, and s is 0, 1, or 2.), or the general formula (I-C)

[Chem 3]



(I-C)

{wherein,

ring D is a 3- to 7-membered monocyclic ring optionally substituted by a halogen atom, a hydroxy group, a C_1-C_4 alkyl group, a C_1-C_4 haloalkyl group, a C_1-C_4 alkoxy group, or a C_1-C_4 haloalkoxy group,

L^3 is a single bond, or an oxygen atom.}.} or

R^{4a} and R^{4b} optionally form, together with the carbon atom bonded thereto, a 3- to 7-membered monocyclic ring, or

R^{4a} and R^{4b} optionally together form the general formula (I-D):

[Chem 4]



(I-D)

(R^{4d} and R^{4e} are, independently each other, a hydrogen atom, a halogen atom, or a C_1-C_4 alkyl group, or R^{4d} and R^{4e} optionally form, together with the carbon atom bonded thereto, a 3- to 7-membered monocyclic ring) (with a proviso that at least one of Y^1, Y^2, Y^3, and Y^4 is -$CR^{4a}R^{4b}$-, -$CR^{4a}H$-, -$CH_2CR^{4a}R^{4b}$-, or -$CH_2CR^{4a}H$- when R^2 is a hydrogen atom.),

Z^2-Z^3 is, -OCH_2-, -CH_2O-, -SCH_2-, -CH_2S-, -CH_2NR^{f1}-, -$NR^{f1}CH_2$-, -CH_2CH_2-, -$CONR^{f1}$-, -$NR^{f1}CO$-, -$OCR^{f1}R^{f2}$-, or -$CR^{f1}R^{f2}O$- (R^{f1} and R^{f2} are a hydrogen atom, a C_1-C_4 alkyl group, or a C_1-C_4 haloalkyl group.),

R^{5a} is a hydrogen atom, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_3-C_7 cycloalkyl group, a heterocycloalkyl group, a C_3-C_7 cycloalkyl-C_1-C_4 alkyl group, a heterocycloalkyl-C_1-C_4 alkyl group, or an aralkyl group,

R^{6a} and R^{6b} are, independently each other, a hydrogen atom, a halogen atom, a hydroxy group, a cyano group, a C_1-C_4 alkyl group, a C_1-C_4 haloalkyl group, a C_1-C_4 alkoxy group, or a C_1-C_4 haloalkoxy group,

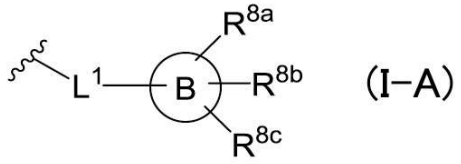
Z^4 is C-R^{11a} or a nitrogen atom,

R^{11a} is a hydrogen atom, a halogen atom, a cyano group, a cyanomethyl group, a formyl group, a nitro group, a carboxamide group, a hydroxy group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group, a C_1-C_4 haloalkoxy-C_1-C_4 alkyl group, a C_3-C_7 cycloalkyl group, a C_2-C_6 alkenyl group, a C_2-C_6 alkenyloxy group, a C_2-C_6 alkynyl group, or a C_2-C_6 alkynyloxy group,

R^{11b} and R^{11c} are, independently each other, a hydrogen atom, a halogen atom, a cyano group, a cyanomethyl group, a formyl group, a nitro group, a carboxamide group, a hydroxy group, an optionally substituted C_1-C_6 alkyl group, an optionally substituted C_1-C_6 haloalkyl group, an optionally substituted C_1-C_6 alkoxy group, an optionally substituted C_1-C_6 haloalkoxy group, an optionally substituted C_1-C_4 alkoxy-C_1-C_4 alkyl group, an optionally substituted C_1-C_4 haloalkoxy-C_1-C_4 alkyl group, an optionally substituted C_1-C_4 alkoxy-C_1-C_4 haloalkyl group, an optionally substituted C_1-C_4 haloalkoxy-C_1-C_4 haloalkyl group, an optionally substituted C_1-C_6 alkylcarbonyl group, an optionally substituted C_1-C_6 alkoxycarbonyl group, an optionally substituted C_1-C_6 alkylcarbonyloxy group, an optionally substituted C_1-C_6 haloalkylcarbonyl group, an optionally substituted C_1-C_6 haloalkoxycarbonyl group, an optionally substituted C_1-C_6 haloalkylcarbonyloxy group, an optionally substituted C_3-C_7 cycloalkyl group, an optionally substituted heterocycloalkyl group, an optionally substituted C_3-C_7 cycloalkyloxy group, an optionally substituted heterocycloalkyloxy group, an optionally substituted C_2-C_6 alkenyl group, an optionally substituted C_2-C_6 alkenyloxy group, an optionally substituted C_2-C_6 alkenyloxy-C_1-C_4 alkyl group, an optionally substituted C_2-C_6 alkenyloxy-C_1-C_4 haloalkyl group, an optionally substituted C_2-C_6 alkynyl group, an optionally substituted C_2-C_6 alkynyloxy group, an optionally substituted C_2-C_6 alkynyloxy-C_1-C_4 alkyl group, an optionally substituted C_2-C_6 alkynyloxy-C_1-C_4 haloalkyl group, an optionally substituted C_1-C_4 alkoxy-C_1-C_4 alkoxy group, an optionally substituted C_1-C_4 haloalkoxy-C_1-C_4 alkoxy group, an optionally substituted C_2-C_6 alkenyloxy-C_1-C_4 alkoxy group, an optionally substituted C_2-C_6 alkynyloxy-C_1-C_4 alkoxy group, an optionally substituted C_2-C_6 alkenyloxy-C_1-C_4 haloalkoxy group, an optionally substituted C_2-C_6 alkynyloxy-C_1-C_4 haloalkoxy group, an optionally substituted C_1-C_6 alkylthio group, an

optionally substituted C_1-C_6 haloalkylthio group, an optionally substituted C_1-C_4 alkylthio-C_1-C_4 alkyl group, an optionally substituted C_1-C_4 haloalkylthio-C_1-C_4 alkyl group, an optionally substituted C_1-C_4 alkylthio-C_1-C_4 haloalkyl group, an optionally substituted C_1-C_4 haloalkylthio-C_1-C_4 haloalkyl group, an optionally substituted C_1-C_6 alkylsulfonyl group, $-(CH_2)_pNR^{a1}R^{a2}$ (R^{a1} and R^{a2} are, independently each other, a hydrogen atom, a C_1-C_4 alkyl group, or a C_1-C_4 haloalkyl group, and p is 0, 1, or 2.), or a group represented by the general formula (I-A)

[Chem 5]



(I-A)

{wherein,

ring B is a saturated, partially saturated or unsaturated 3- to 7-membered monocyclic ring,

L^1 is a single bond, $-CR^{a3}R^{a4}-$, -O-, $-NR^{a1}-$, $-CR^{a3}R^{a4}O-$, $-OCR^{a3}R^{a4}-$, $-CH_2CH_2-$, -CH=CH-, -C≡C-, or $-CH_2OCH_2-$ (R^{a3} and R^{a4} are, independently each other, a hydrogen atom, a C_1-C_4 alkyl group, or a C_1-C_4 haloalkyl group.),

R^{8a}, R^{8b} and R^{8c} are, independently each other, a hydrogen atom, a halogen atom, a cyano group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_3-C_7 cycloalkyl group, a C_3-C_7 cycloalkyloxy group, a heterocycloalkyl group, a heterocycloalkyloxy group, a C_2-C_6 alkenyl group, or a C_2-C_6 alkynyl group.}].

[Claim 2]

The heteroaromatic amide derivative or salt thereof according to Claim 1, wherein in the general formula (I-E2),

X^1-X^2 is C-N,

Y^1, Y^2, Y^3 and Y^4 together form

$-OCR^{4a}HCH_2CH_2-$, $-OCR^{4a}R^{4b}CH_2CH_2-$, $-OCH_2CH_2-$,

$-OCR^{4a}HCH_2-$, $-OCR^{4a}R^{4b}CH_2-$,

$-OCH_2CH_2CH_2CH_2-$, $-OCR^{4a}HCH_2CH_2CH_2-$, $-OCH_2CR^{4a}HCH_2CH_2-$,

$-CH_2OCH_2CH_2-$, $-CH_2OCH_2CH_2CH_2-$,

$-CH_2CR^{4a}HCH_2CH_2-$, $-CH_2CR^{4a}R^{4b}CH_2CH_2-$, $-CH_2CH_2CR^{4a}HCH_2-$,

$-NHCH_2CH_2CH_2-$, $-NR^{4c}CR^{4a}HCH_2CH_2-$, $-NHCR^{4a}HCH_2CH_2-$, or $-CH_2NR^{4c}CH_2CH_2-$

(R^{4a}, R^{4b} and R^{4c} have the same definition as given in Claim 1.),

(with a proviso that R^2 is a hydrogen atom when X^1-X^2 is C-N and Y^1, Y^2, Y^3 and Y^4 together

form -$OCR^{4a}HCH_2CH_2$- or -$OCR^{4a}R^{4b}CH_2CH_2$-.).

[Claim 3]

The heteroaromatic amide derivative or salt thereof according to Claim 1 or 2, wherein in the general formula (I-E2),

Z^2-Z^3 is -CH_2O-,

R^{6a} and R^{6b}, each independently, are a hydrogen atom, a fluorine atom, a hydroxy group or a methoxy group,

R^{11a} and R^{11c} are each a hydrogen atom.

[Claim 4]

The heteroaromatic amide derivative or salt thereof according to any one of Claims 1 to 3, wherein in the general formula (I-E2),

X^1-X^2 is C-N,

Y^1, Y^2, Y^3 and Y^4 together form

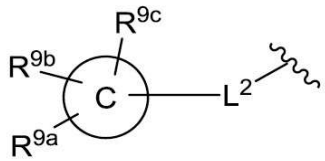
-$OCR^{4a}HCH_2CH_2$-, -$OCR^{4a}HCH_2$-,

-$OCR^{4a}HCH_2CH_2CH_2$-, -$CH_2CR^{4a}HCH_2CH_2$-,

-$NR^{4c}CR^{4a}HCH_2CH_2$-, -$NHCR^{4a}HCH_2CH_2$-, or -$CH_2NR^{4c}CH_2CH_2$-,

R^{4a} is a halogen atom, a hydroxy group, a cyano group, a C_1-C_6 alkyl group, a C_1-C_6 alkyl group optionally substituted by a hydroxy group, a C_1-C_6 haloalkyl group, a C_1-C_6 haloalkyl group optionally substituted by a hydroxy group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group optionally substituted by a C_1-C_4 haloalkoxy group, a C_1-C_4 haloalkoxy-C_1-C_4 alkyl group, a C_1-C_4 alkoxy-C_1-C_4 haloalkyl group, a C_1-C_4 haloalkoxy-C_1-C_4 haloalkyl group, a C_1-C_6 alkylcarbonyl group, a C_1-C_6 alkoxycarbonyl group, a C_1-C_6 haloalkylcarbonyl group, a C_3-C_7 cycloalkyl group, a C_3-C_7 cycloalkyl group optionally substituted by a halogen atom or a C_1-C_4 haloalkyl group, a heterocycloalkyl group, a C_2-C_6 alkenyl group, a C_2-C_6 alkenyloxy group, a C_2-C_6 alkenyloxy-C_1-C_4 alkyl group, a C_2-C_6 alkenyloxy-C_1-C_4 alkyl group optionally substituted by a halogen atom, a C_2-C_6 alkynyl group, a C_2-C_6 alkynyl group optionally substituted by a halogen atom or a methoxy group, a C_2-C_6 alkynyloxy-C_1-C_4 alkyl group, a C_1-C_4 haloalkoxy-C_1-C_4 alkoxy group, a C_1-C_6 alkylthio group, a C_1-C_6 haloalkylthio group, a C_1-C_4 alkylthio-C_1-C_4 alkyl group, a C_1-C_4 haloalkylthio-C_1-C_4 alkyl group, -$(CH_2)_qNR^{b1}R^{b2}$ (q, R^{b1} and R^{b2} have the same definition as given in Claim 1.), or the general formula (I-B)

[Chem 6]



(I-B)

{wherein,

ring C is a C_3-C_7 cycloalkyl, an azetidinyl, a pyrrolidinyl, a piperidyl, a piperazinyl, a morpholino, a phenyl, a pyrrolyl, a furyl, a thienyl, an imidazolyl, a pyrazolyl, an oxazolyl, a thiazolyl, a triazolyl, a pyridyl, a pyrazinyl, a pyridazinyl, or a pyrimidinyl,

L^2 is a single bond, -CH=CH-, -C≡C-,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}O(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}NR^{c}(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}CO(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-,

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}S(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-, or

$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}SO(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$ (R^{10a}, R^{10b}, R^{10c}, R^{10d}, R^{10e}, R^{10f}, R^{10g}, R^{10h}, r1, r2, r3, r4 and R^c have the same definition as given in Claim 1.),

R^{9a}, R^{9b} and R^{9c} are, independently each other, a hydrogen atom, a halogen atom, a hydroxy group, a cyano group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_1-C_6 alkoxycarbonyl group, a heterocycloalkyloxy group, or $-(CH_2)_sNR^{d1}R^{d2}$ (s, R^{d1} and R^{d2} have the same definition as given in Claim 1.).}.

[Claim 5]

The heteroaromatic amide derivative or salt thereof according to Claim 1, wherein in the general formula (I-E2),

X^1-X^2 is N-C,

Y^1, Y^2, Y^3 and Y^4 together form

$-CH_2CR^{4a}HOCH_2$-, $-CH_2CR^{4a}HCH_2CH_2$-, $-CH_2CR^{4a}R^{4b}CH_2CH_2$-,

$-CH_2CH_2NR^{4c}CH_2$-, $-CH_2CR^{4a}HNR^{4c}CH_2$-, or $-CH_2CR^{4a}HNHCH_2$- (R^{4a}, R^{4b} and R^{4c} have the same definition as given in Claim 1.),

(with a proviso that ring C is not a phenyl ring when Y^1, Y^2, Y^3 and Y^4 together form $-CH_2CR^{4a}HCH_2CH_2$-, R^2 is a hydrogen atom, R^{4a} is a group represented by the general formula (I-B), and L^2 is a single bond.).

[Claim 6]

The heteroaromatic amide derivative or salt thereof according to Claim 1 or 5, wherein in the general formula (I-E2),

Z^2-Z^3 is -CH_2O-,

R^{6a}, R^{6b}, and R^{11c} are each a hydrogen atom,

R^{11a} is a hydrogen atom or a halogen atom.

[Claim 7]

The heteroaromatic amide derivative or salt thereof according to any one of Claims 1, 5 and 6, wherein in the general formula (I-E2),

X^1-X^2 is N-C,

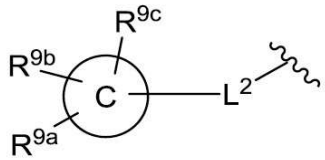
Y^1, Y^2, Y^3 and Y^4 together form

-$CH_2CR^{4a}HOCH_2$-, -$CH_2CR^{4a}HCH_2CH_2$-, -$CH_2CH_2NR^{4c}CH_2$-,

-$CH_2CR^{4a}HNR^{4c}CH_2$-, or -$CH_2CR^{4a}HNHCH_2$-,

R^{4a} and R^{4c}, each independently, are a halogen atom, a hydroxy group, a cyano group, a C_1-C_6 alkyl group, a C_1-C_6 alkyl group optionally substituted by a hydroxy group, a C_1-C_6 haloalkyl group, a C_1-C_6 haloalkyl group optionally substituted by a hydroxy group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group optionally substituted by a C_1-C_4 haloalkoxy group, a C_1-C_4 haloalkoxy-C_1-C_4 alkyl group, a C_1-C_4 alkoxy-C_1-C_4 haloalkyl group, a C_1-C_4 haloalkoxy-C_1-C_4 haloalkyl group, a C_1-C_6 alkylcarbonyl group, a C_1-C_6 alkoxycarbonyl group, a C_1-C_6 haloalkylcarbonyl group, a C_3-C_7 cycloalkyl group, a C_3-C_7 cycloalkyl group optionally substituted by a halogen atom or a C_1-C_4 haloalkyl group, a heterocycloalkyl group, a C_2-C_6 alkenyl group, a C_2-C_6 alkenyloxy group, a C_2-C_6 alkenyloxy-a C_1-C_4 alkyl group, a C_2-C_6 alkenyloxy-C_1-C_4 alkyl group optionally substituted by a halogen atom, a C_2-C_6 alkynyl group, a C_2-C_6 alkynyl group optionally substituted by a halogen atom or a methoxy group, a C_2-C_6 alkynyloxy-C_1-C_4 alkyl group, a C_1-C_4 haloalkoxy-C_1-C_4 alkoxy group, a C_1-C_6 alkylthio group, a C_1-C_6 haloalkylthio group, a C_1-C_4 alkylthio-C_1-C_4 alkyl group, a C_1-C_4 haloalkylthio-C_1-C_4 alkyl group, -$(CH_2)_qNR^{b1}R^{b2}$ (q, R^{b1} and R^{b2} have the same definition as given in Claim 1.), or the general formula (I-B)

[Chem 7]



(I−B)

{wherein,

ring C is a C_3-C_7 cycloalkyl, an azetidinyl, a pyrrolidinyl, a piperidyl, a piperazinyl, a morpholino, a phenyl, a pyrrolyl, a furyl, a thienyl, an imidazolyl, a pyrazolyl, an oxazolyl, a thiazolyl, a triazolyl, a pyridyl, a pyrazinyl, a pyridazinyl, or a pyrimidinyl,

L^2 is a single bond, -CH=CH-, -C≡C-,
$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-,
$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}O(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-,
$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}NR^{c}(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-,
$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}CO(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-,
$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}S(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$-, or
$-(CR^{10a}R^{10b})_{r1}(CR^{10c}R^{10d})_{r2}SO(CR^{10e}R^{10f})_{r3}(CR^{10g}R^{10h})_{r4}$- ($R^{10a}$, R^{10b}, R^{10c}, R^{10d}, R^{10e}, R^{10f}, R^{10g}, R^{10h}, r1, r2, r3, r4 and R^{c} have the same definition as given in Claim 1.),

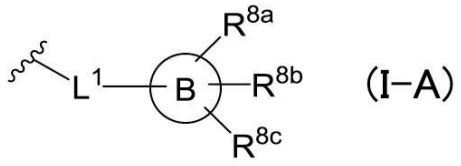
R^{9a}, R^{9b} and R^{9c} are, independently each other, a hydrogen atom, a halogen atom, a hydroxy group, a cyano group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_1-C_6 alkoxycarbonyl group, a heterocycloalkyloxy group, or $-(CH_2)_sNR^{d1}R^{d2}$ (s, R^{d1} and R^{d2} have the same definition as given in Claim 1.).}.

[Claim 8]

The heteroaromatic amide derivative or salt thereof according to any one of Claims 1 to 7, wherein in the general formula (I-E2),

R^{11b} is a hydrogen atom, a halogen atom, a cyano group, a cyanomethyl group, a formyl group, a nitro group, a carboxamide group, a hydroxy group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group, a C_1-C_4 alkoxy-C_1-C_4 alkyl group optionally substituted by a dimethylaminocarbonyl group or a dimethylamino group, a C_1-C_4 haloalkoxy-C_1-C_4 alkyl group, a C_1-C_4 alkoxy-C_1-C_4 haloalkyl group, a C_1-C_4 haloalkoxy-C_1-C_4 haloalkyl group, a C_1-C_6 alkylcarbonyl group, a C_2-C_6 alkenyl group, a C_2-C_6 alkynyl group, a C_2-C_6 alkynyl group optionally substituted by a halogen atom, a C_1-C_6 alkylthio group, a C_1-C_6 haloalkylthio group, $-(CH_2)_pNR^{a1}R^{a2}$ (p, R^{a1} and R^{a2} have the same definition given in Claim 1.), or a group represented by the general formula (I-A)

[Chem 8]



(I-A)

{wherein,

ring B is a C_3-C_7 cycloalkyl, an azetidinyl, a pyrrolidinyl, a piperidyl, a piperazinyl, a morpholino, a phenyl, a pyrrolyl, a furyl, a thienyl, an imidazolyl, a pyrazolyl, an oxazolyl, an isoxazolyl, a thiazolyl, an isothiazolyl, a triazolyl, a tetrazolyl, a pyridyl, a pyrazinyl, a

pyridazinyl, or a pyrimidinyl,

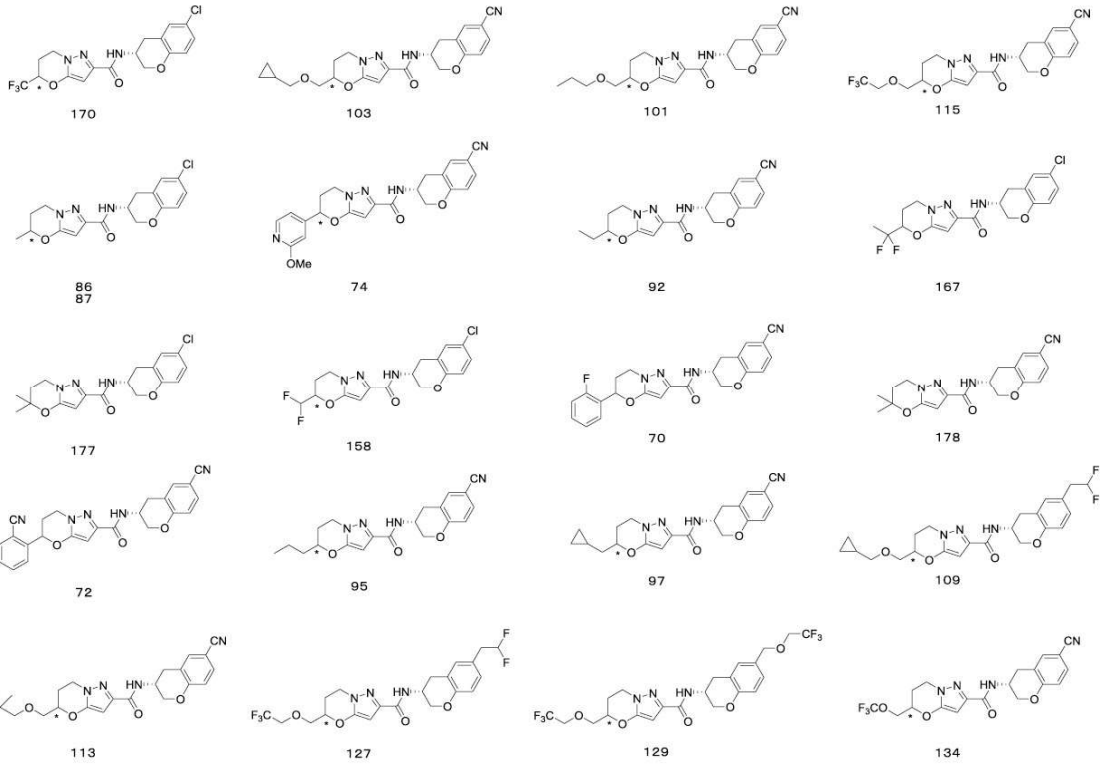
L^1 is a single bond, $-CH_2-$, $-CH_2O-$, $-OCH_2-$, $-CH_2CH_2-$, or $-CH_2OCH_2-$,

R^{8a}, R^{8b} and R^{8c} are, independently each other, a hydrogen atom, a halogen atom, a cyano group, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_1-C_6 alkoxy group, a C_1-C_6 haloalkoxy group, a C_3-C_7 cycloalkyl group, a C_3-C_7 cycloalkyloxy group, a heterocycloalkyl group, a heterocycloalkyloxy group, a C_2-C_6 alkenyl group, or a C_2-C_6 alkynyl group}.

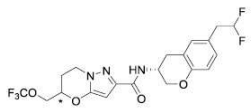
[Claim 9]

The heteroaromatic amide derivative or salt thereof according to Claim 1, wherein the compound represented by the general formula (I-E2) (the asterisks (*) in the sturctural formulae denote that the stereo of the corresponding asymmetric carbon has a single steric structure.) is any one of the following:

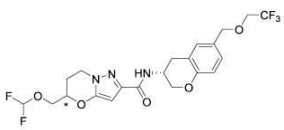
[Chem 9]



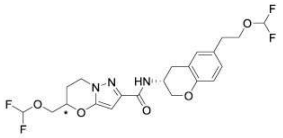
[Chem 10]



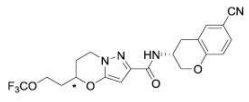
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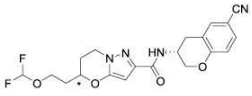
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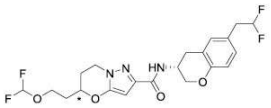
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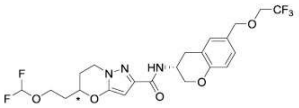
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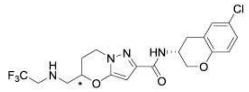
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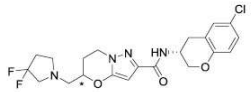
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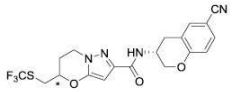
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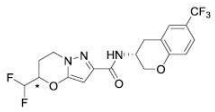
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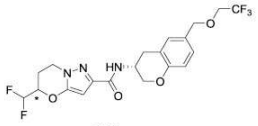
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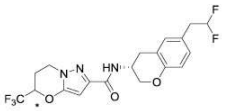
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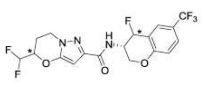
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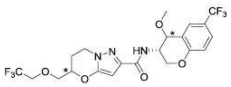
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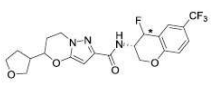
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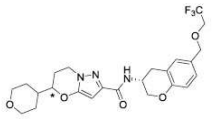
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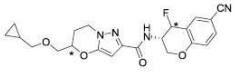
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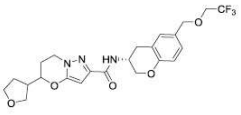
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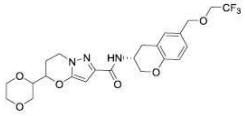
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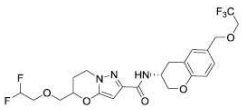
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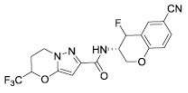
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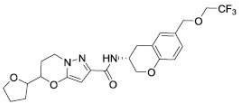
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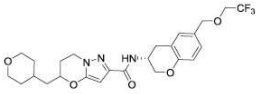
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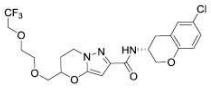
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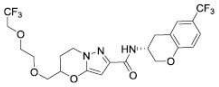
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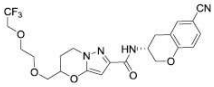
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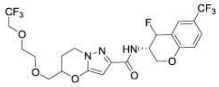
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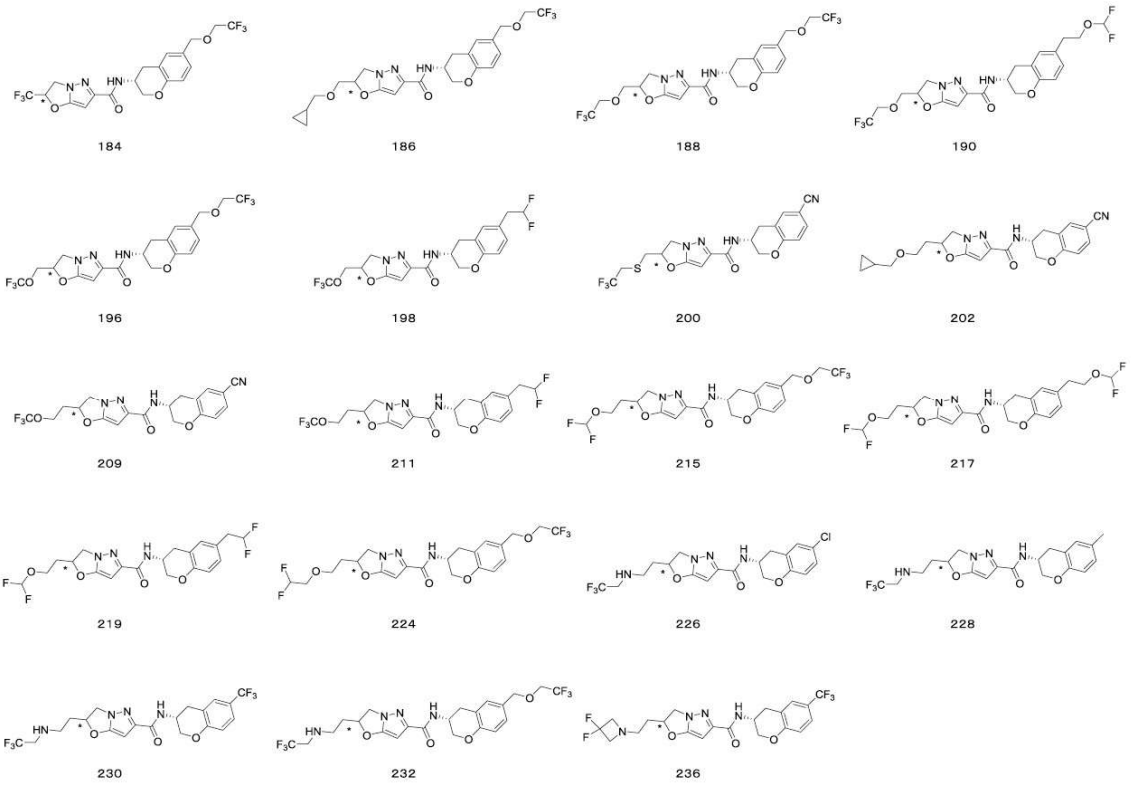


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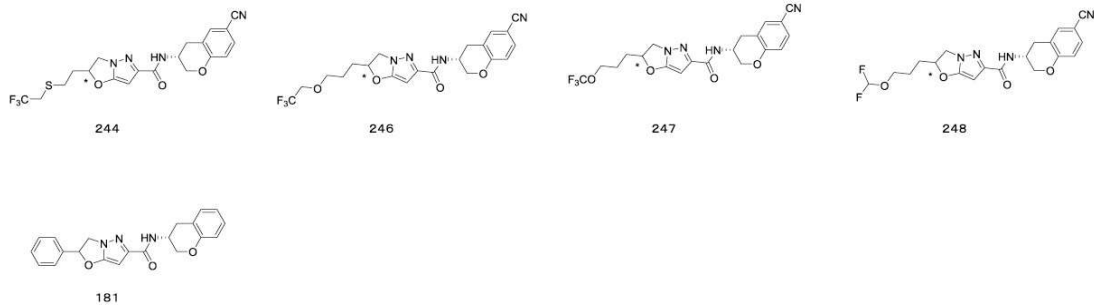


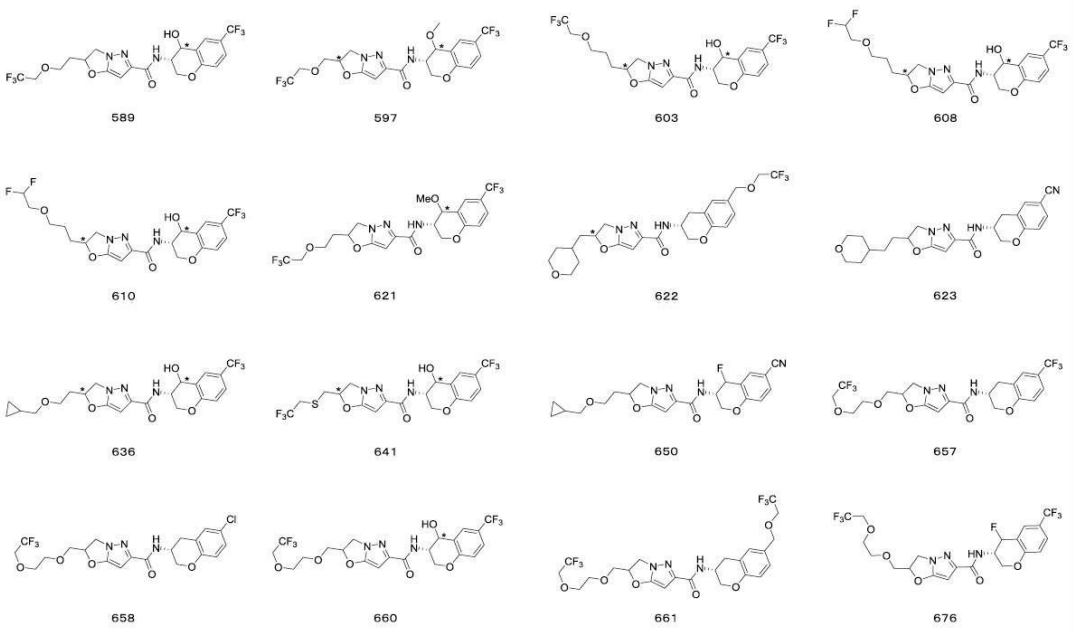
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[Chem 11]

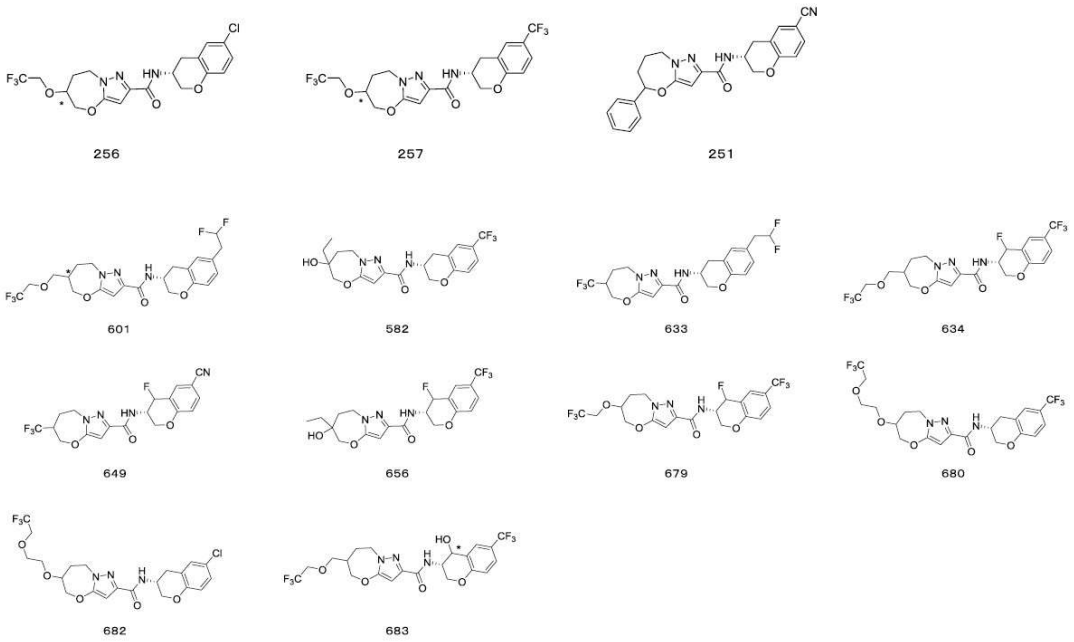

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[Chem 12]

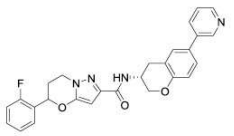

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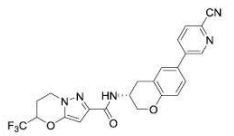
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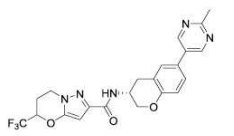
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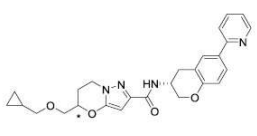
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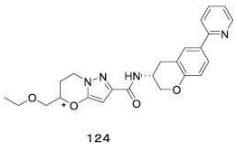
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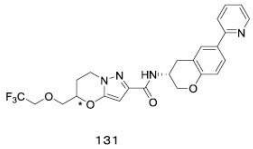
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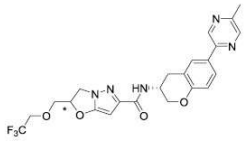
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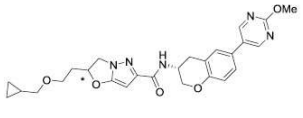
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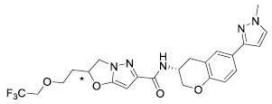
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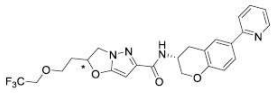
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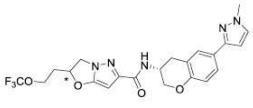
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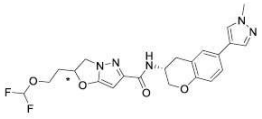
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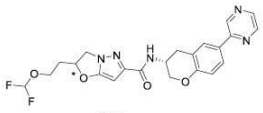
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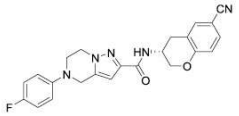


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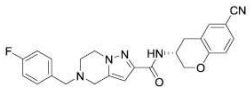


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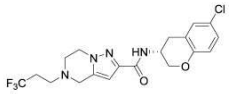
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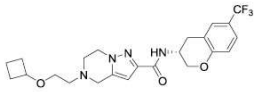
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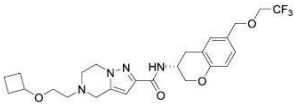
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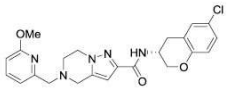
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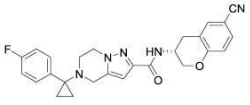
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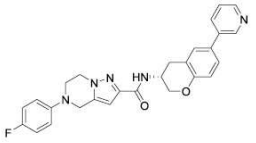
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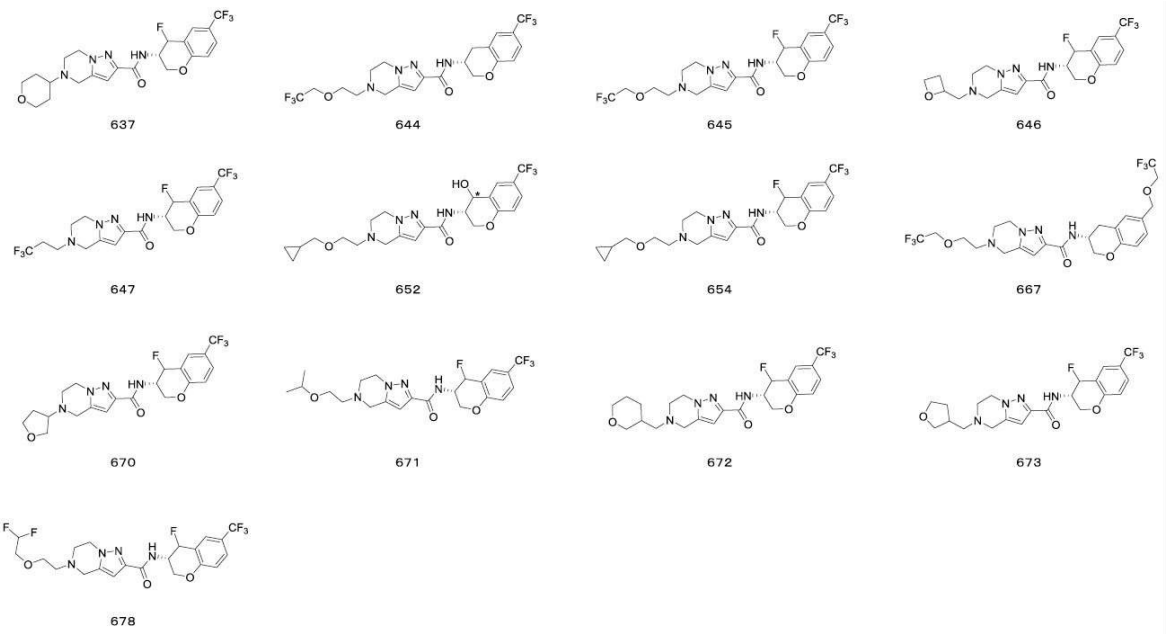
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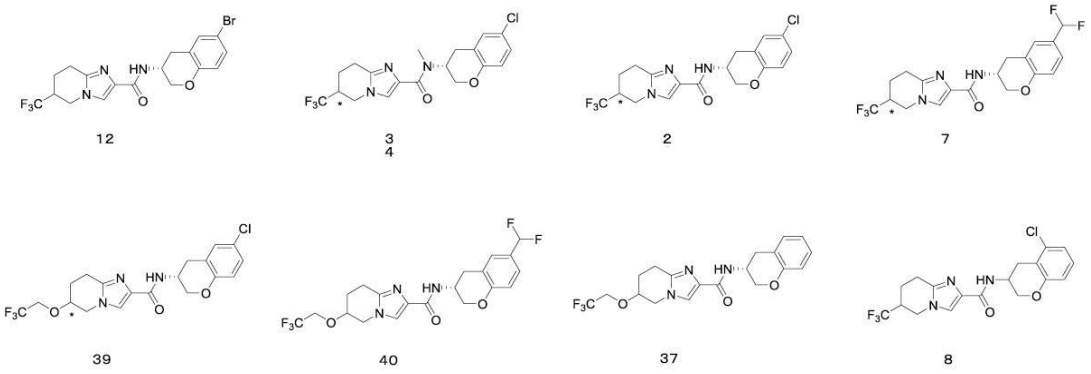
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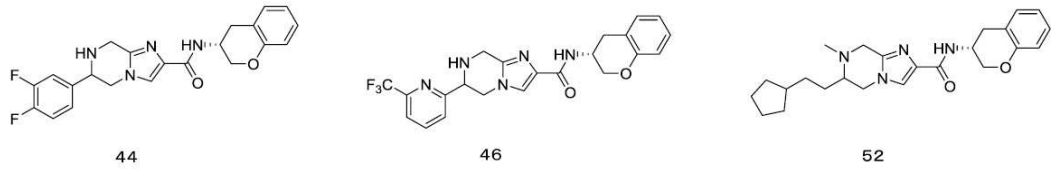
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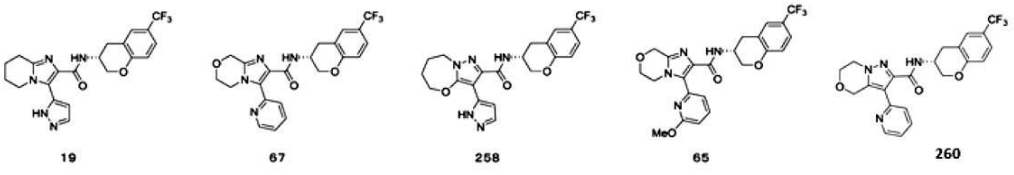
[Chem 16]



[Chem 17]



[Chem 18]



[Claim 10]

A pharmaceutical composition containing the heteroaromatic amide derivative or salt

thereof according to any one of Claims 1 to 9.

[Claim 11]

A pharmaceutical composition for use in preventing or treating a disorder associated with voltage-gated sodium channel Nav1.7, containing as an active ingredient the heteroaromatic amide derivative or salt thereof according to any one of Claims 1 to 9.

[Claim 12]

A preventing or treating agent for use in preventing or treating a disorder with pain, a disorder with pruritus, a disorder associated with autonomic nerves, containing as an active ingredient the heteroaromatic amide derivative or salt thereof according to any one of Claims 1 to 9.

[Claim 13]

A preventing or treating agent for use in preventing or treating a disorder with pain, containing as an active ingredient the heteroaromatic amide derivative or salt thereof according to any one of Claims 1 to 9.

[Claim 14]

An analgesic agent containing as an active ingredient the heteroaromatic amide derivative or salt thereof according to any one of Claims 1 to 9.

[Claim 15]

A preventing or treating agent for use in preventing or treating nociceptive pain or neuropathic pain, containing as an active ingredient the heteroaromatic amide derivative or salt thereof according to any one of Claims 1 to 9.

[Claim 16]

Use of the heteroaromatic amide derivative or salt thereof according to any one of Claims 1 to 9 for manufacturing a pharmaceutical composition used for preventing or treating pain.

[Claim 17]

Use of the heteroaromatic amide derivative or salt thereof according to any one of Claims 1 to 9 for manufacturing an analgesic agent.