

SPECIFICATION

AMIDE DERIVATIVE AND INSECTICIDE CONTAINING THE SAME

5 TECHNICAL FIELD

The present invention relates to a new amide derivative and an insecticide containig the same.

BACKGROUND ART

10 In WO 2000 / 55120 and US Patent No. 6548514, a compound similar to the compound of the present invention for medicine use was described. But activity against insects was never described therein. Furthermore, it is obvious that such compounds are not included in the scope of the claims of the present invention.

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20 In US Patent Laid-Open No. 2002-032238, a compound similar to the compound of the present invention for medicine use was described. But activity against insects was never described therein. Furthermore, it is obvious that such a compound is not included in the scope of the claims of the present invention.

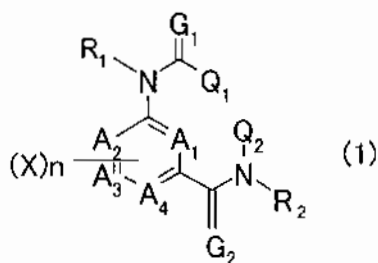
DISCLOSURE OF THE INVENTION

The present invention provides a compound represented by the general formula (1) or (5), and an insecticide containig the same as
 5 an active ingredient.

In order to solve the above objects, the present inventors have repeatedly conducted an extensive study and as a result, have found a novel compound which is not described in any documents, and a new
 10 use of a compound of the present invention as an insecticide because the compound of the present invention has a remarkably excellent insecticidal effect.

That is, the present invention is specified by the following matters.

15 [1] A compound represented by the general formula (1),



wherein, in the formula, A₁, A₂, A₃ and A₄ each represent a carbon atom, a nitrogen atom or an oxidized nitrogen atom;

R₁ and R₂ mutually independently represent a hydrogen atom, a
 20 C1-C4 alkyl group or a C1-C4 alkylcarbonyl group;

G₁ and G₂ mutually independently represent an oxygen atom or a sulfur atom;

Xs may be the same or different and represent a hydrogen atom,

a halogen atom, a C1-C3 alkyl group or a trifluoromethyl group;

n represents an integer of 0 to 4;

Q₁ represents a phenyl group,

a substituted phenyl group having one or more substituents which
 5 may be the same or different and are selected from a halogen atom, a
 C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl
 group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4
 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group,
 a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy
 10 group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3
 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3
 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4
 alkylamino group, a di C1-C4 alkylamino group, an amino group, a cyano
 group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group,
 15 a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a
 C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a
 C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a
 C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group,
 a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a
 20 pentafluorosulfanyl group, a phenylalkynyl group and a phenyl group,

a carbocyclic group (The carbocyclic group herein represents a
 naphthyl group, a tetrahydronaphthyl group, an indanyl group, a
 fluorenyl group, a 9-oxofluorenyl group, an adamantanyl group, an
 anthracenyl group or a norbornyl group.),

25 a substituted carbocyclic group having one or more substituents
 which may be the same or different and are selected from a halogen atom,
 a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl

group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, an amino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group, a phenylalkynyl group and a phenyl group

(The carbocyclic group herein represents a naphthyl group, a tetrahydronaphthyl group, an indanyl group, a fluorenyl group, a 9-oxofluorenyl group, an adamantanyl group, an anthracenyl group or a norbornyl group.),

a heterocyclic group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a benzothiazolyl group, a benzoxazolyl group, a benzofuranyl group, a benzothiophenyl group, a quinolyl group, an isoquinolyl group, an indolyl group, an isoindolyl group, an

1H-isoindolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group, an acridinyl group or a dihydropyranyl group.), or

a substituted heterocyclic group having one or more
 5 substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy
 10 group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, an amino group, a cyano group, a nitro group, a
 15 hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxycarbonyl group, a C1-C4 haloalkoxycarbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group,
 20 an arylsulfonyloxy group, a pentafluorosulfanyl group, a phenylalkynyl group and a phenyl group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a
 25 thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a benzothiazolyl group, a benzoxazolyl group, a

benzofuranyl group, a benzothiophenyl group, a quinolyl group, an isoquinolyl group, an indolyl group, an isoindolyl group, an 1H-isoindolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group, an acridinyl group or a dihydropyranyl group.); and

Q₂ represents a carbocyclic group (The carbocyclic group herein represents a naphthyl group, a tetrahydronaphthyl group, a C3-C8 cycloalkyl group, an indanyl group, a fluorenyl group, a 9-oxofluorenyl group, an adamantanyl group or a norbornyl group.),

10 a substituted carbocyclic group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group (The carbocyclic group herein represents a naphthyl group, a tetrahydronaphthyl group, a C3-C8

cycloalkyl group, an indanyl group, a fluorenyl group, a 9-oxofluorenyl group, an adamantanyl group or a norbornyl group),

a heterocyclic group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a benzothiazolyl group, a benzoxazolyl group, a benzofuranyl group, a benzothiophenyl group, a quinolyl group, an isoquinolyl group, an indolyl group, an isoindolyl group, an 1H-isoindolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group, a benzimidazolyl group or a dihydropyranyl group.),

a substituted heterocyclic group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4

alkoxycarbonyl group, a C1-C4 haloalkoxycarbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group

5 (The heterocyclic group herein represents a pyrazinyl, a pyridin-2-yl group, a pyridin-4-yl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an

10 imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a benzothiazolyl group, a benzoxazolyl group, a benzofuranyl group, a benzothiophenyl group, a quinolyl group, an isoquinolyl group, an indolyl group, an isoindolyl group, an 1H-isoindolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a

15 tetrahydropyranyl group, a benzimidazolyl group or a dihydropyranyl group.),

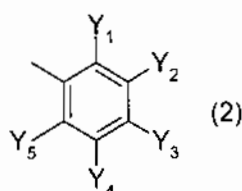
a C1-C6 alkyl group, or

a substituted C1-C6 alkyl group having one or more substituents which may be the same or different and are selected from a halogen atom,

20 a C1-C4 haloalkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3

25 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4

alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4
 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4
 alkoxycarbonyl group, a C1-C4 haloalkoxycarbonyl group, a C1-C4
 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a
 5 C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an
 arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group,
 a group represented by general formula (2)



wherein, in the formula, Y₁, Y₂, Y₃, Y₄ and Y₅ may be the same or
 10 different and represent a hydrogen atom, a halogen atom, a C1-C6 alkyl
 group,

a substituted C1-C6 alkyl group having one or more substituents
 which may be the same or different and are selected from a halogen atom,
 a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group,
 15 a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3
 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3
 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4
 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4
 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4
 20 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4
 alkoxycarbonyl group, a C1-C4 haloalkoxycarbonyl group, a C1-C4
 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a
 C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an
 arylsulfonyloxy group, a pentafluorosulfanyl group and a alkylsilyl

group,

a C1-C6 haloalkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C6 alkoxy group, a C1-C6 haloalkoxy group,

a substituted C1-C6 haloalkoxy group having one or more substituents which may be the same or different and are selected from a hydrogen atom, a hydroxy group, a chlorine atom, a bromine atom, an iodine atom, a C1-C6 alkoxy group and a C1-C6 haloalkoxy group,

a C1-C6 haloalkyl group which may be substituted with one or more hydroxyl groups,

a C1-C6 haloalkyl group which may be substituted with one or more haloalkyl groups,

a C1-C6 haloalkyl group which may be substituted with one or more alkoxy groups,

a C1-C6 haloalkyl group which may be substituted with one or more haloalkoxy groups,

a C1-C6 alkylthio group,

a C1-C6 haloalkylthio group,

a substituted C1-C6 haloalkylthio group having one or more substituents which may be the same or different and are selected from a hydrogen atom, a hydroxy group, a chlorine atom, a bromine atom, an iodine atom, a C1-C6 alkoxy group and a C1-C6 haloalkoxy group,

a C1-C6 alkylsulfinyl group,

a C1-C6 haloalkylsulfinyl group,

a substituted C1-C6 haloalkylsulfinyl group having one or more substituents which may be the same or different and are selected from

a hydrogen atom, a hydroxy group, a chlorine atom, a bromine atom, an iodine atom, a C1-C6 alkoxy group and a C1-C6 haloalkoxy group,

a C1-C6 alkylsulfonyl group,

a C1-C6 haloalkylsulfonyl group,

5 a substituted C1-C6 haloalkylsulfonyl group having one or more substituents which may be the same or different and are selected from a hydrogen atom, a hydroxy group, a chlorine atom, a bromine atom, an iodine atom, a C1-C6 alkoxy group and a C1-C6 haloalkoxy group,

a C1-C4 alkoxycarbonyl group, a C1-C4 haloalkoxycarbonyl group,

10 a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group,

a C1-C6 alkylsulfonyloxy group, a C1-C6 haloalkylsulfonyloxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group,

a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group,

15 a cyano group, a nitro group, a hydroxy group, a pentafluorosulfanyl group, a carboxyl group, a carbamoyl group, a C1-C3 alkylaminocarbonyl group, a phenylazo group, a pyridyloxy group,

a substituted pyridyloxy group having one or more substituents which may be the same or different and are selected from a halogen atom,

20 a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4

alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group,

a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3

25 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3

alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4

alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro

group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxycarbonyl group, a C1-C4 haloalkoxycarbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group,

a phenyl group,

a substituted phenyl group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxycarbonyl group, a C1-C4 haloalkoxycarbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group,

a heterocyclic group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a

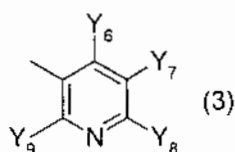
pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a benzothiazolyl group, a benzoxazolyl group, a benzofuranyl group, a benzothiophenyl group, a quinolyl group, an isoquinolyl group, an indolyl group, an isoindolyl group, an 1H-isoindolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a dihydropyranyl group.), or

a substituted heterocyclic group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group

(The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a benzothiazolyl group, a benzoxazolyl group, a benzofuranyl group, a benzothiophenyl group, a quinolyl group, an isoquinolyl group, an indolyl group, an isoindolyl group, an 1H-isoindolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a dihydropyranyl group.),

whereas Y_1 and Y_5 may be the same or different and when Y_1 and Y_5 represent a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group or a cyano group, Y_3 does not have a C2-C6 perfluoroalkyl group, a C1-C6 perfluoroalkylthio group, a C1-C6 perfluoroalkylsulfinyl group or a C1-C6 perfluoroalkylsulfonyl group.) or

a group represented by general formula (3)



wherein, in the formula, , Y_6 , Y_7 , Y_8 and Y_9 may be the same or different and represent a hydrogen atom, a halogen atom, a C1-C6 alkyl group, a C1-C6 haloalkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group,

a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C4 alkoxy group, a C1-C4 haloalkoxy group, a C1-C6 haloalkyl group which may be substituted with one or more hydroxyl groups, a C1-C6 haloalkyl group which may be substituted with one or more alkoxy groups, a C1-C6
 5 haloalkyl group which may be substituted with one or more haloalkoxy groups, a C1-C6 alkylthio group, a C1-C6 haloalkylthio group, a C1-C6 alkylsulfinyl group, a C1-C6 haloalkylsulfinyl group, a C1-C6 alkylsulfonyl group, a C1-C6 haloalkylsulfonyl group, a C1-C6 alkylsulfonyloxy group, a C1-C6 haloalkylsulfonyloxy group, a C1-C4
 10 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a cyano group, a nitro group, a hydroxy group, a pentafluorosulfanyl group, a phenyl group,

a substituted phenyl group having one or more substituents which
 15 may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3
 20 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4
 25 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxycarbonyl group, a C1-C4 haloalkoxycarbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4

haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group,

a heterocyclic group (The heterocyclic group herein represents
 5 a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a
 10 tetrazolyl group, a benzothiazolyl group, a benzoxazolyl group, a benzofuranyl group, a benzothiophenyl group, a quinolyl group, an isoquinolyl group, an indolyl group, an isoindolyl group, an 1H-isoindolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a
 15 dihydropyranyl group.), or

a substituted heterocyclic group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4
 20 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3
 25 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4

alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4
 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4
 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a
 C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an
 5 arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group
 (The heterocyclic group herein represents a pyrazinyl group, a pyridyl
 group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group,
 a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group,
 an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a
 10 thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl
 group, a pyrazolyl group, a tetrazolyl group, a benzothiazolyl group,
 a benzoxazolyl group, a benzofuranyl group, a benzothiophenyl group,
 a quinolyl group, an isoquinolyl group, an indolyl group, an isoindolyl
 group, an 1H-isoindolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group,
 15 a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a
 dihydropyranyl group.),

whereas Y_6 and Y_9 may be the same or different and when Y_6 and
 Y_9 represent a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl
 group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3
 20 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3
 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group or a cyano group,
 Y_8 does not have a C1-C4 haloalkoxy group, a C2-C6 perfluoroalkyl group,
 a C1-C6 perfluoroalkylthio group, a C1-C6 perfluoroalkylsulfinyl group
 or a C1-C6 perfluoroalkylsulfonyl group;

25 [2] the compound according to [1], wherein, in the general
 formula (1), A_1 represents a carbon atom, a nitrogen atom or an oxidized
 nitrogen atom;

A_2 , A_3 and A_4 represent a carbon atom;

R_1 and R_2 mutually independently represent a hydrogen atom or a C1-C4 alkyl group;

G_1 and G_2 mutually independently represent an oxygen atom or a
5 sulfur atom;

X_s may be the same or different and are a hydrogen atom, a halogen atom or a trifluoromethyl group;

n represents an integer of 0 to 4;

Q_1 represents a phenyl group,

10 a substituted phenyl group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy
15 group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro
20 group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4
25 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group,

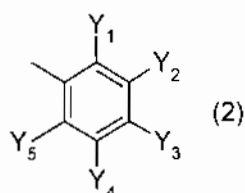
a heterocyclic group (The heterocyclic group herein represents

a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole
 5 group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a dihydropyranyl group.), or

a substituted heterocyclic group having one or more
 10 substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy
 15 group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4
 20 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an
 25 arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group
 (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group,

a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a
 5 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a dihydropyranyl group.); and

Q₂ is represented by the general formula (2),



wherein, in the formula, Y₁ and Y₅ may be the same or different
 10 and represent a halogen atom, a C1-C6 alkyl group, a C1-C6 haloalkyl group, a C1-C6 haloalkoxy group, a C1-C6 haloalkoxy group, a C1-C6 alkylthio group, a C1-C6 haloalkylthio group, a C1-C6 alkylsulfinyl group, a C1-C6 haloalkylsulfinyl group, a C1-C6 alkylsulfonyl group, a C1-C6 haloalkylsulfonyl group, a cyano group or a nitro group;

15 Y₂ and Y₄ may be the same or different and represent a hydrogen atom, a halogen atom or a C1-C6 alkyl group; and

Y₃ represents a trifluoromethyl group, a C1-C6 perfluoroalkoxy group, a pentafluorosulfanyl group,

a substituted C1-C6 haloalkoxy group having one or more
 20 substituents which may be the same or different and are selected from a hydrogen atom, a hydroxy group, a chlorine atom, a bromine atom, an iodine atom, a C1-C6 alkoxy group or a C1-C6 haloalkoxy group which may be the same or different,

a substituted C1-C6 haloalkylthio group having at least one or

more a hydrogen atom, a hydroxy group, a chlorine atom, a bromine atom, an iodine atom, a C1-C6 alkoxy group or a C1-C6 haloalkoxy group which may be the same or different,

5 a substituted C1-C6 haloalkylsulfinyl group having one or more substituents which may be the same or different and are selected from a hydrogen atom, a hydroxy group, a chlorine atom, a bromine atom, an iodine atom, a C1-C6 alkoxy group or a C1-C6 haloalkoxy group, or

10 a substituted C1-C6 haloalkylsulfonyl group having one or more substituents which may be the same or different and are selected from a hydrogen atom, a hydroxy group, a chlorine atom, bromine atom, iodine atom, C1-C6 alkoxy group or a C1-C6 haloalkoxy group;

[3] the compound according to [1], wherein, in the general formula (1), A₁ represents a carbon atom, a nitrogen atom or an oxidized nitrogen atom;

15 A₂, A₃ and A₄ represent a carbon atom;

R₁ and R₂ mutually independently represent a hydrogen atom or a C1-C4 alkyl group;

G₁ and G₂ mutually independently represent an oxygen atom or a sulfur atom;

20 Xs may be the same or different and are a hydrogen atom, a halogen atom or a trifluoromethyl group;

n represents an integer of 0 to 4;

Q₁ represents a phenyl group,

25 a substituted phenyl group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4

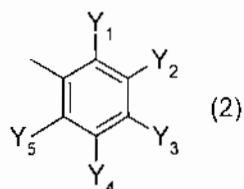
alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group,

a heterocyclic group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a dihydropyranyl group.), or

a substituted heterocyclic group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group,

a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a dihydropyranyl group.); and

Q₂ is represented by the general formula (2),



wherein, in the formula, Y₁ represents a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group,

a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, or

- 5 a C1-C4 alkyl group having one or more substituents which may be the same or different and are selected from halogen atom, C1-C3 alkoxy group, C1-C3 haloalkoxy group, C1-C3 alkylthio group, C1-C3 haloalkylthio group, C1-C3 alkylsulfinyl group, C1-C3 haloalkylsulfinyl group, C1-C3 alkylsulfonyl group, C1-C3 haloalkylsulfonyl group, C1-C4 alkylamino group, a di C1-C4 alkylamino group, cyano group, nitro group, hydroxy group, C1-C4 alkylcarbonyl group, C1-C4 haloalkylcarbonyl group, C1-C4 alkylcarbonyloxy group, C1-C4 haloalkylcarbonyloxy group, C1-C4 alkoxy carbonyl group, C1-C4 haloalkoxy carbonyl group, C1-C4 alkylcarbonylamino group, C1-C4 haloalkylcarbonylamino group, C1-C4 alkylsulfonyloxy group, C1-C4 haloalkylsulfonyloxy group, arylsulfonyloxy group, pentafluorosulfanyl group or alkylsilyl group;

- 20 Y₅ represents a halogen atom, a C1-C6 alkyl group, a C1-C6 haloalkyl group, a C1-C6 alkoxy group, a C1-C6 haloalkoxy group, a C1-C6 alkylthio group, a C1-C6 haloalkylthio group, a C1-C6 alkylsulfinyl group, a C1-C6 haloalkylsulfinyl group, a C1-C6 alkylsulfonyl group, a C1-C6 haloalkylsulfonyl group, a cyano group or a nitro group;

- 25 Y₂ and Y₄ may be the same or different and represent a hydrogen atom, a halogen atom or a C1-C6 alkyl group; and

Y₃ represents a C1-C4 haloalkoxy group, a C2-C6 perfluoroalkyl group, a C1-C6 perfluoroalkylthio group, a C1-C6

perfluoroalkylsulfinyl group, a C1-C6 perfluoroalkylsulfonyl group, a trifluoromethyl group, a C1-C6 perfluoroalkoxy group, a pentafluorosulfanyl group,

a substituted C1-C6 haloalkoxy group having at least one or more substituents which may be the same or different and are selected from a hydrogen atom, a hydroxy group, a chlorine atom, a bromine atom, an iodine atoms, a C1-C6 alkoxy group or a C1-C6 haloalkoxy group,

a substituted C1-C6 haloalkylthio group having at least one or more substituents which may be the same or different and are selected from a hydrogen atom, a hydroxy group, a chlorine atom, a bromine atom, an iodine atom, a C1-C6 alkoxy group or a C1-C6 haloalkoxy group,

a substituted C1-C6 haloalkylsulfinyl group having at least one or more substituents which may be the same or different and are selected from a hydrogen atom, a hydroxy group, a chlorine atom, a bromine atom, an iodine atom, a C1-C6 alkoxy group or a C1-C6 haloalkoxy group, or

a substituted C1-C6 haloalkylsulfonyl group having at least one or more substituents which may be the same or different and are selected from a hydrogen atom, a hydroxy group, a chlorine atom, a bromine atom, an iodine atom, a C1-C6 alkoxy group or a C1-C6 haloalkoxy group;

[4] the compound according to [1], wherein, in the general formula (1), A₁ represents a carbon atom, a nitrogen atom or an oxidized nitrogen atom;

A₂, A₃ and A₄ represent a carbon atom;

R₁ and R₂ mutually independently represent a hydrogen atom or a C1-C4 alkyl group;

G₁ and G₂ mutually independently represent an oxygen atom or a sulfur atom;

Xs may be the same or different and are a hydrogen atom, a halogen atom or a trifluoromethyl group;

n represents an integer of 0 to 4;

Q₁ represents a phenyl group,

5 a substituted phenyl group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, 10 a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro 15 group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 20 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group,

a heterocyclic group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, 25 an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a

tetrazolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a dihydropyranyl group), or

a substituted heterocyclic group having one or more

5 substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy

10 group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4

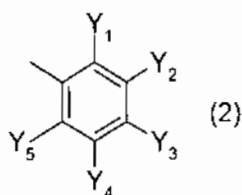
15 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxycarbonyl group, a C1-C4 haloalkoxycarbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an

20 arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a

25 thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a

tetrahydropyranyl group or a dihydropyranyl group.); and

Q₂ is represented by the general formula (2),



wherein, in the formula, Y₁ represents a C1-C6 alkoxy group, a
 5 C1-C6 haloalkoxy group, a C1-C6 alkylthio group, a C1-C6 haloalkylthio
 group, a C1-C6 alkylsulfinyl group, a C1-C6 haloalkylsulfinyl group,
 a C1-C6 alkylsulfonyl group or a C1-C6 haloalkylsulfonyl group;

Y₅ represents a halogen atom, a C1-C6 alkyl group, a C1-C6
 haloalkyl group, a C1-C6 alkoxy group, a C1-C6 haloalkoxy group, a
 10 C1-C6 alkylthio group, a C1-C6 haloalkylthio group, a C1-C6
 alkylsulfinyl group, a C1-C6 haloalkylsulfinyl group, a C1-C6
 alkylsulfonyl group, a C1-C6 haloalkylsulfonyl group, a cyano group
 or a nitro group;

Y₂ and Y₄ may be the same or different and represent a hydrogen
 15 atom, a halogen atom or a C1-C6 alkyl group; and

Y₃ represents a halogen atom;

[5] The compound according to [1], wherein, in the general
 formula (1), A₁ represents a carbon atom, a nitrogen atom or an oxidized
 nitrogen atom;

20 A₂, A₃ and A₄ represent a carbon atom;

R₁ and R₂ mutually independently represent a hydrogen atom or
 a C1-C4 alkyl group;

G₁ and G₂ mutually independently represent an oxygen atom or a
 sulfur atom;

Xs may be the same or different and are a hydrogen atom, a halogen atom or a trifluoromethyl group;

n represents an integer of 0 to 4;

Q₁ represents a phenyl group,

5 a substituted phenyl group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group,

10
15
20

a heterocyclic group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a

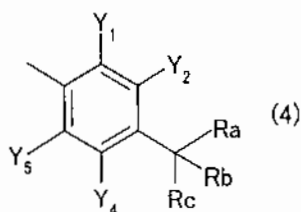
25

tetrazolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a dihydropyranyl group.), or

- a substituted heterocyclic group having one or more
- 5 substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy
- 10 group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4
- 15 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an
- 20 arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a
- 25 thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a

tetrahydropyranyl group or a dihydropyranyl group.); and

Q₂ is represented by the general formula (4),



wherein, in the formula, Y₁ and Y₅ may be the same or different
 5 and represent a halogen atom, a C1-C6 alkyl group, a C1-C6 haloalkyl
 group, a C1-C6 alkoxy group, a C1-C6 haloalkoxy group, a C1-C6
 alkylthio group, a C1-C6 haloalkylthio group, a C1-C6 alkylsulfinyl
 group, a C1-C6 haloalkylsulfinyl group, a C1-C6 alkylsulfonyl group,
 a C1-C6 haloalkylsulfonyl group, a cyano group or a nitro group;

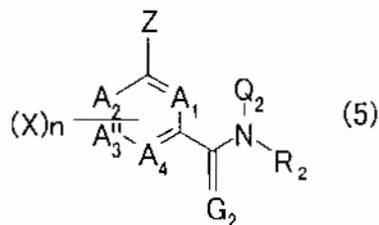
10 Y₂ and Y₄ may be the same or different and represent a hydrogen
 atom, a halogen atom or a C1-C6 alkyl group;

Ra represents a halogen atom or a hydroxy group; and

Rb and Rc may each independently represent a halogen atom or a
 C1-C6 haloalkyl group, and at least either Rb or Rc has one or more
 15 hydrogen atoms, hydroxy groups, chlorine atoms, bromine atoms or iodine
 atoms included thereto.

[6] the compound according to any one of claims [1] to [5],
 wherein, in the general formula (1), at least one of R₁ and R₂ is a C1-C4
 alkyl group;

20 [7] a compound represented by the general formula (5),



wherein, in the formula, A_1 , A_2 , A_3 and A_4 each represents a carbon atom, a nitrogen atom or an oxidized nitrogen atom;

Z represents $-N(R_1)SO_2Q_1$ or $-N(R_1)Q_1$;

R_1 and R_2 mutually independently represent a hydrogen atom, a
5 C1-C4 alkyl group or a C1-C4 alkylcarbonyl group;

G_1 represents an oxygen atom or a sulfur atom;

X_s may be the same or different and represent a hydrogen atom, a halogen atom, a C1-C3 alkyl group or a trifluoromethyl group;

n represents an integer of 0 to 4;

10 Q_1 represents a phenyl group,

a substituted phenyl group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4
15 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4
20 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4
25 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group, an amino group and a phenyl group,

a carbocyclic group (The carbocyclic group herein represents a naphthyl group, a tetrahydronaphthyl group, a C3-C8 cycloalkyl group, an indanyl group, a fluorenyl group, a 9-oxofluorenyl group, an adamantanyl group or a norbornyl group.),

5 a substituted carbocyclic group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, 10 a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro 15 group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a 20 pentafluorosulfanyl group and a phenyl group (The carbocyclic group herein represents a naphthyl group, a tetrahydronaphthyl group, a C3-C8 cycloalkyl group, an indanyl group, a fluorenyl group, a 9-oxofluorenyl group, an adamantanyl group or a norbornyl group.),

25 a heterocyclic group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group,

an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a benzothiazolyl group, a benzoxazolyl group, a benzofuranyl group, a benzothiophenyl group, a quinolyl group, an isoquinolyl group, an indolyl group, an isoindolyl group, an 1H-isoindolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a dihydropyranyl group.), or

- 10 a substituted heterocyclic group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, 15 a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 20 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an 25 arylsulfonyloxy group, a pentafluorosulfanyl group, an amino group and a phenyl group (The heterocyclic group herein represents a pyrazinyl

group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an
 5 imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a benzothiazolyl group, a benzoxazolyl group, a benzofuranyl group, a benzothiophenyl group, a quinolyl group, an isoquinolyl group, an indolyl group, an isoindolyl group, an 1H-isoindolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a
 10 tetrahydropyranyl group or a dihydropyranyl group.); and

Q₂ represents a phenyl group,

a substituted phenyl group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl
 15 group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3
 20 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4
 25 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a

pentafluorosulfanyl group and a phenyl group,

a carbocyclic group (The carbocyclic group herein represents a naphthyl group, a tetrahydronaphthyl group, a C3-C8 cycloalkyl group, an indanyl group, a fluorenyl group, a 9-oxofluorenyl group, an
5 adamantanyl group or a norbornyl group.),

a substituted carbocyclic group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4
10 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4
15 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a
20 pentafluorosulfanyl group and a phenyl group (The carbocyclic group herein represents a naphthyl group, a tetrahydronaphthyl group, a C3-C8 cycloalkyl group, an indanyl group, a fluorenyl group, a 9-oxofluorenyl group, an adamantanyl group or a norbornyl group.),

a heterocyclic group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a

pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a
 5 tetrazolyl group, a benzothiazolyl group, a benzoxazolyl group, a benzofuranyl group, a benzothiophenyl group, a quinolyl group, an isoquinolyl group, an indolyl group, an isoindolyl group, an 1H-isoindolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a
 10 dihydropyranyl group.),

a substituted heterocyclic group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4
 15 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3
 20 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4
 25 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group

(The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a benzothiazolyl group, a benzoxazolyl group, a benzofuranyl group, a benzothiophenyl group, a quinolyl group, an isoquinolyl group, an indolyl group, an isoindolyl group, an 1H-isoindolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a dihydropyranyl group.),

a C1-C6 alkyl group, or

a substituted C1-C6 alkyl group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 haloalkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an

arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group;
and

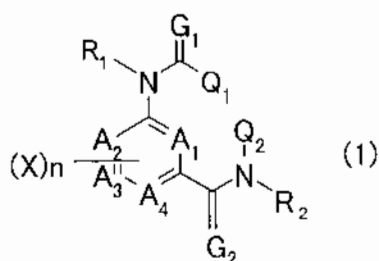
[8] an insecticide comprising the compound as described in any
one of [1] to [7] and an active ingredient.

5

The compound of the present invention exhibits an excellent
control effect as an insecticide in a small amount of chemicals, and
also exhibits an excellent control effect when it is used in
combination with other insecticides, miticides, nematocides,
10 fungicides, herbicides, plant growth regulators, biological
agrochemicals or the like.

BEST MODE FOR CARRYING OUT THE INVENTION

15 A compound of the present invention is represented by the general
formula (1).



In the formula (1), A₁, A₂, A₃ and A₄ each represent a carbon atom,
a nitrogen atom or an oxidized nitrogen atom;

20

R₁ and R₂ mutually independently represent a hydrogen atom, a
C1-C4 alkyl group or a C1-C4 alkylcarbonyl group;

G₁ and G₂ mutually independently represent an oxygen atom or a
sulfur atom;

Xs may be the same or different and represent a hydrogen atom, a halogen atom, a C1-C3 alkyl group or a trifluoromethyl group;

n represents an integer of 0 to 4;

Q₁ represents a phenyl group,

5 a substituted phenyl group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, 10 a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, an amino group, a cyano 15 group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, 20 a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group, a phenylalkynyl group and a phenyl group,

a carbocyclic group (The carbocyclic group herein represents a naphthyl group, a tetrahydronaphthyl group, an indanyl group, a fluorenyl group, a 9-oxofluorenyl group, an adamantanyl group, an 25 anthracenyl group or a norbornyl group.),

a substituted carbocyclic group having one or more substituents which may be the same or different and are selected from a halogen atom,

a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, an amino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group, a phenylalkynyl group and a phenyl group (The carbocyclic group herein represents a naphthyl group, a tetrahydronaphthyl group, an indanyl group, a fluorenyl group, a 9-oxofluorenyl group, an adamantanyl group, an anthracenyl group or a norbornyl group.),

a heterocyclic group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a benzothiazolyl group, a benzoxazolyl group, a benzofuranyl group, a benzothiophenyl group, a quinolyl group, an

isoquinolyl group, an indolyl group, an isoindolyl group, an 1H-isoindolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group, an acridinyl group or a dihydropyranyl group.), or

- 5 a substituted heterocyclic group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, 10 a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 15 alkylamino group, an amino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, 20 a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group, a phenylalkynyl group and a phenyl group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, 25 an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a

tetrazolyl group, a benzothiazolyl group, a benzoxazolyl group, a benzofuranyl group, a benzothiophenyl group, a quinolyl group, an isoquinolyl group, an indolyl group, an isoindolyl group, an 1H-isoindolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group, an acridinyl group or a dihydropyranyl group.); and

Q₂ represents a carbocyclic group (The carbocyclic group herein represents a naphthyl group, a tetrahydronaphthyl group, a C3-C8 cycloalkyl group, an indanyl group, a fluorenyl group, a 9-oxofluorenyl group, an adamantanyl group or a norbornyl group.),

a substituted carbocyclic group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group (The carbocyclic group

herein represents a naphthyl group, a tetrahydronaphthyl group, a C3-C8 cycloalkyl group, an indanyl group, a fluorenyl group, a 9-oxofluorenyl group, an adamantanyl group or a norbornyl group),

a heterocyclic group (The heterocyclic group herein represents
 5 a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a
 10 tetrazolyl group, a benzothiazolyl group, a benzoxazolyl group, a benzofuranyl group, a benzothiophenyl group, a quinolyl group, an isoquinolyl group, an indolyl group, an isoindolyl group, an 1H-isoindolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group, a benzimidazolyl
 15 group or a dihydropyranyl group.),

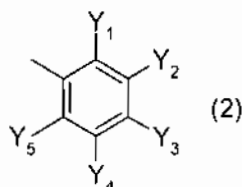
a substituted heterocyclic group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4
 20 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3
 25 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4

alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4
 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4
 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a
 C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an
 5 arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group
 (The heterocyclic group herein represents a pyrazinyl, a pyridin-2-yl
 group, a pyridin-4-yl group, a pyridine N-oxide group, a pyrimidinyl
 group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl
 group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group,
 10 an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an
 imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl
 group, a benzothiazolyl group, a benzoxazolyl group, a benzofuranyl
 group, a benzothiophenyl group, a quinolyl group, an isoquinolyl group,
 an indolyl group, an isoindolyl group, an 1H-isoindolyl group, a
 15 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a
 tetrahydropyranyl group, a benzimidazolyl group or a dihydropyranyl
 group.),

a C1-C6 alkyl group, or

a substituted C1-C6 alkyl group having one or more substituents
 20 which may be the same or different and are selected from a halogen atom,
 a C1-C4 haloalkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl
 group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8
 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group,
 a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3
 25 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3
 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3
 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4

alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4
 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4
 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4
 alkoxycarbonyl group, a C1-C4 haloalkoxycarbonyl group, a C1-C4
 5 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a
 C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an
 arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group,
 a group represented by general formula (2)



10 wherein, in the formula, Y₁, Y₂, Y₃, Y₄ and Y₅ may be the same or
 different and represent a hydrogen atom, a halogen atom, a C1-C6 alkyl
 group,

a substituted C1-C6 alkyl group having one or more substituents
 which may be the same or different and are selected from a halogen atom,
 15 a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group,
 a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3
 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3
 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4
 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4
 20 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4
 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4
 alkoxycarbonyl group, a C1-C4 haloalkoxycarbonyl group, a C1-C4
 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a
 C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an

arylsulfonyloxy group, a pentafluorosulfanyl group and a alkylsilyl group,

a C1-C6 haloalkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group,
 5 a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C6 alkoxy group, a C1-C6 haloalkoxy group,

a substituted C1-C6 haloalkoxy group having one or more substituents which may be the same or different and are selected from a hydrogen atom, a hydroxy group, a chlorine atom, a bromine atom, an
 10 iodine atom, a C1-C6 alkoxy group and a C1-C6 haloalkoxy group,

a C1-C6 haloalkyl group which may be substituted with one or more hydroxyl groups,

a C1-C6 haloalkyl group which may be substituted with one or more haloalkyl groups,

15 a C1-C6 haloalkyl group which may be substituted with one or more alkoxy groups,

a C1-C6 haloalkyl group which may be substituted with one or more haloalkoxy groups,

a C1-C6 alkylthio group,

20 a C1-C6 haloalkylthio group,

a substituted C1-C6 haloalkylthio group having one or more substituents which may be the same or different and are selected from a hydrogen atom, a hydroxy group, a chlorine atom, a bromine atom, an iodine atom, a C1-C6 alkoxy group and a C1-C6 haloalkoxy group,

25 a C1-C6 alkylsulfinyl group,

a C1-C6 haloalkylsulfinyl group,

a substituted C1-C6 haloalkylsulfinyl group having one or more

substituents which may be the same or different and are selected from a hydrogen atom, a hydroxy group, a chlorine atom, a bromine atom, an iodine atom, a C1-C6 alkoxy group and a C1-C6 haloalkoxy group,

a C1-C6 alkylsulfonyl group,

5 a C1-C6 haloalkylsulfonyl group,

a substituted C1-C6 haloalkylsulfonyl group having one or more substituents which may be the same or different and are selected from a hydrogen atom, a hydroxy group, a chlorine atom, a bromine atom, an iodine atom, a C1-C6 alkoxy group and a C1-C6 haloalkoxy group,

10 a C1-C4 alkoxycarbonyl group, a C1-C4 haloalkoxycarbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 halo alkylcarbonylamino group,

a C1-C6 alkylsulfonyloxy group, a C1-C6 haloalkylsulfonyloxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, 15 a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a cyano group, a nitro group, a hydroxy group, a pentafluorosulfanyl group, a carboxyl group, a carbamoyl group, a C1-C3 alkylaminocarbonyl group, a phenylazo group, a pyridyloxy group,

a substituted pyridyloxy group having one or more substituents 20 which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, 25 a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4

- alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group,
- a phenyl group,
- 10 a substituted phenyl group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group,
- 15 a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro
- 20 group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a
- 25 pentafluorosulfanyl group and a phenyl group,
- a heterocyclic group (The heterocyclic group herein represents

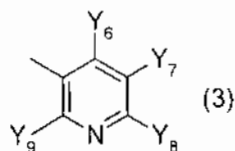
a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a benzothiazolyl group, a benzoxazolyl group, a benzofuranyl group, a benzothiophenyl group, a quinolyl group, an isoquinolyl group, an indolyl group, an isoindolyl group, an 1H-isoindolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a dihydropyranyl group.), or

a substituted heterocyclic group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an

arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group
 (The heterocyclic group herein represents a pyrazinyl group, a pyridyl
 group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group,
 a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group,
 5 an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a
 thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl
 group, a pyrazolyl group, a tetrazolyl group, a benzothiazolyl group,
 a benzoxazolyl group, a benzofuranyl group, a benzothiophenyl group,
 a quinolyl group, an isoquinolyl group, an indolyl group, an isoindolyl
 10 group, an 1H-isoindolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group,
 a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a
 dihydropyranyl group.),

whereas Y_1 and Y_5 may be the same or different and when Y_1 and
 Y_5 represent a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl
 15 group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3
 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3
 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group or a cyano group,
 Y_3 does not have a C2-C6 perfluoroalkyl group, a C1-C6
 perfluoroalkylthio group, a C1-C6 perfluoroalkylsulfinyl group or a
 20 C1-C6 perfluoroalkylsulfonyl group.) or

a group represented by general formula (3)



wherein, in the formula, , Y_6 , Y_7 , Y_8 and Y_9 may be the same or
 different and represent a hydrogen atom, a halogen atom, a C1-C6 alkyl
 group, a C1-C6 haloalkyl group, a C2-C4 alkenyl group, a C2-C4

haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C4 alkoxy group, a C1-C4 haloalkoxy group, a C1-C6 haloalkyl group which may be substituted with one or more hydroxyl groups, a C1-C6 haloalkyl group which may be substituted with one or more alkoxy groups, a C1-C6 haloalkyl group which may be substituted with one or more haloalkoxy groups, a C1-C6 alkylthio group, a C1-C6 haloalkylthio group, a C1-C6 alkylsulfinyl group, a C1-C6 haloalkylsulfinyl group, a C1-C6 alkylsulfonyl group, a C1-C6 haloalkylsulfonyl group, a C1-C6 alkylsulfonyloxy group, a C1-C6 haloalkylsulfonyloxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a cyano group, a nitro group, a hydroxy group, a pentafluorosulfanyl group, a phenyl group,

15 a substituted phenyl group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxycarbonyl group, a C1-C4

25

haloalkoxycarbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group,

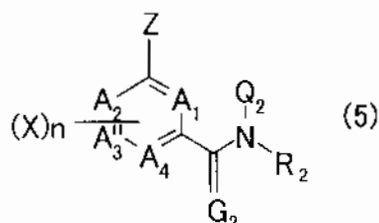
5 a heterocyclic group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a benzothiazolyl group, a benzoxazolyl group, a benzofuranyl group, a benzothiophenyl group, a quinolyl group, an isoquinolyl group, an indolyl group, an isoindolyl group, an 1H-isoindolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a 10 benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a dihydropyranyl group.), or

a substituted heterocyclic group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a 20 substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4

alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4
 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4
 alkoxycarbonyl group, a C1-C4 haloalkoxycarbonyl group, a C1-C4
 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a
 5 C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an
 arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group
 (The heterocyclic group herein represents a pyrazinyl group, a pyridyl
 group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group,
 a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group,
 10 an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a
 thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl
 group, a pyrazolyl group, a tetrazolyl group, a benzothiazolyl group,
 a benzoxazolyl group, a benzofuranyl group, a benzothiophenyl group,
 a quinolyl group, an isoquinolyl group, an indolyl group, an isoindolyl
 15 group, an 1H-isoindolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group,
 a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a
 dihydropyranyl group.),

whereas Y₆ and Y₉ may be the same or different and when Y₆ and
 Y₉ represent a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl
 20 group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3
 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3
 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group or a cyano group,
 Y₈ does not have a C1-C4 haloalkoxy group, a C2-C6 perfluoroalkyl group,
 a C1-C6 perfluoroalkylthio group, a C1-C6 perfluoroalkylsulfinyl group
 25 or a C1-C6 perfluoroalkylsulfonyl group.

Furthermore, a compound of the present invention is represented
 by the general formula (5).



In the formula (5), A₁, A₂, A₃ and A₄ each represents a carbon atom, a nitrogen atom or an oxidized nitrogen atom;

Z represents -N(R₁)SO₂Q₁ or -N(R₁)Q₁;

5 R₁ and R₂ mutually independently represent a hydrogen atom, a C1-C4 alkyl group or a C1-C4 alkylcarbonyl group;

G₁ represents an oxygen atom or a sulfur atom;

Xs may be the same or different and represent a hydrogen atom, a halogen atom, a C1-C3 alkyl group or a trifluoromethyl group;

10 n represents an integer of 0 to 4;

Q₁ represents a phenyl group,

a substituted phenyl group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxycarbonyl group, a C1-C4

haloalkoxycarbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group, an amino group and a phenyl group,

5 a carbocyclic group (The carbocyclic group herein represents a naphthyl group, a tetrahydronaphthyl group, a C3-C8 cycloalkyl group, an indanyl group, a fluorenyl group, a 9-oxofluorenyl group, an adamantanyl group or a norbornyl group.),

a substituted carbocyclic group having one or more substituents
 10 which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4
 15 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxycarbonyl group, a C1-C4 haloalkoxycarbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a
 20 pentafluorosulfanyl group and a phenyl group (The carbocyclic group herein represents a naphthyl group, a tetrahydronaphthyl group, a C3-C8 cycloalkyl group, an indanyl group, a fluorenyl group, a 9-oxofluorenyl

group, an adamantanyl group or a norbornyl group.),

a heterocyclic group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, 5 an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a benzothiazolyl group, a benzoxazolyl group, a benzofuranyl group, a benzothiophenyl group, a quinolyl group, an 10 isoquinolyl group, an indolyl group, an isoindolyl group, an 1H-isoindolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a dihydropyranyl group.), or

a substituted heterocyclic group having one or more 15 substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy 20 group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 25 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4

alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group, an amino group and a phenyl group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a benzothiazolyl group, a benzoxazolyl group, a benzofuranyl group, a benzothiophenyl group, a quinolyl group, an isoquinolyl group, an indolyl group, an isoindolyl group, an 1H-isoindolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a dihydropyranyl group.); and

Q₂ represents a phenyl group,

a substituted phenyl group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4

haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a

5 pentafluorosulfanyl group and a phenyl group,

a carbocyclic group (The carbocyclic group herein represents a naphthyl group, a tetrahydronaphthyl group, a C3-C8 cycloalkyl group, an indanyl group, a fluorenyl group, a 9-oxofluorenyl group, an adamantanyl group or a norbornyl group.),

10 a substituted carbocyclic group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, 15 a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro 20 group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a 25 pentafluorosulfanyl group and a phenyl group (The carbocyclic group herein represents a naphthyl group, a tetrahydronaphthyl group, a C3-C8

cycloalkyl group, an indanyl group, a fluorenyl group, a 9-oxofluorenyl group, an adamantanyl group or a norbornyl group.),

a heterocyclic group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a
 5 pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a benzothiazolyl group, a benzoxazolyl group, a
 10 benzofuranyl group, a benzothiophenyl group, a quinolyl group, an isoquinolyl group, an indolyl group, an isoindolyl group, an 1H-isoindolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a dihydropyranyl group.),

15 a substituted heterocyclic group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group,
 20 a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4
 25 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4

alkoxycarbonyl group, a C1-C4 haloalkoxycarbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group

5 (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a benzothiazolyl group, a benzoxazolyl group, a benzofuranyl group, a benzothiophenyl group, a quinolyl group, an isoquinolyl group, an indolyl group, an isoindolyl group, an 1H-isoindolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a
10 dihydropyranyl group.),

a C1-C6 alkyl group, or

a substituted C1-C6 alkyl group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 haloalkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl
20 group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4
25 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4

alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4
 alkoxycarbonyl group, a C1-C4 haloalkoxycarbonyl group, a C1-C4
 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a
 C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an
 5 arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group.

Wordings used in general formulae such as the general formula
 (1) of the present invention and the like have the respective meanings
 as described hereinafter in terms of definitions.

The term "halogen atom" represents a fluorine atom, a chlorine
 10 atom, a bromine atom or an iodine atom.

In expression of "Ca-Cb (a and b represent an integer of not less
 than 1)," for example, "C1-C3" refers to 1 to 3 carbon atoms, "C2-C6"
 refers to 2 to 6 carbon atoms, and "C1-C4" refers to 1 to 4 carbon atoms.

"n-" refers to normal, "i-" refers to iso, "s-" refers to
 15 secondary and "t-" refers to tertiary.

The term "C1-C3 alkyl group" refers to a straight or branched
 alkyl group having 1 to 3 carbon atoms such as methyl, ethyl, n-propyl,
 i-propyl, cyclopropyl or the like, "C1-C4 alkyl group" refers to a
 straight or branched alkyl group having 1 to 4 carbon atoms such as
 20 n-butyl, s-butyl, i-butyl, t-butyl or the like in addition to "C1-C3
 alkyl group," and "C1-C6 alkyl group" refers to a straight or branched
 alkyl group having 1 to 6 carbon atoms such as n-pentyl, 2-pentyl,
 3-pentyl, neopentyl, n-hexyl, 2-hexyl, 4-methyl-2-pentyl,
 3-methyl-n-pentyl or the like in addition to "C1-C4 alkyl group"

25 The term "C1-C3 haloalkyl group" refers to a straight or
 branched alkyl group having 1 to 3 carbon atoms which is substituted
 with one or more halogen atoms which may be the same or different, such

as monofluoromethyl, difluoromethyl, trifluoromethyl,
 monochloromethyl, dichloromethyl, trichloromethyl, monobromomethyl,
 dibromomethyl, tribromomethyl, 1-fluoroethyl, 2-fluoroethyl,
 2,2-difluoroethyl, 2,2,2-trifluoroethyl, 1-chloroethyl,
 5 2-chloroethyl, 2,2-dichloroethyl, 2,2,2-trichloroethyl, 1-bromoethyl,
 2-bromoethyl, 2,2-dibromoethyl, 2,2,2-tribromoethyl, 2-iodineethyl,
 pentafluoroethyl, 3-fluoro-n-propyl, 3-chloro-n-propyl,
 3-bromo-n-propyl, 1,3-difluoro-2-propyl, 1,3-dichloro-2-propyl,
 1,1,1-trifluoro-2-propyl, 1-chloro-3-fluoro-2-propyl,
 10 1,1,1,3,3,3-hexafluoro-2-propyl,
 1,1,1,3,3,3-hexafluoro-2-chloro-2-propyl,
 2,2,3,3,3-pentafluoro-n-propyl, heptafluoro-i-propyl,
 heptafluoro-n-propyl, 1-bromo-1,1,2,3,3,3-hexafluoro-2-propyl or the
 like, and "C1-C4 haloalkyl group" refers to a straight or branched
 15 alkyl group having 1 to 4 carbon atoms which is substituted with one
 or more halogen atoms which may be the same or different, such as
 4-fluoro-n-butyl, nonafluoro-n-butyl, nonafluoro-2-butyl or the like
 in addition to "C1-C3 haloalkyl group" , and "C1-C6 haloalkyl group"
 refers to a straight or branched alkyl group having 1 to 6 carbon atoms
 20 which is substituted with one or more halogen atoms which may be the
 same or different, such as 6,6,6-trifluoro-n-hexyl,
 nonafluoro-n-butyl, nonafluoro-2-butyl or the like in addition to
 "C1-C4 haloalkyl group".

The term "C2-C4 alkenyl group" refers to an alkenyl group of 2
 25 to 4 carbon atoms having a double bond in the carbon chain such as vinyl,
 allyl, 2-butenyl, 3-butenyl or the like, and "C2-C4 haloalkenyl group"
 refers to a straight or branched alkenyl group of 2 to 4 carbon atoms

having a double bond in the carbon chain which is substituted with one or more halogen atoms which may be the same or different, such as 3,3-difluoro-2-propenyl, 3,3-dichloro-2-propenyl, 3,3-dibromo-2-propenyl, 2,3-dibromo-2-propenyl, 5 4,4-difluoro-3-butenyl, 3,4,4-tribromo-3-butenyl or the like.

The term "C2-C4 alkynyl group" refers to a straight or branched alkynyl group of 2 to 4 carbon atoms having a triple bond in the carbon chain such as propargyl, 1-butyn-3-yl, 1-butyne-3-methyl-3-yl or the like, and "C2-C4 haloalkynyl group" refers to a straight or branched 10 alkenyl group of 2 to 4 carbon atoms having a triple bond in the carbon chain which is substituted with one or more halogen atoms which may be the same or different.

The term "C3-C8 cycloalkyl group" refers to a cycloalkyl group of 3 to 8 carbon atoms having a ring structure, such as cyclopropyl, cyclobutyl, cyclopentyl, 2-methylcyclopentyl, 3-methylcyclopentyl, 15 cyclohexyl, cycloheptyl or the like, and "C3-C8 halocycloalkyl group" refers to a cycloalkyl group of 3 to 8 carbon atoms having a ring structure which is substituted with one or more halogen atoms which may be the same or different, such as 2,2,3,3-tetrafluorocyclobutyl, 20 2-chlorocyclohexyl, 4-chlorocyclohexyl or the like.

The term "C1-C3 alkoxy group" refers to a straight or branched alkoxy group having 1 to 3 carbon atoms such as methoxy, ethoxy, n-propyloxy, isopropyloxy or the like, "C1-C4 alkoxy group" refers to a straight or branched alkoxy group having 1 to 4 carbon atoms such 25 as 2-butyloxy or the like, in addition to "C1-C3 alkoxy group", "C1-C3 haloalkoxy group" refers to a straight or branched haloalkoxy group having 1 to 3 carbon atoms which is substituted with one or more halogen

atoms which may be the same or different, such as trifluoromethoxy,
 1,1,2- trifluoroethoxy, 1,1,1,3,3,3-hexafluoro-2-propyloxy,
 2,2,2-trifluoroethoxy, 2-chloroethoxy, 3-fluoro-n-propyloxy,
 1,1,2,2- tetrafluoroethoxy, 1,1,2,3,3,3-hexafluoropropyloxy, or the
 5 like, and "C1-C4 haloalkoxy group" refers to a straight or branched
 haloalkoxy group having 1 to 4 carbon atoms which is substituted with
 one or more halogen atoms which may be the same or different, such as
 1,1,2,3,3,3-hexafluoro-n-propyloxy,
 1,1,1,3,3,4,4,4-octafluoro-2-butyloxy or the like, in addition to
 10 "C1-C3 haloalkoxy group."

The term "C1-C3 alkylthio group" refers to a straight or
 branched alkylthio group having 1 to 3 carbon atoms such as methylthio,
 ethylthio, n-propylthio, i-propylthio, cyclopropylthio or the like,
 "C1-C4 alkylthio group" refers to a straight or branched alkylthio
 15 group having 1 to 4 carbon atoms such as n-butylthio, i-butylthio,
 s-butylthio, t-butylthio, cyclopropylmethylthio or the like, in
 addition to "C1-C3 alkylthio group," "C1-C6 alkylthio group" refers
 to a straight or branched alkylthio group having 1 to 6 carbon atoms
 such as n-pentylthio, n-hexylthio or the like, in addition to "C1-C4
 20 alkylthio group."

The term "C1-C3 haloalkylthio group" refers to a straight or
 branched alkylthio group having 1 to 3 carbon atoms which is
 substituted with one or more halogen atoms which may be the same or
 different, such as trifluoromethylthio, pentafluoroethylthio,
 25 2-fluoroethylthio, 2,2,2-trifluoroethylthio,
 heptafluoro-n-propylthio, heptafluoro-i-propylthio,
 1,1,2,2-tetrafluoroethylthio, 1,1,2,3,3,3-hexafluoropropylthio or

the like, "C1-C4 haloalkylthio group" refers to a straight or branched alkylthio group having 1 to 4 carbon atoms which is substituted with one or more halogen atoms which may be the same or different, such as nonafluoro-n-butylthio, nonafluoro-s-butylthio,

5 4,4,4-trifluoro-n-butylthio or the like, in addition to "C1-C3 haloalkylthio group," and "C1-C6 haloalkylthio group" refers to a straight or branched alkylthio group having 1 to 6 carbon atoms which is substituted with one or more halogen atoms which may be the same or different, such as perfluoro-n-pentylthio, perfluoro-n-hexylthio
10 or the like, in addition to "C1-C4 haloalkylthio group."

The term "C1-C3 alkylsulfinyl group" refers to a straight or branched alkylsulfinyl group having 1 to 3 carbon atoms, such as methylsulfinyl, ethylsulfinyl, n-propylsulfinyl, i-propylsulfinyl, cyclopropylsulfinyl or the like, and "C1-C6 alkylsulfinyl group"
15 refers to a straight or branched alkylsulfinyl group having 1 to 6 carbon atoms, such as n-butylsulfinyl, t-butylsulfinyl, n-pentylsulfinyl, n-hexylsulfinyl or the like, in addition to "C1-C3 alkylsulfinyl group."

The term "C1-C3 haloalkylsulfinyl group" refers to a straight
20 or branched alkylsulfinyl group having 1 to 3 carbon atoms which is substituted with one or more halogen atoms which may be the same or different, such as trifluoromethylsulfinyl, pentafluoroethylsulfinyl, 2,2,2-trifluoroethylsulfinyl, heptafluoro-n-propylsulfinyl, heptafluoro-i-propylsulfinyl, 1,1,2,2-tetrafluoroethylsulfinyl,
25 1,1,2,3,3,3-hexafluoropropylsulfinyl or the like, "C1-C6 haloalkylsulfinyl group" refers to a straight or branched alkylsulfinyl group having 1 to 6 carbon atoms which is substituted

with one or more halogen atoms which may be the same or different, such as nonafluoro-n-butylsulfinyl, nonafluoro-s-butylsulfinyl, 4,4,4-trifluoro-n-butylsulfinyl, perfluoro-n-pentylsulfinyl, perfluoro-n-hexylsulfinyl or the like, in addition to "C1-C3
5 haloalkylsulfinyl group."

The term "C1-C3 alkylsulfonyl group" refers to a straight or branched alkylsulfonyl group having 1 to 3 carbon atoms, such as methylsulfonyl, ethylsulfonyl, n-propylsulfonyl, i-propylsulfonyl, cyclopropylsulfonyl or the like, "C1-C6 alkylsulfonyl group" refers
10 to a straight or branched alkylsulfonyl group having 1 to 6 carbon atoms, such as n-butylsulfonyl, t-butylsulfonyl, n-pentylsulfonyl, n-hexylsulfonyl or the like, in addition to "C1-C3 alkylsulfonyl group."

The term "C1-C3 haloalkylsulfonyl group" refers to a straight
15 or branched alkylsulfonyl group having 1 to 3 carbon atoms which is substituted with one or more halogen atoms which may be the same or different, such as trifluoromethylsulfonyl, pentafluoroethylsulfonyl, 2,2,2-trifluoroethylsulfonyl, heptafluoro-n-propylsulfonyl, heptafluoro-i-propylsulfonyl, 1,1,2,2-tetrafluoroethylsulfonyl,
20 1,1,2,3,3,3-hexafluoropropylsulfonyl or the like, "C1-C6 haloalkylsulfonyl group" refers to a straight or branched alkylsulfonyl group having 1 to 6 carbon atoms which is substituted with one or more halogen atoms which may be the same or different, such as nonafluoro-n-butylsulfonyl, nonafluoro-s-butylsulfonyl,
25 4,4,4-trifluoro-n-butylsulfonyl, perfluoro-n-pentylsulfonyl, perfluoro-n-hexylsulfonyl or the like, in addition to "C1-C3 haloalkylsulfonyl group."

The term "arylsulfonyloxy group" refers to an arylsulfonyloxy group of 6 to 14 carbon atoms having an aromatic ring, such as phenylsulfonyloxy, p-toluenesulfonyloxy, 1-naphthylsulfonyloxy, 2-naphthylsulfonyloxy, anthrylsulfonyloxy, phenanthrylsulfonyloxy, acenaphthylenylsulfonyloxy or the like.

The term "C1-C4 alkylamino group" refers to a straight, branched or cyclic alkylamino group having 1 to 4 carbon atoms, such as methylamino, ethylamino, n-propylamino, i-propylamino, n-butylamino, cyclopropylamino or the like, "a di C1-C4 alkylamino group" refers to a straight or branched amino group which is substituted with two alkyl groups having 1 to 4 carbon atoms which may be the same or different, such as dimethylamino, diethylamino, N-ethyl-N-methylamino or the like.

The term "C1-C4 perfluoroalkyl group" refers to a straight or branched alkyl group having 1 to 4 carbon atoms which is all substituted with fluorine atoms, such as trifluoromethyl, pentafluoroethyl, heptafluoro-n-propyl, heptafluoro-i-propyl, nonafluoro-n-butyl, nonafluoro-2-butyl, nonafluoro-i-butyl or the like, and "C2-C6 perfluoroalkyl group" refers to a straight or branched alkyl group having 2 to 6 carbon atoms which is all substituted with fluorine atoms, such as pentafluoroethyl, heptafluoro-n-propyl, heptafluoro-i-propyl, nonafluoro-n-butyl, nonafluoro-2-butyl, nonafluoro-i-butyl, undecafluoro-n-pentyl, tridecafluoro-n-hexyl or the like.

The term "C1-C6 perfluoroalkylthio group" refers to a straight or branched alkylthio group having 1 to 6 carbon atoms which is all substituted with fluorine atoms, such as trifluoromethylthio, pentafluoroethylthio, heptafluoro-n-propylthio,

heptafluoro-*i*-propylthio, nonafluoro-*n*-butylthio,
nonafluoro-2-butylthio, nonafluoro-*i*-butylthio,
undecafluoro-*n*-pentylthio, tridecafluoro-*n*-hexylthio or the like.

The term "C1-C6 perfluoroalkylsulfinyl group" refers to a
5 straight or branched alkylsulfinyl group having 1 to 6 carbon atoms
which is all substituted with fluorine atoms, such as
trifluoromethylsulfinyl, pentafluoroethylsulfinyl,
heptafluoro-*n*-propylsulfinyl, heptafluoro-*i*-propylsulfinyl,
nonafluoro-*n*-butylsulfinyl, nonafluoro-2-butylsulfinyl,
10 nonafluoro-*i*-butylsulfinyl, undecafluoro-*n*-pentylsulfinyl,
tridecafluoro-*n*-hexylsulfinyl or the like.

The term "C1-C6 perfluoroalkylsulfonyl group" refers to a
straight or branched alkylsulfonyl group having 1 to 6 carbon atoms
which is all substituted with fluorine atoms, such as
15 trifluoromethylsulfonyl, pentafluoroethylsulfonyl,
heptafluoro-*n*-propylsulfonyl, heptafluoro-*i*-propylsulfonyl,
nonafluoro-*n*-butylsulfonyl, nonafluoro-2-butylsulfonyl,
nonafluoro-*i*-butylsulfonyl, undecafluoro-*n*-pentylsulfonyl,
tridecafluoro-*n*-hexylsulfonyl or the like.

20 The term "alkylsilyl group" refers to a straight or branched
alkyl chain having silicon atom, such as methylsilyl group,
trimethylsilyl group, ethylsilyl group or the like.

The compound represented by the general formula (1) or (5) of
the present invention contains one or more asymmetric carbon atoms or
25 asymmetric centers in its structural formula in some cases and has two
or more optical isomers in some cases. The present invention also
includes all of the respective optical isomers and mixtures consisting

of these isomers in any ratio. Furthermore, the compound represented by the general formula (1) or (5) of the present invention has two or more geometrical isomers derived from a carbon-carbon double bond in its structural formula in some cases. The present invention also
5 includes all of the respective geometrical isomers and mixtures consisting of these isomers in any ratio.

Preferable examples of the substituents or atoms in the compounds represented by the general formula (1) and the like of the present invention are listed below.

10 A_1 is preferably a carbon atom, a nitrogen atom or an oxidized nitrogen atom and at the same time, A_2 , A_3 and A_4 are all carbon atoms, and more preferably all of A_1 , A_2 , A_3 and A_4 are carbon atoms, in A_1 , A_2 , A_3 , A_4 .

R_1 is preferably a hydrogen atom or a C1-C4 alkyl group, and more
15 preferably a hydrogen atom, a methyl group or an ethyl group.

R_2 is preferably a hydrogen atom or a C1-C4 alkyl group, and more preferably a hydrogen atom, a methyl group or an ethyl group.

G_1 and G_2 are all preferably oxygen atoms.

n is preferably 0, 1 or 2, and more preferably 0 or 1.

20 X is preferably a hydrogen atom or a halogen atom, and more preferably a hydrogen atom or a fluorine atom.

Q_1 is preferably a phenyl group, or

a substituted phenyl group having one or more substituents which may be the same or different and are selected from a halogen atom, a
25 C1-C4 alkyl group, a C1-C4 haloalkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C6 cycloalkyl group, a C3-C6 halocycloalkyl group, a C1-C3

alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 alkoxycarbonyl group and an acetylamino group,

a pyridyl group, or

a substituted pyridyl group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C6 cycloalkyl group, a C3-C6 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino groups, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 alkoxycarbonyl group and an acetylamino group.

Q_1 is more preferably a phenyl group,

a substituted phenyl group having 1 to 3 substituents which may be the same or different and are selected from a fluorine atom, a chlorine atom, a bromine atom, an iodine atom, a methyl group, a trifluoromethyl group, a methoxy group, a trifluoromethoxy group, a methylthio group, a methylsulfinyl group, a methylsulfonyl group, a trifluoromethylthio group, a trifluoromethylsulfinyl group, a

trifluoromethylsulfonyl group, a methylamino group, a dimethylamino group, a cyano group or a nitro group,

a pyridyl group, or

a pyridyl group having one or two substituents which may be the same
 5 or different and are selected from a fluorine atom, a chlorine atom, a bromine atom, an iodine atom, a methyl group, a trifluoromethyl group, a methoxy group, a trifluoromethoxy group, a methylthio group, a methylsulfinyl group, a methylsulfonyl group, a trifluoromethylthio group, a trifluoromethylsulfinyl group, a trifluoromethylsulfonyl
 10 group, a methylamino group, a dimethylamino group, a cyano group or a nitro group.

Q_2 is preferably a substituted phenyl group or a substituted pyridyl group represented by the general formula (2), (3) or (4).

When Q_2 is a substituted phenyl group represented by the general
 15 formula (2),

(i)

Y_1 or Y_5 , which may be the same or different, is preferably a fluorine atom, a chlorine atom, a bromine atom, an iodine atom, a methyl group, an ethyl group, a n-propyl group, a i-propyl group, a n-butyl
 20 group, a 2-butyl group, a trifluoromethyl group, a methylthio group, a methylsulfinyl group, a methylsulfonyl group, a trifluoromethylthio group, a trifluoromethylsulfinyl group, a trifluoromethylsulfonyl group, a cyano group,

Y_2 or Y_4 is preferably a hydrogen atom,

25 Y_3 is preferably a trifluoromethyl group, a pentafluorosulfanyl group, a 1,1,2,3,3,3- hexafluoropropoxy group, a 2,2,2-trifluoro-1-trifluoromethylethoxy group, a

2-trifluoromethoxy-1,1,2-trifluoroethoxy group, a
 1,1,2,2-tetrafluoroethoxy group, a 1,1,2,3,3,3- hexafluoropropylthio
 group, a 2,2,2-trifluoro-1-trifluoromethylethylthio group, a
 2-trifluoromethoxy-1,1,2-trifluoroethylthio group, a
 5 1,1,2,2-tetrafluoroethylthio group,
 a 1,1,2,3,3,3- hexafluoro propylsulfinyl group, a
 2,2,2-trifluoro-1-trifluoromethylethylsulfinyl group, a
 2-trifluoromethoxy-1,1,2-trifluoroethylsulfinyl group, a
 1,1,2,2-tetrafluoroethylsulfinyl group,
 10 a 1,1,2,3,3,3- hexafluoro propylsulfonyl group, a
 2,2,2-trifluoro-1-trifluoromethylethylsulfonyl group, a
 2-trifluoromethoxy-1,1,2-trifluoroethylsulfonyl group, a
 1,1,2,2-tetrafluoroethylsulfonyl group, or

(ii)

15 Y_1 is preferably a hydroxymethyl group, a methoxymethyl group,
 a methylthiomethyl group, a methylsulfinylmethyl group, a
 methylsulfonylmethyl group, an acetyl group, a trifluoroacetyl group,
 an acetoxymethyl group, an ethylcarbonyloxy group, trifluoroacetoxymethyl group,
 a methoxycarbonyl group, an ethoxycarbonyl group, an acetylamino group,
 20 a trifluoroacetylamino group, a methylsulfonyloxy group, a
 trifluoromethylsulfonyloxy group,

Y_2 is preferably a fluorine atom, a chlorine atom, a bromine atom,
 an iodine atom, a methyl group, an ethyl group, n-propyl group,
 i-propyl group, n-butyl group, 2-butyl group, a trifluoromethyl group,
 25 a methylthio group, a methylsulfinyl group, a methylsulfonyl group,
 a trifluoromethylthio group, a trifluoromethylsulfinyl group, a
 trifluoromethylsulfonyl group, a cyano group,

Y_2 or Y_4 is preferably a hydrogen atom,

Y_3 is preferably a pentafluoroethyl group, a heptafluoro-n-propyl group, a heptafluoro-i-propyl group, a nonafluoro-n-butyl group, a nonafluoro-2-butyl group, a
 5 nonafluoro-i-butyl group, a trifluoromethylthio group, a pentafluoroethylthio group, a heptafluoro-n-propylthio group, a heptafluoro-i-propylthio group, a nonafluoro-n-butylthio group, a nonafluoro-2-butylthio group, a trifluoromethylsulfinyl group, a pentafluoroethylsulfinyl group, a heptafluoro-n-propylsulfinyl group,
 10 a heptafluoro-i-propylsulfinyl group, a nonafluoro-n-butylsulfinyl group, a nonafluoro-2-butylsulfinyl group, a trifluoromethylsulfonyl, a pentafluoroethylsulfonyl, a heptafluoro-n-propylsulfonyl, a heptafluoro-i-propylsulfonyl, a nonafluoro-n-butylsulfonyl, a nonafluoro-2-butylsulfonyl, a trifluoromethyl group, a 1,1,2,3,3,3-
 15 hexafluoropropoxy group, a 2,2,2-trifluoro-1-trifluoromethylethoxy group, a 2-trifluoromethoxy-1,1,2-trifluoroethoxy group, 1,1,2,2-tetrafluoroethoxy group, a 1,1,2,3,3,3- hexafluoropropylthio group, a 2,2,2-trifluoro-1-trifluoromethylethylthio group, a
 20 2-trifluoromethoxy-1,1,2-trifluoroethylthio group, a 1,1,2,2-tetrafluoroethylthio group, a 1,1,2,3,3,3- hexafluoropropylsulfinyl group, a 2,2,2-trifluoro-1-trifluoromethylethylsulfinyl group, a 2-trifluoromethoxy-1,1,2-trifluoroethylsulfinyl group, a
 25 1,1,2,2-tetrafluoroethylsulfinyl group, a 1,1,2,3,3,3-hexafluoropropylsulfonyl group, a 2,2,2-trifluoro-1-trifluoromethylethylsulfonyl group, a

2-trifluoromethoxy-1,1,2-trifluoroethylsulfonyl group, a
1,1,2,2-tetrafluoroethylsulfonyl group, or

(iii)

Y_1 is preferably a trifluoromethoxy group, a pentafluoroethyl
5 group, a trifluoromethylthio group, a pentafluoroethylthio group, a
heptafluoropropylthio group, a heptafluoro-iso-propylthio group, a
trifluoromethylsulfinyl group, a pentafluoroethylsulfinyl group, a
heptafluoropropylsulfinyl group, a heptafluoro-iso-propylsulfinyl
group, a trifluoromethylsulfonyl group, a pentafluoroethylsulfonyl
10 group, a heptafluoropropylsulfonyl group, a
heptafluoro-iso-propylsulfonyl group,

Y_5 is preferably a fluorine atom, a chlorine atom, a bromine atom,
an iodine atom, a methyl group, an ethyl group, a trifluoromethoxy
group, a pentafluoroethyl group, a trifluoromethylthio group, a
15 pentafluoroethylthio group, a heptafluoropropylthio group, a
heptafluoro-iso-propylthio group, a trifluoromethylsulfinyl group, a
pentafluoroethylsulfinyl group, a heptafluoropropylsulfinyl group, a
heptafluoro-iso-propylsulfinyl group, a trifluoromethylsulfonyl
group, a pentafluoroethylsulfonyl group, a heptafluoropropylsulfonyl
20 group, a heptafluoro-iso-propylsulfonyl group,

Y_2 or Y_4 is preferably a hydrogen atom,

Y_3 is preferably a fluorine atom, a chlorine atom, a bromine atom,
an iodine atom.

When Q_2 is a substituted phenyl group represented by the general
25 formula (4),

Y_1 or Y_5 , which may be the same or different, is preferably a
fluorine atom, a chlorine atom, a bromine atom, an iodine atom, a methyl

group, an ethyl group, a n-propyl group, a i-propyl group, a n-butyl group, a 2-butyl group, a trifluoromethyl group, a methylthio group, a methylsulfinyl group, a methylsulfonyl group, a trifluoromethylthio group, a trifluoromethylsulfinyl group, a trifluoromethylsulfonyl group, a cyano group,

Y_2 or Y_4 is preferably a hydrogen atom,

R_a is a bromodifluoro group and R_b is a fluorine atom and R_c is a trifluoromethyl group, or R_a is a chlorodifluoro group and R_b is a hydroxyl group and R_c is a chlorodifluoromethyl group.

The compounds of present invention represented the general formula (1) may contain the following compounds I to VIII. These compounds may is preferably used from the viewpoint of controll effect on the insect pests.

(The compound I)

The compound I represented by the general formula (1), wherein , in the formula, A_1 represents a carbon atom, a nitrogen atom or an oxidized nitrogen atom;

A_2 , A_3 and A_4 represent a carbon atom;

R_1 and R_2 mutually independently represent a hydrogen atom or a C1-C4 alkyl group;

G_1 and G_2 mutually independently represent an oxygen atom or a sulfur atom;

X_s may be the same or different and are a hydrogen atom, a halogen atom or a trifluoromethyl group;

n represents an integer of 0 to 4;

Q_1 represents a phenyl group,

a substituted phenyl group having one or more substituents which

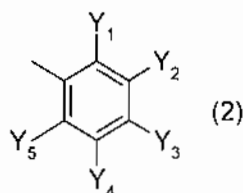
may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group,

a heterocyclic group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a dihydropyranyl group.), or

a substituted heterocyclic group having one or more substituents which may be the same or different and are selected from

a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a dihydropyranyl group.); and

Q₂ is represented by the general formula (2),



wherein, in the formula, Y_1 and Y_5 may be the same or different and represent a halogen atom, a C1-C6 alkyl group, a C1-C6 haloalkyl group, a C1-C6 alkoxy group, a C1-C6 haloalkoxy group, a C1-C6 alkylthio group, a C1-C6 haloalkylthio group, a C1-C6 alkylsulfinyl group, a C1-C6 haloalkylsulfinyl group, a C1-C6 alkylsulfonyl group, a C1-C6 haloalkylsulfonyl group, a cyano group or a nitro group;

Y_2 and Y_4 may be the same or different and represent a hydrogen atom, a halogen atom or a C1-C6 alkyl group; and

Y_3 represents a trifluoromethyl group, a C1-C6 perfluoroalkoxy group, a pentafluorosulfanyl group,

a substituted C1-C6 haloalkoxy group having one or more substituents which may be the same or different and are selected from a hydrogen atom, a hydroxy group, a chlorine atom, a bromine atom, an iodine atom, a C1-C6 alkoxy group or a C1-C6 haloalkoxy group,

a substituted C1-C6 haloalkylthio group having one or more substituents which may be the same or different and are selected from a hydrogen atom, a hydroxy group, a chlorine atom, a bromine atom, an iodine atom, a C1-C6 alkoxy group or a C1-C6 haloalkoxy group,

a substituted C1-C6 haloalkylsulfinyl group having one or more substituents which may be the same or different and are selected from a hydrogen atom, a hydroxy group, a chlorine atom, a bromine atom, an iodine atom, a C1-C6 alkoxy group or a C1-C6 haloalkoxy group, or

a substituted C1-C6 haloalkylsulfonyl group having one or more

substituents which may be the same or different and are selected from a hydrogen atom, a hydroxy group, a chlorine atom, a bromine atom, an iodine atom, a C1-C6 alkoxy group or a C1-C6 haloalkoxy group.

(The compound II)

5 The compound II represented by the general formula (1),
wherein, in the formula, A₁ represents a carbon atom, a nitrogen atom or an oxidized nitrogen atom;

A₂, A₃ and A₄ represent a carbon atom;

R₁ and R₂ mutually independently represent a hydrogen atom or
10 a C1-C4 alkyl group;

G₁ and G₂ mutually independently represent an oxygen atom or a sulfur atom;

Xs may be the same or different and are a hydrogen atom, a halogen atom or a trifluoromethyl group;

15 n represents an integer of 0 to 4;

Q₁ represents a phenyl group,

a substituted phenyl group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl
20 group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3
25 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4

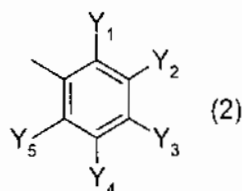
haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4
haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4
haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4
haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4
5 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a
pentafluorosulfanyl group and a phenyl group,

a heterocyclic group (The heterocyclic group herein represents
a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a
pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group,
10 an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a
thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole
group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a
tetrazolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a
benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a
15 dihydropyranyl group.), or

a substituted heterocyclic group having one or more
substituents which may be the same or different and are selected from
a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a
substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4
20 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group,
a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy
group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3
haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3
haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3
25 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4
alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4
alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4

alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4
 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4
 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a
 C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an
 5 arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group
 (The heterocyclic group herein represents a pyrazinyl group, a pyridyl
 group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group,
 a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group,
 an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a
 10 thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl
 group, a pyrazolyl group, a tetrazolyl group, a
 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a
 tetrahydropyranyl group or a dihydropyranyl group.); and

Q₂ is represented by the general formula (2),



15

wherein, in the formula, Y₁ represents a C1-C4 alkylcarbonyl
 group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group,
 a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a
 C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a
 20 C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group,
 a C1-C4 haloalkylsulfonyloxy group, or

a C1-C4 alkyl group having one or more substituents which may
 be the same or different and are selected from halogen atom, C1-C3
 alkoxy group, C1-C3 haloalkoxy group, C1-C3 alkylthio group, C1-C3

haloalkylthio group, C1-C3 alkylsulfinyl group, C1-C3
haloalkylsulfinyl group, C1-C3 alkylsulfonyl group, C1-C3
haloalkylsulfonyl group, C1-C4 alkylamino group, a di C1-C4 alkylamino
group, cyano group, nitro group, hydroxy group, C1-C4 alkylcarbonyl
5 group, C1-C4 haloalkylcarbonyl group, C1-C4 alkylcarbonyloxy group,
C1-C4 haloalkylcarbonyloxy group, C1-C4 alkoxy carbonyl group, C1-C4
haloalkoxy carbonyl group, C1-C4 alkylcarbonylamino group, C1-C4
haloalkylcarbonylamino group, C1-C4 alkylsulfonyloxy group, C1-C4
haloalkylsulfonyloxy group, arylsulfonyloxy group,
10 pentafluorosulfanyl group or alkylsilyl group;

Y₅ represents a halogen atom, a C1-C6 alkyl group, a C1-C6
haloalkyl group, a C1-C6 alkoxy group, a C1-C6 haloalkoxy group, a
C1-C6 alkylthio group, a C1-C6 haloalkylthio group, a C1-C6
alkylsulfinyl group, a C1-C6 haloalkylsulfinyl group, a C1-C6
15 alkylsulfonyl group, a C1-C6 haloalkylsulfonyl group, a cyano group
or a nitro group;

Y₂ and Y₄ may be the same or different and represent a hydrogen
atom, a halogen atom or a C1-C6 alkyl group; and

Y₃ represents a C1-C4 haloalkoxy group, a C2-C6 perfluoroalkyl
20 group, a C1-C6 perfluoroalkylthio group, a C1-C6
perfluoroalkylsulfinyl group, a C1-C6 perfluoroalkylsulfonyl group,
a trifluoromethyl group, a C1-C6 perfluoroalkoxy group, a
pentafluorosulfanyl group,

a substituted C1-C6 haloalkoxy group having at least one or more
25 substituents which may be the same or different and are selected from
hydrogen atom, hydroxy group, chlorine atom, bromine atom, iodine atoms,
C1-C6 alkoxy groups or C1-C6 haloalkoxy group,

a substituted C1-C6 haloalkylthio group having at least one or more substituents which may be the same or different and are selected from a hydrogen atom, a hydroxy group, a chlorine atom, a bromine atom, an iodine atom, a C1-C6 alkoxy group or a C1-C6 haloalkoxy group,

5 a substituted C1-C6 haloalkylsulfinyl group having at least one or more substituents which may be the same or different and are selected from a hydrogen atom, a hydroxy group, a chlorine atom, a bromine atom, an iodine atom, a C1-C6 alkoxy group or a C1-C6 haloalkoxy group, or

10 a substituted C1-C6 haloalkylsulfonyl group having at least one or more substituents which may be the same or different and are selected from a hydrogen atom, a hydroxy group, a chlorine atom, a bromine atom, an iodine atom, a C1-C6 alkoxy group or a C1-C6 haloalkoxy group.

(The compound III)

The compound III represented by the general formula (1),

15 wherein , in the formula, A₁ represents a carbon atom, a nitrogen atom or an oxidized nitrogen atom;

A₂, A₃ and A₄ represent a carbon atom;

R₁ and R₂ mutually independently represent a hydrogen atom or a C1-C4 alkyl group;

20 G₁ and G₂ mutually independently represent an oxygen atom or a sulfur atom;

Xs may be the same or different and are a hydrogen atom, a halogen atom or a trifluoromethyl group;

n represents an integer of 0 to 4;

25 Q₁ represents a phenyl group,

a substituted phenyl group having one or more substituents which may be the same or different and are selected from a halogen atom, a

C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl
 group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4
 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group,
 a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy
 5 group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3
 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3
 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4
 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro
 group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4
 10 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4
 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4
 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4
 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4
 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a
 15 pentafluorosulfanyl group and a phenyl group,

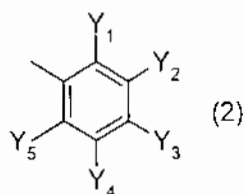
a heterocyclic group (The heterocyclic group herein represents
 a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a
 pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group,
 an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a
 20 thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole
 group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a
 tetrazolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a
 benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a
 dihydropyranyl group), or

25 a substituted heterocyclic group having one or more
 substituents which may be the same or different and are selected from
 a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a

substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxycarbonyl group, a C1-C4 haloalkoxycarbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group

(The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a dihydropyranyl group.); and

Q₂ is represented by the general formula (2),



wherein, in the formula, Y_1 represents a C1-C6 alkoxy group, a C1-C6 haloalkoxy group, a C1-C6 alkylthio group, a C1-C6 haloalkylthio group, a C1-C6 alkylsulfinyl group, a C1-C6 haloalkylsulfinyl group, a C1-C6 alkylsulfonyl group or a C1-C6 haloalkylsulfonyl group;

5 Y_5 represents a halogen atom, a C1-C6 alkyl group, a C1-C6 haloalkyl group, a C1-C6 alkoxy group, a C1-C6 haloalkoxy group, a C1-C6 alkylthio group, a C1-C6 haloalkylthio group, a C1-C6 alkylsulfinyl group, a C1-C6 haloalkylsulfinyl group, a C1-C6 alkylsulfonyl group, a C1-C6 haloalkylsulfonyl group, a cyano group
10 or a nitro group;

Y_2 and Y_4 may be the same or different and represent a hydrogen atom, a halogen atom or a C1-C6 alkyl group; and

Y_3 represents a halogen atom.

(The compound IV)

15 The compound IV represented by the general formula (1),
wherein, in the formula, A_1 represents a carbon atom, a nitrogen atom or an oxidized nitrogen atom;

A_2 , A_3 and A_4 represent a carbon atom;

R_1 and R_2 mutually independently represent a hydrogen atom or
20 a C1-C4 alkyl group;

G_1 and G_2 mutually independently represent an oxygen atom or a sulfur atom;

X_s may be the same or different and are a hydrogen atom, a halogen atom or a trifluoromethyl group;

25 n represents an integer of 0 to 4;

Q_1 represents a phenyl group,

a substituted phenyl group having one or more substituents which

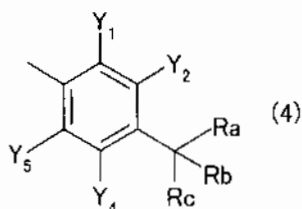
may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group,

a heterocyclic group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a dihydropyranyl group.), or

a substituted heterocyclic group having one or more substituents which may be the same or different and are selected from

a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a dihydropyranyl group.); and

Q_2 is represented by the general formula (4),



wherein, in the formula, Y_1 and Y_3 may be the same or different and represent a halogen atom, a C1-C6 alkyl group, a C1-C6 haloalkyl group, a C1-C6 alkoxy group, a C1-C6 haloalkoxy group, a C1-C6 alkylthio group, a C1-C6 haloalkylthio group, a C1-C6 alkylsulfinyl group, a C1-C6 haloalkylsulfinyl group, a C1-C6 alkylsulfonyl group, a C1-C6 haloalkylsulfonyl group, a cyano group or a nitro group;

Y_2 and Y_4 may be the same or different and represent a hydrogen atom, a halogen atom or a C1-C6 alkyl group;

R_a represents a halogen atom or a hydroxy group; and

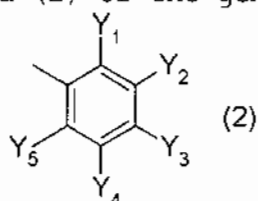
R_b and R_c may each independently represent a halogen atom or a C1-C6 haloalkyl group, and at least either R_b or R_c has one or more hydrogen atoms, hydroxy groups, chlorine atoms, bromine atoms or iodine atoms included thereto.

(The compounds V to VIII)

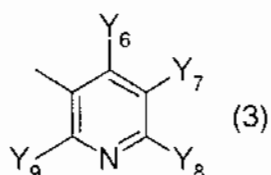
The compounds V to VIII has a C1-C4 alkyl group at least one of R_1 and R_2 in each compounds I to IV represented by the general formula (1).

The compounds represented by the general formula (1) and (5) can be prepared according to methods of preparation methods 1 to 11 as described below. Typical preparation methods of the compound of the present invention are illustrated below. The compound of the present invention can be prepared according to the methods, but the preparation method paths are not restricted to the following preparation methods.

In the general formula represented by the following preparation methods, Q_2 represents the meanings as described in [1], the general formula (2) or the general formula (3),

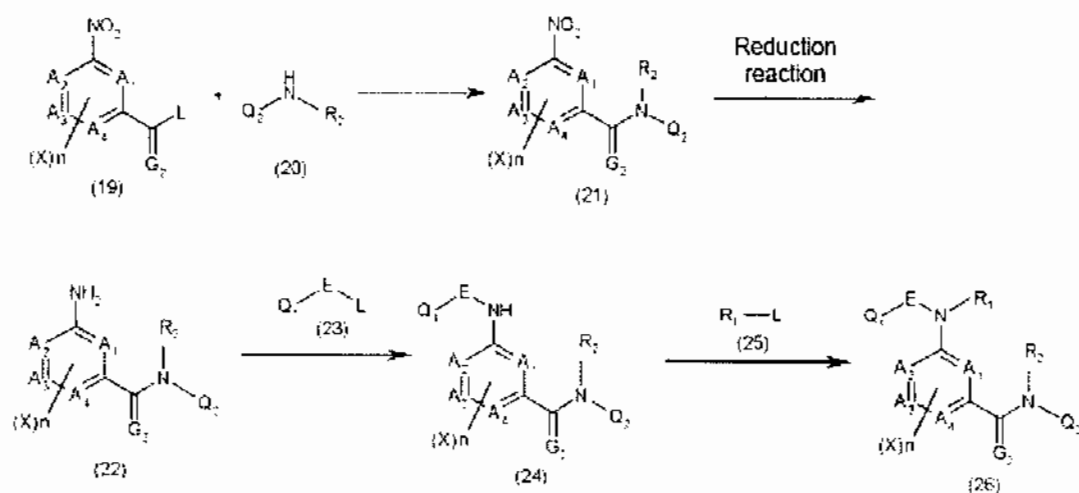


5 wherein, in the formula, Y_1 , Y_2 , Y_3 , Y_4 and Y_5 represent the same as those in [1], or



wherein, in the formula, Y_6 , Y_7 , Y_8 and Y_9 represent the same as those in [1].

10 Preparation Method 1



wherein, in the formula, E represents $-C(=G_1)-$ or $-SO_2-$; A_1 , A_2 , A_3 , A_4 , G_1 , G_2 , R_1 , R_2 , X , n , Q_1 and Q_2 represent the same as those in [1]; and L represents a functional group having a leaving-group ability

such as a halogen atom, a hydroxyl group or the like.

1-(i): General formula (19) + General formula (20) → General formula (21)

By reacting an m-nitroaromatic carboxylic acid derivative
5 having a leaving group represented by the general formula (19) with
an aromatic amine derivative represented by the general formula (20)
in a solvent or without a solvent, an aromatic carboxylic acid
derivative having a nitro group represented by the general formula (21)
can be prepared. In the process, a base can also be used.

10 Solvents may not remarkably hinder the progress of the reaction
and examples thereof include water; aromatic hydrocarbons such as
benzene, toluene, xylene and the like; halogenated hydrocarbons such
as dichloromethane, chloroform, carbon tetrachloride and the like;
chained ethers or cyclic ethers such as diethyl ether, dioxane,
15 tetrahydrofuran, 1,2-dimethoxyethane and the like; esters such as
ethyl acetate, butyl acetate and the like; alcohols such as methanol,
ethanol and the like; ketones such as acetone, methylisobutyl ketone,
cyclohexanone and the like; amides such as dimethylformamide,
dimethylacetamide and the like; nitriles such as acetonitrile and the
20 like; and inert solvents such as 1,3-dimethyl-2-imidazolidinone and
the like. These solvents can be used singly or in combination of 2
or more kinds.

Furthermore, examples of the base include organic bases such as
triethylamine, tri-n-butylamine, pyridine, 4-dimethylaminopyridine
25 and the like; alkali metal hydroxides such as sodium hydroxide,
potassium hydroxide and the like; carbonates such as sodium hydrogen
carbonate, potassium carbonate and the like; phosphates such as

di-potassium mono-hydrogen phosphate, tri-sodium phosphate and the like; alkali metal hydrides such as sodium hydride and the like; and alkali metal alcoholates such as sodium methoxide, sodium ethoxide and the like. These bases may be suitably selected in the range of 0.01
5 to 5 mole equivalents based on the compound represented by the general formula (19) and used accordingly.

The reaction temperature may be suitably selected in the range of -20°C to the reflux temperature of a solvent in use, while the reaction time may be properly selected in the range of several minutes
10 to 96 hours.

Of the compounds represented by the general formula (19), an aromatic carboxylic acid halide derivative can be easily prepared from an aromatic carboxylic acid according to a usual method using a halogenating agent. Examples of the halogenating agent include thionyl
15 chloride, thionyl bromide, phosphorus oxychloride, oxalyl chloride, phosphorus trichloride and the like.

On the other hand, the compound represented by the general formula (21) can be prepared from the m-nitroaromatic carboxylic acid derivative and the compound represented by the general formula (20)
20 without using a halogenating agent. As a method thereof, an additive such as 1-hydroxybenzotriazole and the like is suitably used according to a method, as described, for example, in Chem. Ber. P. 788 (1970) and a method employing a condensation agent using N,N'-dicyclohexylcarbodiimide can be exemplified. Other condensation
25 agents to be used in this case include, for example, 1-ethyl-3-(3-dimethylaminopropyl)carbodiimide, 1,1'-carbonylbis-1H-imidazole and the like.

Furthermore, as other method for preparing the compound represented by the general formula (21), a mixed anhydride procedure using chloroformates can be cited. Also, the compound represented by the general formula (21) can be prepared according to a method as
5 described in J. Am. Chem. Soc. P. 5012 (1967). Examples of chloroformates to be used in this case include isobutyl chloroformate, isopropyl chloroformate and the like. In addition to chloroformates, diethylacetyl chloride, trimethylacetyl chloride and the like can be cited.

10 Both the method using a condensation agent and mixed anhydride procedure are not restricted to the solvent, reaction temperature and reaction time as described in the above documents, and an inert solvent which does not remarkably hinder the suitable progress of the reaction may be used. The reaction temperature and reaction time may be suitably
15 selected as the reaction proceeds.

1-(ii): General formula (21) $\rightarrow$ General formula (22)

An aromatic carboxylic acid derivative having a nitro group represented by the general formula (21) can be made into an aromatic carboxylic acid amide derivative having an amino group represented by
20 the general formula (22) by the reduction reaction. As the reduction reaction, a method employing the hydrogenation and a method employing a metallic compound (for example, tin(II)chloride (anhydride), iron powder, zinc powder and the like) can be cited.

The former method can be carried out in a proper solvent in the
25 presence of a catalyst, in an atmospheric pressure or a increased pressure, in a hydrogen atmosphere. Such the catalyst includes, for example, palladium catalysts such as palladium carbon and the like,

nickel catalysts such as Raney nickel and the like, cobalt catalysts, ruthenium catalysts, rhodium catalysts, platinum catalysts and the like. The solvent includes, for example, water; alcohols such as methanol, ethanol and the like; aromatic hydrocarbons such as benzene, toluene and the like; chained ethers or cyclic ethers such as ether, dioxane, tetrahydrofuran and the like; and esters such as ethyl acetate and the like. The pressure may be suitably selected in the range of 0.1 to 10 MPa, the reaction temperature may be suitably selected in the range of -20°C to the reflux temperature of a solvent in use, and the reaction time may be properly selected in the range of several minutes to 96 hours. The compound of the general formula (22) can be more effectively prepared.

As the latter method, a method employing tin(II)chloride (anhydride) as a metallic compound according to the conditions as described in "Organic Syntheses" Coll. Vol. III P. 453 can be cited.

1-(iii): General formula (22) + General formula (23) → General formula (24)

By reacting an aromatic carboxylic acid amide derivative having an amino group represented by the general formula (22) with a compound represented by the general formula (23) in a solvent, the compound represented by the general formula (24) of the present invention can be prepared. In this process, a base can also be used.

Solvents may not remarkably hinder the progress of the reaction and examples thereof include water; aromatic hydrocarbons such as benzene, toluene, xylene and the like; halogenated hydrocarbons such as dichloromethane, chloroform, carbon tetrachloride and the like; chained ethers or cyclic ethers such as diethyl ether, dioxane,

tetrahydrofuran, 1,2-dimethoxyethane and the like; esters such as ethyl acetate, butyl acetate and the like; alcohols such as methanol, ethanol and the like; ketones such as acetone, methylisobutyl ketone, cyclohexanone and the like; amides such as dimethylformamide, dimethylacetamide and the like; nitriles such as acetonitrile and the like; and inert solvents such as 1,3-dimethyl-2-imidazolidinone and the like. These solvents can be used singly or in combination of 2 or more kinds.

Furthermore, examples of the base include organic bases such as triethylamine, tri-n-butylamine, pyridine, 4-dimethylaminopyridine and the like; alkali metal hydroxides such as sodium hydroxide, potassium hydroxide and the like; carbonates such as sodium hydrogen carbonate, potassium carbonate and the like; phosphates such as di-potassium mono-hydrogen phosphate, tri-sodium phosphate and the like; alkali metal hydrides such as sodium hydride and the like; and alkali metal alcoholates such as sodium methoxide, sodium ethoxide and the like. These bases may be suitably selected in the range of 0.01 to 5 mole equivalents based on the compound represented by the general formula (22) and used accordingly. The reaction temperature may be suitably selected in the range of -20°C to the reflux temperature of a solvent in use, while the reaction time may be properly selected in the range of several minutes to 96 hours. Furthermore, a method employing a condensation agent as described in 1-(i) and a mixed anhydride procedure can also be used.

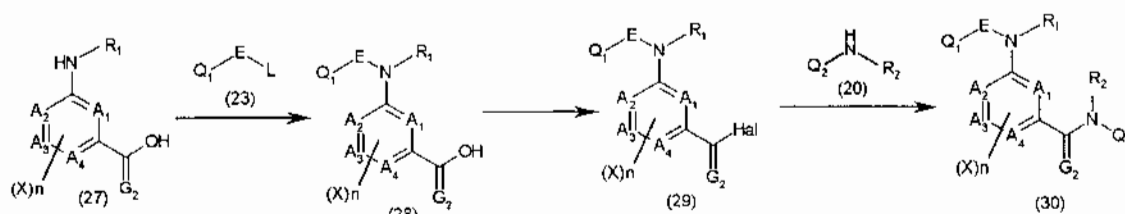
1-(iv): General formula (24) + General formula (25) $\rightarrow$ General formula (26)

By reacting a compound represented by the general formula (24)

with an alkyl compound having a leaving group represented by the general formula (25) in a solvent or without a solvent, a compound represented by the general formula (26) of the present invention can be prepared. Examples of the compound represented by the general formula (25) include alkyl halides such as methyl iodide, ethyl iodide, n-propyl bromide and the like, halogenated acyls such as acetyl chloride and the like. Furthermore, in this process, a suitable base or solvent can be used. As the base or solvent, the bases or solvents cited in 1-(i) can be used. The reaction temperature and reaction time cited in 1-(i) can be applied.

Furthermore, the compound represented by the general formula (26) can also be prepared by a method comprising reacting an alkylating agent such as dimethyl sulfate, diethyl sulfate or the like, instead of the compound represented by the general formula (25), with the compound represented by the general formula (24).

Preparation Method 2



wherein, in the formula, E represents $-C(=G_1)-$ or $-SO_2-$; A_1 , A_2 , A_3 , A_4 , G_1 , G_2 , R_1 , R_2 , X , n , Q_1 and Q_2 represent the same as those in [1]; L represents a functional group having a leaving-group ability such as a halogen atom, a hydroxyl group or the like; and Hal represents a halogen atom.

2-(i): General formula (27) + General formula (23) → General formula (28)

By reacting a carboxylic acids having an amino group represented by the general formula (27) as a starting material with a compound
5 represented by the general formula (23) in accordance with the conditions described in 1-(i), carboxylic acids having an acylamino group represented by the general formula (28) can be prepared.

2-(ii): General formula (28) → General formula (29)

A compound represented by the general formula (29) can be
10 prepared by a known usual method comprising reacting a compound represented by the general formula (28) with thionyl chloride, oxalyl chloride, phosgene, phosphorus oxychloride, phosphorus pentachloride, phosphorus trichloride, thionyl bromide, phosphorus tribromide, diethylaminosulfur trifluoride or the like.

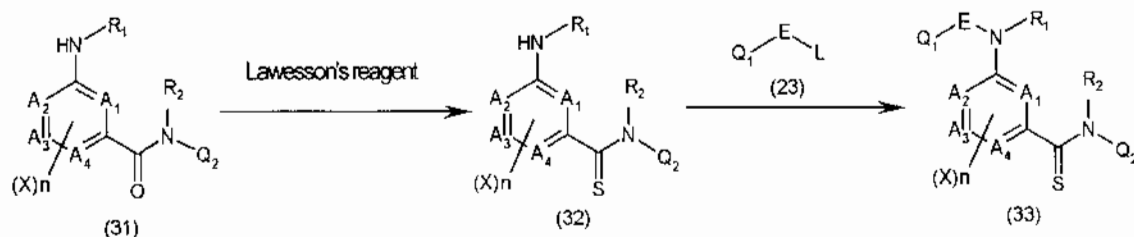
15 2-(iii): General formula (29) + General formula (20) → General formula (30)

By reacting a compound represented by the general formula (29) with a compound represented by the general formula (20) according to the conditions described in 1-(i), a compound represented by the
20 general formula (30) can be prepared.

2-(iv): General formula (28) + General formula (20) → General formula (30)

By reacting a compound represented by the general formula (28) with a compound represented by the general formula (20) according to
25 the conditions using a condensation agent or a mixed anhydride procedure as described in 1-(i), a compound represented by the general formula (30) can be prepared.

Preparation Method 3



wherein, in the formula, E represents -C(=G₁)- or -SO₂-; A₁, A₂, A₃, A₄, G₁, G₂, R₁, R₂, X, n, Q₁ and Q₂ represent the same as those in [1]; and L represents a functional group having a leaving-group ability
 5 such as a halogen atom, a hydroxyl group or the like.

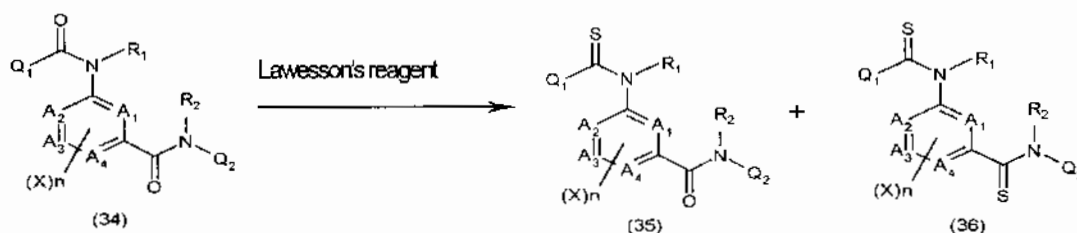
3-(i) General formula (31) → General formula (32)

By reacting a compound represented by the general formula (31) with a Lawesson's reagent according to the known conditions described in Synthesis p. 463 (1993), Synthesis p. 829 (1984) or the like, a
 10 compound represented by the general formula (32) can be prepared. A solvent, reaction temperature and the like are not restricted to those described in the documents.

3-(ii): General formula (32) + General formula (23) → General formula (33)

15 By reacting a compound represented by the general formula (32) with a compound represented by the general formula (23) according to the conditions as described in 1-(i), a compound represented by the general formula (33) can be prepared.

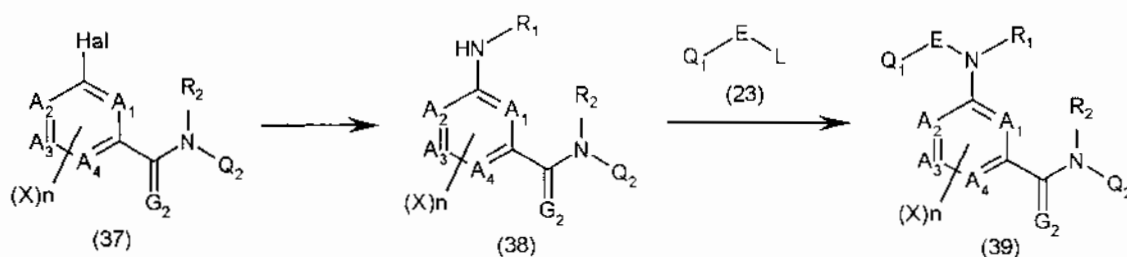
Preparation Method 4



wherein, in the formula, A_1 , A_2 , A_3 , A_4 , R_1 , R_2 , X , n , Q_1 and Q_2 represent the same as those in [1].

5 Compounds represented by the general formulae (35) and (36) can be prepared from a compound represented by the general formula (34) according to the conditions as described in 3-(i). A solvent, reaction temperature and the like are not restricted to those described in the documents. These two compounds can be easily separated and purified
 10 by a known method of separation and purification technique such as silica gel column chromatography and the like.

Preparation Method 5



15 wherein, in the formula, A_1 , A_2 , A_3 , A_4 , G_1 , G_2 , R_1 , R_2 , X , n , Q_1 and Q_2 represent the same as those in [1]; and L represents a functional group having a leaving-group ability such as a halogen atom, a hydroxyl group or the like.

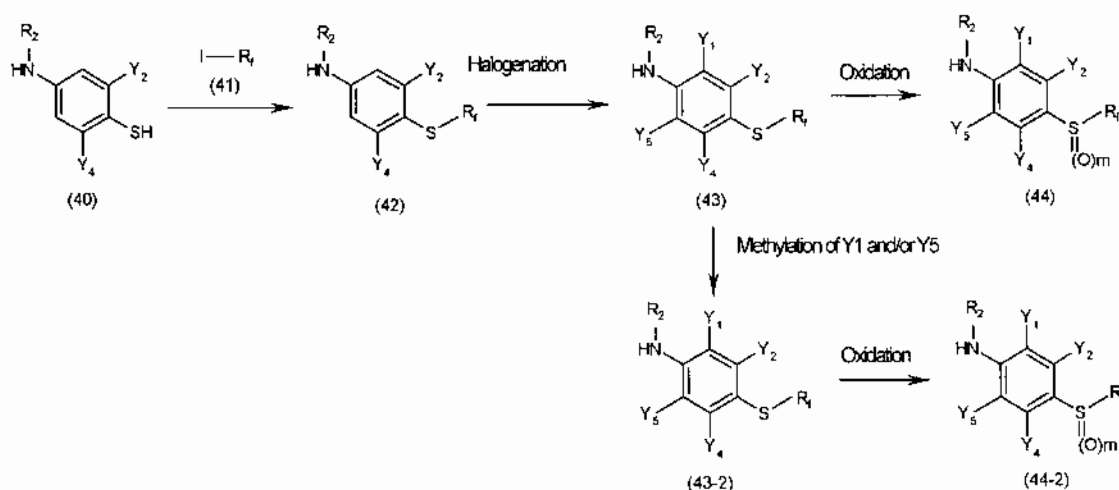
5-(1): General formula (37) $\rightarrow$ General formula (38)

A compound represented by the general formula (38) can be prepared by carrying out an amination reaction using ammonia according to the conditions described, for example, in J. Org. Chem. p. 280 (1958). The conditions such as a reaction solvent or the like are not restricted to those in the literature, and an inert solvent which does not remarkably hinder the proper progress of the reaction may be used. The reaction temperature and reaction time may be suitably selected as the reaction proceeds. Furthermore, examples of the amination agent include methylamine, ethylamine or the like, in addition to ammonia.

5-(ii): General formula (38) + General formula (23) → General formula (39)

By reacting a compound represented by the general formula (38) with a compound represented by the general formula (23) according to the conditions described in 1-(i), a compound represented by the general formula (39) can be prepared.

Preparation Method 6



wherein, in the formula, R_2 , Y_2 and Y_4 represents the same as those

in [1]; Y_1 and Y_5 each represent a hydrogen atom, a methyl group, a chlorine atom, a bromine atom or an iodine atom; R_f represents a C1-C6 perfluoroalkyl group; and m represents 1 or 2.

6-(i): General formula (40) + General formula (41) → General
5 formula (42)

By reacting aminothiophenols represented by the general formula (40) with haloalkyl iodide represented by the general formula (41) in accordance with a method described in J. Fluorine Chem. p. 207 (1994), a compound represented by the general formula (42) can be prepared.

10 Examples of the haloalkyl iodide represented by the general formula (41) include trifluoromethyl iodide, pentafluoroethyl iodide, heptafluoro-n-propyl iodide, heptafluoroisopropyl iodide, nonafluoro-n-butyl iodide, nonafluoroisobutyl iodide and the like. These may be suitably selected in the range of 1 to 10 mole equivalents,
15 based on the compound represented by the general formula (40).

The solvent to be used in the process is not restricted to solvents described in the above documents and may not remarkably hinder the progress of the reaction. Examples thereof include water; aromatic hydrocarbons such as benzene, toluene, xylene and the like; halogenated
20 hydrocarbons such as dichloromethane, chloroform, carbon tetrachloride and the like; chained ethers or cyclic ethers such as diethyl ether, dioxane, tetrahydrofuran, 1,2-dimethoxyethane and the like; esters such as ethyl acetate, butyl acetate and the like; alcohols such as methanol, ethanol and the like; ketones such as
25 acetone, methylisobutyl ketone, cyclohexanone and the like; amides such as dimethylformamide, dimethylacetamide and the like; nitriles such as acetonitrile and the like; and inert solvents such as

1,3-dimethyl-2-imidazolidinone, hexamethylphosphoric triamide and the like. These solvents can be used singly or in combination of 2 or more kinds. Particularly preferable is a polar solvent. The reaction temperature may be suitably selected in the range of -20°C to the reflux temperature of a solvent in use, while the reaction time may be properly selected in the range of several minutes to 96 hours.

6-(ii): General formula (42) → General formula (43)

A compound represented by the general formula (43) can be prepared by using a suitable halogenating agent. For example, a method as described in Synth. Commun. p. 1261 (1989) can be cited.

Examples of the halogenating agent include chlorine, bromine, iodine, N-chlorosuccinic acid imide, N-bromosuccinic acid imide, N-iodinesuccinic acid imide and the like. These may be suitably used in the range of 1 to 10 mole equivalents, based on a compound represented by the general formula (42).

In the process, a solvent can be used, but it is not restricted to solvents described in the above documents and may not remarkably hinder the progress of the reaction. Examples thereof include water; aromatic hydrocarbons such as benzene, toluene, xylene and the like; halogenated hydrocarbons such as dichloromethane, chloroform, carbon tetrachloride and the like; chained ethers or cyclic ethers such as diethyl ether, dioxane, tetrahydrofuran, 1,2-dimethoxyethane and the like; esters such as ethyl acetate, butyl acetate and the like; alcohols such as methanol, ethanol and the like; ketones such as acetone, methylisobutyl ketone, cyclohexanone and the like; amides such as dimethylformamide, dimethylacetamide and the like; nitriles such as acetonitrile and the like; and inert solvents such as

1,3-dimethyl-2-imidazolidinone, hexamethylphosphoric triamide and the like. These solvents can be used singly or in combination of 2 or more kinds. Particularly preferable is a polar solvent. The reaction temperature may be suitably selected in the range of -20°C to the reflux temperature of a solvent in use, while the reaction time may be properly selected in the range of several minutes to 96 hours.

6-(iii): General formula (43) → General formula (44)

A compound represented by the general formula (44) can be prepared by using a suitable oxidizing agent. For example, a method described in Tetrahedron Lett. p. 4955 (1994) can be cited.

Examples of the oxidizing agent include organic peroxides such as m-chloroperbenzoic acid and the like, sodium metaperiodate, hydrogen peroxide, ozone, selenium dioxide, chromic acid, dinitrogen tetroxide, acyl nitrate, iodine, bromine, N-bromosuccinic acid imide, iodosylbenzyl, t-butyl hypochlorite and the like.

The solvent to be used in the process is not restricted to solvents described in the above documents and may not remarkably hinder the progress of the reaction. These solvents can be used singly or in combination of 2 or more kinds. Particularly preferable is a polar solvent. The reaction temperature may be suitably selected in the range of -20°C to the reflux temperature of a solvent in use, while the reaction time may be properly selected in the range of several minutes to 96 hours.

6-(iv): General formula (43) → General formula (43-2)

A compound represented by the general formula (43-2) (wherein, in the formula, any one of Y₁ and Y₃ must represent a methyl group) can be prepared from a compound represented by the general formula (43)

by using a suitable methylating agent. In the process, for example, a method described in Tetrahedron Lett. p. 6237 (2000) can be cited.

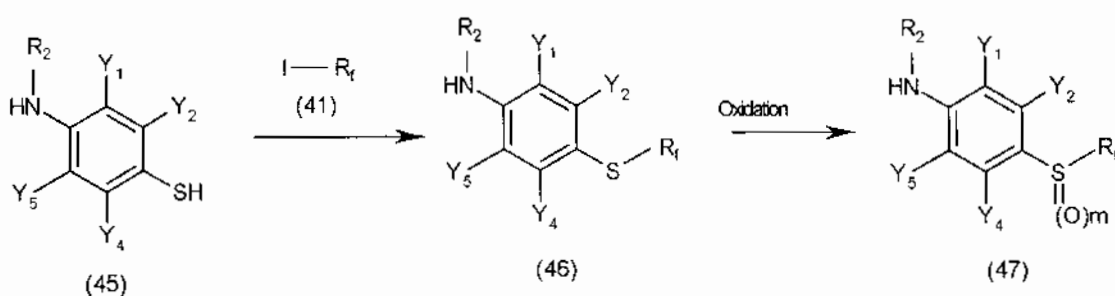
6-(v): General formula (43-2) $\rightarrow$ General formula (44-2)

A compound represented by the general formula (44-2) (wherein, in the formula, any one of Y_1 and Y_5 must represent a methyl group) can be prepared according to a method described in preparation method 6-(iii).

Furthermore, the compound of the present invention can be prepared by suitably selecting a preparation method illustrated in the present invention using an aniline derivative represented by the general formulae (43), (44), (43-2), (44-2).

According to the same method, it is possible to prepare a compound represented general formula (1) of present invention, wherein, in the general formula(2), Y_1 , Y_2 , Y_4 and Y_5 are a C1-C6 perfluoroalkylthio group, a C1-C6 perfluoroalkylsulfinyl group or a C1-C6 perfluoroalkylsulfonyl group.

Preparation Method 7



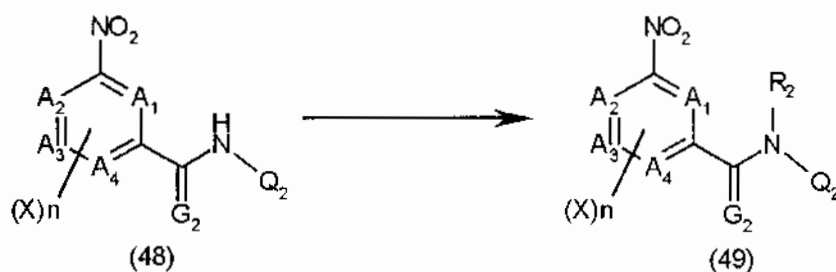
wherein, in the formula, R_2 , Y_2 and Y_4 represents the same as those in [1]; Y_1 and Y_5 each represent a hydrogen atom, a methyl group, a chlorine atom, a bromine atom or an iodine atom; R_f represents a C1-C6

perfluoroalkyl group; and m represents 1 or 2.

An aniline derivative represented by the general formula (47) can be prepared using a compound represented by the general formula (45) as a starting raw material according to the preparation method 5 6. Furthermore, by suitably selecting a preparation method represented in the present invention, the compound of the present invention can be prepared.

According to the same method, it is possible to prepare a compound represented general formula (1) of present invention, wherein, 10 in the general formula (2), Y_1 , Y_2 , Y_4 and Y_5 are a C1-C6 perfluoroalkylthio group, a C1-C6 perfluoroalkylsulfinyl group or a C1-C6 perfluoroalkylsulfonyl group.

Preparation Method 8



15

wherein, in the formula, A_1 , A_2 , A_3 , A_4 , X , n , G_2 , R_2 , and Q_2 represent the same as those in [1].

By reacting a compound represented by the general formula (48) 20 with a reactant using a base in a solvent, a compound represented by the general formula (49) can be prepared.

Solvents may not remarkably hinder the progress of the reaction and examples thereof include aliphatic hydrocarbons such as hexane,

cyclohexane, methylcyclohexane and the like; aromatic hydrocarbons such as benzene, xylene, toluene and the like; halogenated hydrocarbons such as dichloromethane, chloroform, carbon tetrachloride, 1,2-dichloroethane and the like; ethers such as diethyl ether, dioxane, tetrahydrofuran, 1,2-dimethoxyethane and the like; amides such as dimethylformamide, dimethylacetamide and the like; nitriles such as acetonitrile, propionitrile and the like; ketones such as acetone, methylisobutyl ketone, cyclohexanone, methylethyl ketone and the like; esters such as ethyl acetate, butyl acetate and the like; alcohols such as methanol, ethanol and the like; and solvents such as 1,3-dimethyl-2-imidazolidinone, sulfolane, dimethylsulfoxide; water and the like. These solvents can be used singly or in combination of 2 or more kinds.

Examples of the base include organic bases such as triethylamine, tributylamine, pyridine, 4-dimethylaminopyridine and the like; alkali metal hydroxides such as sodium hydroxide, potassium hydroxide and the like; carbonates such as sodium hydrogen carbonate, potassium carbonate and the like; phosphates such as potassium mono-hydrogen phosphate, tri-sodium phosphate and the like; alkali metal hydrides such as sodium hydride and the like; alkali metal alkoxides such as sodium methoxide, sodium ethoxide and the like; organolithiums such as n-butyl lithium and the like; and Grignard reagents such as ethyl magnesium bromide and the like.

These bases may be suitably selected in the range of 0.01 to 5 mole equivalents based on the compound represented by the general formula (48) or may be used as a solvent.

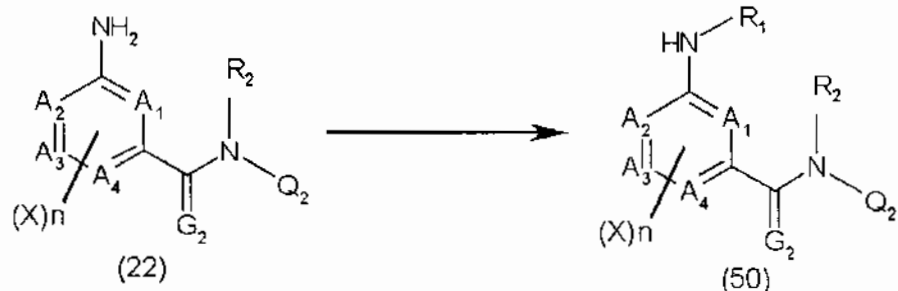
Examples of the reactant include halogenated alkyls such as

methyl iodide, ethyl bromide, trifluoromethyl iodide,
 2,2,2-trifluoroethyl iodide and the like; halogenated allyls such as
 allyl iodide and the like; halogenated propargyls such as propargyl
 bromide and the like; halogenated acyls such as acetyl chloride and
 5 the like; acid anhydrides such as trifluoroacetic anhydride and the
 like; and alkyl sulfuric acids such as dimethyl sulfate, diethyl
 sulfate and the like.

These reactants may be suitably selected in the range of 1 to
 5 mole equivalents, based on the compound represented by the general
 10 formula (48) or may be used as a solvent.

The reaction temperature may be suitably selected in the range
 of -80°C to the reflux temperature of a solvent in use, while the
 reaction time may be properly selected in the range of several minutes
 to 96 hours.

15 Preparation Method 9



wherein, in the formula, A_1 , A_2 , A_3 , A_4 , X , n , G_2 , R_1 , R_2 and Q_2
 represent the same as those in [1].

20 9-(i): General formula (22) $\rightarrow$ General formula (50)

By reacting a compound represented by the general formula (22)
 with aldehydes or ketones in a solvent, adding a catalyst and reacting

the resultant in a hydrogen atmosphere, a compound represented by the general formula (50) can be prepared.

Solvents may not remarkably hinder the progress of the reaction and examples thereof include aliphatic hydrocarbons such as hexane, cyclohexane, methylcyclohexane and the like; aromatic hydrocarbons
5 such as benzene, xylene, toluene and the like; halogenated hydrocarbons such as dichloromethane, chloroform, carbon tetrachloride, 1,2-dichloroethane and the like; ethers such as diethyl ether, dioxane, tetrahydrofuran, 1,2-dimethoxyethane and the like; amides such as
10 dimethylformamide, dimethylacetamide and the like; nitriles such as acetonitrile, propionitrile and the like; ketones such as acetone, methylisobutyl ketone, cyclohexanone, methylethyl ketone and the like; esters such as ethyl acetate, butyl acetate and the like; alcohols such as 1,3-dimethyl-2-imidazolidinone, sulfolane, dimethylsulfoxide,
15 methanol, ethanol and the like; water and the like. These solvents can be used singly or in combination of 2 or more kinds.

Examples of the catalyst include palladium catalysts such as palladium carbon, palladium hydroxide carbon and the like, nickel catalysts such as Raney nickel and the like, cobalt catalysts, platinum
20 catalysts ruthenium catalysts, rhodium catalysts and the like.

Examples of aldehydes include formaldehyde, acetoaldehyde, propionaldehyde, trifluoroacetoaldehyde, difluoroacetoaldehyde, fluoroacetoaldehyde, chloroacetoaldehyde, dichloroacetoaldehyde, trichloroacetoaldehyde, bromoacetoaldehyde and the like.

25 Examples of ketones include acetone, perfluoroacetone, methylethyl ketone and the like.

The reaction pressure may be suitably selected in the range of

1 to 100 atm.

The reaction temperature may be suitably selected in the range of -20°C to the reflux temperature of a solvent in use, while the reaction time may be properly selected in the range of several minutes to 96 hours.

9-(ii): General formula (22) $\rightarrow$ General formula (50)
(alternative method 1)

By reacting a compound represented by the general formula (22) with aldehydes or ketones in a solvent, and applying a reducing agent, a compound represented by the general formula (50) can be prepared.

Solvents may not remarkably hinder the progress of the reaction and examples thereof include aliphatic hydrocarbons such as hexane, cyclohexane, methylcyclohexane and the like; aromatic hydrocarbons such as benzene, xylene, toluene and the like; halogenated hydrocarbons such as dichloromethane, chloroform, carbon tetrachloride, 1,2-dichloroethane and the like; ethers such as diethyl ether, dioxane, tetrahydrofuran, 1,2-dimethoxyethane and the like; amides such as dimethylformamide, dimethylacetamide and the like; nitriles such as acetonitrile, propionitrile and the like; ketones such as acetone, methylisobutyl ketone, cyclohexanone, methylethyl ketone and the like; esters such as ethyl acetate, butyl acetate and the like; alcohols such as 1,3-dimethyl-2-imidazolidinone, sulfolane, dimethylsulfoxide, methanol, ethanol and the like; water and the like. These solvents can be used singly or in combination of 2 or more kinds.

Examples of the reducing agent include borohydrides such as sodium borohydride, sodium cyanoborohydride, sodium triacetate borohydride and the like.

Examples of aldehydes include formaldehyde, acetoaldehyde, propionaldehyde, trifluoroacetoaldehyde, difluoroacetoaldehyde, fluoroacetoaldehyde, chloroacetoaldehyde, dichloroacetoaldehyde, trichloroacetoaldehyde, bromoacetoaldehyde and the like.

5 Examples of ketones include acetone, perfluoroacetone, methylethyl ketone and the like.

The reaction temperature may be suitably selected in the range of -20°C to the reflux temperature of a solvent in use, while the reaction time may be properly selected in the range of several minutes
10 to 96 hours.

9-(iii): General formula (22) $\rightarrow$ General formula (50)
(alternative method 2)

By reacting a compound represented by the general formula (22) with a formylating agent in a solvent or without a solvent and applying
15 an additive agent, it is possible to prepare a compound, wherein, in the general formula (50), R_1 is a methyl group.

Solvents may not remarkably hinder the progress of the reaction and examples thereof include aliphatic hydrocarbons such as hexane, cyclohexane, methylcyclohexane and the like; aromatic hydrocarbons
20 such as benzene, xylene, toluene and the like; halogenated hydrocarbons such as dichloromethane, chloroform, carbon tetrachloride, 1,2-dichloroethane and the like; ethers such as diethyl ether, dioxane, tetrahydrofuran, 1,2-dimethoxyethane and the like; amides such as dimethylformamide, dimethylacetamide and the like; nitriles such as
25 acetonitrile, propionitrile and the like; ketones such as acetone, methylisobutyl ketone, cyclohexanone, methylethyl ketone and the like; esters such as ethyl acetate, butyl acetate and the like; alcohols such

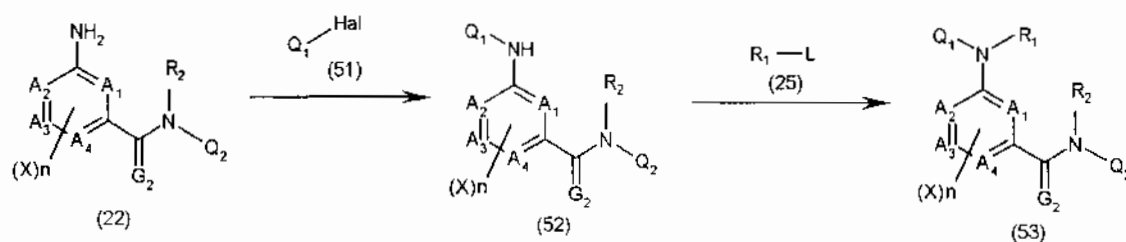
as 1,3-dimethyl-2-imidazolidinone, sulfolane, dimethylsulfoxide, methanol, ethanol and the like; water and the like. These solvents can be used singly or in combination of 2 or more kinds.

Examples of the formylating agent include anhydrous formic acids such as formaldehyde, formic acid, fluoroformic acid, formyl (2,2-dimethylpropionic acid) and the like; formic acid esters such as phenyl formate and the like; pentafluorobenzaldehyde, oxazole and the like.

Examples of the additive agent include inorganic acids such as sulfuric acid and the like; organic acids such as formic acid and the like; borohydrides such as sodium borohydride, sodium cyanoborohydride and the like; boronic acid, lithium aluminum hydride and the like.

The reaction temperature may be suitably selected in the range of -20°C to the reflux temperature of a solvent in use, while the reaction time may be properly selected in the range of several minutes to 96 hours.

Preparation Method 10



wherein, in the formula, A_1 , A_2 , A_3 , A_4 , G_2 , R_1 , R_2 , X , n , Q_1 and Q_2 represent the same as those in [1]; and Hal represents a halogen atom.

10-(i): General formula (22) + General formula (51) $\rightarrow$ General

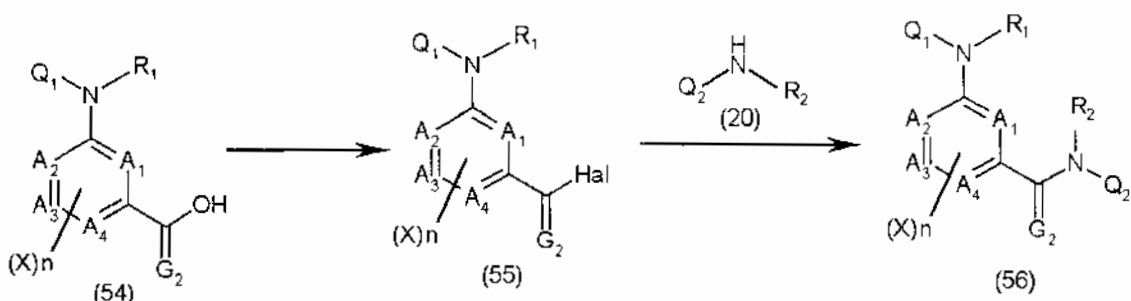
formula (52)

By reacting a compound represented by the general formula (22) with a compound represented by the general formula (51) according to known conditions as described in Tetrahedron Letters p. 3789 (1999) and the like, a compound represented by the general formula (52) can be prepared. Conditions such as a solvent, reaction temperature and the like are not restricted to those described in the documents.

10-(ii): General formula (52) + General formula (25) → General formula (53)

By reacting a compound represented by the general formula (52) with a compound represented by the general formula (25) according to the conditions described in 1-(iv), a compound represented by the general formula (53) can be prepared.

Preparation Method 11



wherein, in the formula, A₁, A₂, A₃, A₄, G₂, R₁, R₂, X, n, Q₁ and Q₂ represent the same as those in [1]; and Hal represents a halogen atom.

11-(i): General formula (54) → General formula (55)

By reacting with a compound represented by the general formula (54) according to the conditions described in 2-(ii), a compound represented by the general formula (56) can be prepared.

11-(ii): General formula (55) + General formula (20) $\rightarrow$ General formula (56)

By reacting a compound represented by the general formula (55) with a compound represented by the general formula (20) according to the conditions described in 1-(i), a compound represented by the general formula (55) can be prepared.

11-(iii): General formula (54) + General formula (20) $\rightarrow$ General formula (56)

By reacting a compound represented by the general formula (54) with a compound represented by the general formula (20) according to the conditions using a condensation agent described in 1-(i) or the conditions using a mixed anhydride procedure, a compound represented by the general formula (56) can be prepared.

In all preparation methods as illustrated above, desired products may be isolated according to a usual method from the reaction system after completion of the reaction, and can be purified, if needed, by carrying out operations such as recrystallization, column chromatography, distillation and the like. Furthermore, desired products can also be supplied to the next reaction process without isolating them from the reaction system.

Typical compounds of the compound represented by the general formula (1) or (5) that is an active ingredient of an insecticide of the present invention are illustrated in Tables 1 to 4 below, but the present invention is not restricted thereto.

Incidentally, in the tables, "n-" refers to normal, "Me" refers to a methyl group, "Et" refers to an ethyl group, "n-Pr" refers to a normal propyl group, "i-Pr" refers to an isopropyl group, "n-Bu" refers to

a normal butyl group, "i-Bu" refers to an isobutyl group, "s-Bu" refers to a secondary butyl group, "t-Bu" refers to a tertiary butyl group, "H" refers to a hydrogen atom, "O" refers to an oxygen atom, "S" refers to a sulfur atom, "C" refers to a carbon atom, "N" refers to a nitrogen
5 atom, "F" refers to a fluorine atom, "Cl" refers to a chlorine atom, "Br" refers to a bromine atom, "I" refers to an iodine atom, "CF₃" refers to a trifluoromethyl group.

General Formula (A)

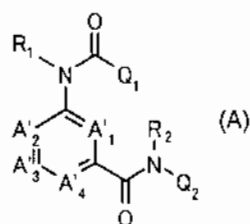


Table 1-1

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
1-1	phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-2	2-methylphenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-3	3-methylphenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-4	4-methylphenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-5	2-ethylphenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-6	3-ethylphenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-7	4-ethylphenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-8	2-fluorophenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-9	3-fluorophenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-10	4-fluorophenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-11	2-chlorophenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-12	3-chlorophenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-13	4-chlorophenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-14	2-bromophenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-15	3-bromophenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-16	4-bromophenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-17	2-iodophenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-18	3-iodophenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-19	4-iodophenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-20	3-cyanophenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl

Table 1-2

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
1-21	4-cyanophenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-22	2-nitrophenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-23	3-nitrophenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-24	4-nitrophenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-25	2-aminophenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-26	3-aminophenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-27	4-aminophenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-28	2-trifluoromethyl phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-29	3-trifluoromethyl phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-30	4-trifluoromethyl phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-31	2-hydroxyphenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-32	2-methoxyphenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-33	3-methoxyphenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-34	4-methoxyphenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-35	2-phenoxyphenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-36	4-(1,1-dimethyl ethyl)phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-37	3-(dimethylamino) phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-38	4-(dimethylamino) phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-39	4-trifluoro methoxyphenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-40	2-(acetylamino) phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl

Table 1-3

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
1-41	3-(acetylamino)phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-42	4-(acetylamino)phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-43	2-acetoxyphenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-44	2-(methoxy carbonyl)phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-45	4-(methoxy carbonyl)phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-46	2,3-dimethyl phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-47	2,4-dimethyl phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-48	2,6-dimethyl phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-49	2,3-difluoro phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-50	2,4-difluoro phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-51	2,5-difluoro phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-52	2,6-difluoro phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-53	3,4-difluoro phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-54	3,5-difluoro phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-55	2,3-dichloro phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-56	2,4-dichloro phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-57	2,5-dichloro phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-58	2,6-dichloro phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-59	3,4-dichloro phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-60	2,4-dinitro phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl

Table 1-4

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
1-61	3,4-dinitro phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-62	2,6-dimethoxy phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-63	3,5-dimethoxy phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-64	3-methyl-4-nitro phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-65	5-amino-2-fluoro phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-66	3-fluoro-2-methyl phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-67	2-fluoro-5-nitro phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-68	4-fluoro-3-nitro phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-69	5-fluoro-2-nitro phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-70	2-fluoro-6-iodine phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-71	2-fluoro-5-trifluoromethyl phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-72	2-chloro-4-nitro phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-73	2-chloro-4-fluoro phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-74	2-chloro-6-fluoro phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-75	3-chloro-4-fluoro phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-76	4-chloro-2-fluoro phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-77	4-chloro-2-nitro phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-78	3-methoxy-4-nitro phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-79	2-methoxy-4-nitro phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-80	2,3,4-trifluoro phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl

Table 1-5

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
1-81	2,4,6-trimethyl phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-82	2,3,6-trifluoro phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-83	2,4,5-trimethoxy phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-84	3,4,5-trimethoxy phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-85	2,3,4,5,6-penta fluorophenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-86	2-biphenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-87	3-biphenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-88	1-naphthyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-89	2-naphthyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-90	pyridin-2-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-91	pyridin-3-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-92	pyridin-4-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-93	2-methylpyridin-5-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-94	3-methylpyridin-2-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-95	2-fluoropyridin-3-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-96	2-chloropyridin-3-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-97	2-chloropyridin-4-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-98	2-chloropyridin-6-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-99	2-chloropyridin-5-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-100	5-chloropyridin-2-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl

Table 1-6

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
1-101	4-trifluoromethyl pyridin-3-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-102	3-hydroxy pyridin-2-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-103	2-phenoxy pyridin-3-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-104	2-methylthio pyridin-3-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-105	2,6-dimethoxy pyridin-3-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-106	2,3-dichloro pyridin-5-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-107	2,5-dichloro pyridin-3-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-108	2,6-dichloro pyridin-3-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-109	3,5-dichloro pyridin-4-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-110	pyridin-N-oxid-2-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-111	N-methylpyrrol-2-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-112	pyrazin-2-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-113	2-methylpyrazin-5-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-114	4-trifluoromethyl pyrimidin-5-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-115	furan-2-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-116	furan-3-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-117	2-tetrahydro furanyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-118	3-tetrahydro furanyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-119	benzofuran-2-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-120	tetrahydropyran-2-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl

Table 1-7

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
1-121	2-methyl-5,6-dihydro-4H-pyran-3-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-122	thiophen-2-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-123	thiophen-3-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-124	3-methyl thiophen-2-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-125	2-nitrothiophen-4-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-126	2-methyl thiophen-5-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-127	3-chlorothiophen-2-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-128	2-chlorothiophen-5-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-129	3-bromothiophen-2-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-130	2-bromothiophen-5-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-131	3-iodinethiophen-2-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-132	3-phenyl thiophen-2-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-133	2,4-dimethyl thiophen-5-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-134	benzothiophen-2-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-135	4-nitro-1H-pyrrol-2-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-136	3-ethyl-3H-pyrazol-4-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-137	1-methyl-3-nitro-1H-pyrazol-4-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-138	3-chloro-1-methyl-1H-pyrazol-4-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-139	3-bromo-1-methyl-1H-pyrazol-4-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-140	1-methyl-3-trifluoromethyl-1H-pyrazol-4-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl

Table 1-8

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
1-141	1-methyl-5-trifluoromethyl-1H-pyrazol-4-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-142	isoxazol-5-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-143	4-trifluoromethylthiazol-5-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-144	2,4-dimethylthiazol-5-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-145	2-ethyl-4-methylthiazol-5-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-146	2-chloro-4-methylthiazol-5-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-147	3-methyl-isothiazol-5-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-148	3,4-dichloro-isothiazol-5-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-149	3-chlorobenzo thiazol-2-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-150	2,2-difluorobenzo[1.3]dioxol-5-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-151	2,2-difluorobenzo[1.3]dioxol-4-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-152	phenyl	CF	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-153	2-fluorophenyl	CF	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-154	4-fluorophenyl	CF	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-155	4-chlorophenyl	CF	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-156	2-chloropyridin-3-yl	CF	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-157	4-nitrophenyl	CF	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-158	4-cyanophenyl	CF	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-159	phenyl	CH	CH	CH	CH	Me	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-160	2-fluorophenyl	CH	CH	CH	CH	Me	H	2,4-dibromo-6-trifluoromethyl thiophenyl

Table 1-9

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
1-161	4-fluorophenyl	CH	CH	CH	CH	Me	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-162	4-chlorophenyl	CH	CH	CH	CH	Me	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-163	2-chloropyridin-3-yl	CH	CH	CH	CH	Me	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-164	4-nitrophenyl	CH	CH	CH	CH	Me	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-165	4-cyanophenyl	CH	CH	CH	CH	Me	H	2,4-dibromo-6-trifluoromethyl thiophenyl
1-166	phenyl	CH	CH	CH	CH	H	Me	2,4-dibromo-6-trifluoromethyl thiophenyl
1-167	2-fluorophenyl	CH	CH	CH	CH	H	Me	2,4-dibromo-6-trifluoromethyl thiophenyl
1-168	4-fluorophenyl	CH	CH	CH	CH	H	Me	2,4-dibromo-6-trifluoromethyl thiophenyl
1-169	4-chlorophenyl	CH	CH	CH	CH	H	Me	2,4-dibromo-6-trifluoromethyl thiophenyl
1-170	2-chloropyridin-3-yl	CH	CH	CH	CH	H	Me	2,4-dibromo-6-trifluoromethyl thiophenyl
1-171	4-nitrophenyl	CH	CH	CH	CH	H	Me	2,4-dibromo-6-trifluoromethyl thiophenyl
1-172	4-cyanophenyl	CH	CH	CH	CH	H	Me	2,4-dibromo-6-trifluoromethyl thiophenyl
1-173	phenyl	CH	CH	CH	CH	Me	Me	2,4-dibromo-6-trifluoromethyl thiophenyl
1-174	2-fluorophenyl	CH	CH	CH	CH	Me	Me	2,4-dibromo-6-trifluoromethyl thiophenyl
1-175	4-fluorophenyl	CH	CH	CH	CH	Me	Me	2,4-dibromo-6-trifluoromethyl thiophenyl
1-176	4-chlorophenyl	CH	CH	CH	CH	Me	Me	2,4-dibromo-6-trifluoromethyl thiophenyl
1-177	2-chloropyridin-3-yl	CH	CH	CH	CH	Me	Me	2,4-dibromo-6-trifluoromethyl thiophenyl
1-178	4-nitrophenyl	CH	CH	CH	CH	Me	Me	2,4-dibromo-6-trifluoromethyl thiophenyl
1-179	4-cyanophenyl	CH	CH	CH	CH	Me	Me	2,4-dibromo-6-trifluoromethyl thiophenyl
1-180	phenyl	CF	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl sulfinylphenyl

Table 1-10

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
1-181	2-fluorophenyl	CF	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-182	4-fluorophenyl	CF	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-183	4-chlorophenyl	CF	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-184	2-chloropyridin-3-yl	CF	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-185	4-nitrophenyl	CF	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-186	4-cyanophenyl	CF	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-187	phenyl	CH	CH	CH	CH	Me	H	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-188	2-fluorophenyl	CH	CH	CH	CH	Me	H	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-189	4-fluorophenyl	CH	CH	CH	CH	Me	H	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-190	4-chlorophenyl	CH	CH	CH	CH	Me	H	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-191	2-chloropyridin-3-yl	CH	CH	CH	CH	Me	H	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-192	4-nitrophenyl	CH	CH	CH	CH	Me	H	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-193	4-cyanophenyl	CH	CH	CH	CH	Me	H	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-194	phenyl	CH	CH	CH	CH	H	Me	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-195	2-fluorophenyl	CH	CH	CH	CH	H	Me	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-196	4-fluorophenyl	CH	CH	CH	CH	H	Me	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-197	4-chlorophenyl	CH	CH	CH	CH	H	Me	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-198	2-chloropyridin-3-yl	CH	CH	CH	CH	H	Me	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-199	4-nitrophenyl	CH	CH	CH	CH	H	Me	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-200	4-cyanophenyl	CH	CH	CH	CH	H	Me	2,4-dibromo-6-trifluoromethyl sulfinylphenyl

Table 1-11

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
1-201	phenyl	CH	CH	CH	CH	Me	Me	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-202	2-fluorophenyl	CH	CH	CH	CH	Me	Me	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-203	4-fluorophenyl	CH	CH	CH	CH	Me	Me	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-204	4-chlorophenyl	CH	CH	CH	CH	Me	Me	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-205	2-chloropyridin-3-yl	CH	CH	CH	CH	Me	Me	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-206	4-nitrophenyl	CH	CH	CH	CH	Me	Me	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-207	4-cyanophenyl	CH	CH	CH	CH	Me	Me	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-208	phenyl	CF	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl sulfonylphenyl
1-209	2-fluorophenyl	CF	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl sulfonylphenyl
1-210	4-fluorophenyl	CF	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl sulfonylphenyl
1-211	4-chlorophenyl	CF	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl sulfonylphenyl
1-212	2-chloropyridin-3-yl	CF	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl sulfonylphenyl
1-213	4-nitrophenyl	CF	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl sulfonylphenyl
1-214	4-cyanophenyl	CF	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl sulfonylphenyl
1-215	phenyl	CH	CH	CH	CH	Me	H	2,4-dibromo-6-trifluoromethyl sulfonylphenyl
1-216	2-fluorophenyl	CH	CH	CH	CH	Me	H	2,4-dibromo-6-trifluoromethyl sulfonylphenyl
1-217	4-fluorophenyl	CH	CH	CH	CH	Me	H	2,4-dibromo-6-trifluoromethyl sulfonylphenyl
1-218	4-chlorophenyl	CH	CH	CH	CH	Me	H	2,4-dibromo-6-trifluoromethyl sulfonylphenyl
1-219	2-chloropyridin-3-yl	CH	CH	CH	CH	Me	H	2,4-dibromo-6-trifluoromethyl sulfonylphenyl
1-220	4-nitrophenyl	CH	CH	CH	CH	Me	H	2,4-dibromo-6-trifluoromethyl sulfonylphenyl

Table 1-12

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
1-221	4-cyanophenyl	CH	CH	CH	CH	Me	H	2,4-dibromo-6-trifluoromethyl sulfonylphenyl
1-222	phenyl	CH	CH	CH	CH	H	Me	2,4-dibromo-6-trifluoromethyl sulfonylphenyl
1-223	2-fluorophenyl	CH	CH	CH	CH	H	Me	2,4-dibromo-6-trifluoromethyl sulfonylphenyl
1-224	4-fluorophenyl	CH	CH	CH	CH	H	Me	2,4-dibromo-6-trifluoromethyl sulfonylphenyl
1-225	4-chlorophenyl	CH	CH	CH	CH	H	Me	2,4-dibromo-6-trifluoromethyl sulfonylphenyl
1-226	2-chloropyridin-3-yl	CH	CH	CH	CH	H	Me	2,4-dibromo-6-trifluoromethyl sulfonylphenyl
1-227	4-nitrophenyl	CH	CH	CH	CH	H	Me	2,4-dibromo-6-trifluoromethyl sulfonylphenyl
1-228	4-cyanophenyl	CH	CH	CH	CH	H	Me	2,4-dibromo-6-trifluoromethyl sulfonylphenyl
1-229	phenyl	CH	CH	CH	CH	Me	Me	2,4-dibromo-6-trifluoromethyl sulfonylphenyl
1-230	2-fluorophenyl	CH	CH	CH	CH	Me	Me	2,4-dibromo-6-trifluoromethyl sulfonylphenyl
1-231	4-fluorophenyl	CH	CH	CH	CH	Me	Me	2,4-dibromo-6-trifluoromethyl sulfonylphenyl
1-232	4-chlorophenyl	CH	CH	CH	CH	Me	Me	2,4-dibromo-6-trifluoromethyl sulfonylphenyl
1-233	2-chloropyridin-3-yl	CH	CH	CH	CH	Me	Me	2,4-dibromo-6-trifluoromethyl sulfonylphenyl
1-234	4-nitrophenyl	CH	CH	CH	CH	Me	Me	2,4-dibromo-6-trifluoromethyl sulfonylphenyl
1-235	4-cyanophenyl	CH	CH	CH	CH	Me	Me	2,4-dibromo-6-trifluoromethyl sulfonylphenyl
1-236	phenyl	CF	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-237	2-fluorophenyl	CF	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-238	4-fluorophenyl	CF	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-239	4-chlorophenyl	CF	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-240	2-chloropyridin-3-yl	CF	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl sulfinylphenyl

Table 1-13

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
1-241	4-nitrophenyl	CF	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-242	4-cyanophenyl	CF	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-243	phenyl	CH	CH	CH	CH	Me	H	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-244	2-fluorophenyl	CH	CH	CH	CH	Me	H	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-245	4-fluorophenyl	CH	CH	CH	CH	Me	H	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-246	4-chlorophenyl	CH	CH	CH	CH	Me	H	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-247	2-chloropyridin-3-yl	CH	CH	CH	CH	Me	H	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-248	4-nitrophenyl	CH	CH	CH	CH	Me	H	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-249	4-cyanophenyl	CH	CH	CH	CH	Me	H	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-250	phenyl	CH	CH	CH	CH	H	Me	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-251	2-fluorophenyl	CH	CH	CH	CH	H	Me	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-252	4-fluorophenyl	CH	CH	CH	CH	H	Me	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-253	4-chlorophenyl	CH	CH	CH	CH	H	Me	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-254	2-chloropyridin-3-yl	CH	CH	CH	CH	H	Me	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-255	4-nitrophenyl	CH	CH	CH	CH	H	Me	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-256	4-cyanophenyl	CH	CH	CH	CH	H	Me	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-257	phenyl	CH	CH	CH	CH	Me	Me	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-258	2-fluorophenyl	CH	CH	CH	CH	Me	Me	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-259	4-fluorophenyl	CH	CH	CH	CH	Me	Me	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-260	4-chlorophenyl	CH	CH	CH	CH	Me	Me	2,4-dibromo-6-trifluoromethyl sulfinylphenyl

Table 1-14

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
1-261	2-chloropyridin-3-yl	CH	CH	CH	CH	Me	Me	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-262	4-nitrophenyl	CH	CH	CH	CH	Me	Me	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-263	4-cyanophenyl	CH	CH	CH	CH	Me	Me	2,4-dibromo-6-trifluoromethyl sulfinylphenyl
1-264	phenyl	CH	CH	CH	CH	H	H	4-bromo-2-chloro-6-trifluoromethylthiophenyl
1-265	phenyl	CH	CH	CH	CH	H	H	2-bromo-4-chloro-6-trifluoromethylthiophenyl
1-266	phenyl	CH	CH	CH	CH	H	H	2-chloro-4-(4-cyanophenyl)-6-trifluoromethylthiophenyl
1-267	phenyl	CH	CH	CH	CH	H	H	2-chloro-4-(2-trifluoromethylphenyl)-6-trifluoromethylthiophenyl
1-268	phenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl)phenyl
1-269	2-fluorophenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl)phenyl
1-270	4-fluorophenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl)phenyl
1-271	4-chlorophenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl)phenyl
1-272	2-chloropyridin-3-yl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl)phenyl
1-273	4-nitrophenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl)phenyl
1-274	4-cyanophenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl)phenyl
1-275	phenyl	CF	CH	CH	CH	H	H	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl)phenyl
1-276	2-fluorophenyl	CF	CH	CH	CH	H	H	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl)phenyl
1-277	4-fluorophenyl	CF	CH	CH	CH	H	H	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl)phenyl
1-278	4-chlorophenyl	CF	CH	CH	CH	H	H	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl)phenyl
1-279	2-chloropyridin-3-yl	CF	CH	CH	CH	H	H	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl)phenyl
1-280	4-nitrophenyl	CF	CH	CH	CH	H	H	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl)phenyl

Table 1-15

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
1-281	4-cyanophenyl	CF	CH	CH	CH	H	H	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl) phenyl
1-282	phenyl	CH	CH	CH	CH	Me	H	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl) phenyl
1-283	2-fluorophenyl	CH	CH	CH	CH	Me	H	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl) phenyl
1-284	4-fluorophenyl	CH	CH	CH	CH	Me	H	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl) phenyl
1-285	4-chlorophenyl	CH	CH	CH	CH	Me	H	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl) phenyl
1-286	2-chloropyridin-3-yl	CH	CH	CH	CH	Me	H	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl) phenyl
1-287	4-nitrophenyl	CH	CH	CH	CH	Me	H	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl) phenyl
1-288	4-cyanophenyl	CH	CH	CH	CH	Me	H	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl) phenyl
1-289	phenyl	CH	CH	CH	CH	H	Me	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl) phenyl
1-290	2-fluorophenyl	CH	CH	CH	CH	H	Me	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl) phenyl
1-291	4-fluorophenyl	CH	CH	CH	CH	H	Me	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl) phenyl
1-292	4-chlorophenyl	CH	CH	CH	CH	H	Me	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl) phenyl
1-293	2-chloropyridin-3-yl	CH	CH	CH	CH	H	Me	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl) phenyl
1-294	4-nitrophenyl	CH	CH	CH	CH	H	Me	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl) phenyl
1-295	4-cyanophenyl	CH	CH	CH	CH	H	Me	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl) phenyl

Table 1-16

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
1-296	phenyl	CH	CH	CH	CH	Me	Me	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl) phenyl
1-297	2-fluorophenyl	CH	CH	CH	CH	Me	Me	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl) phenyl
1-298	4-fluorophenyl	CH	CH	CH	CH	Me	Me	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl) phenyl
1-299	4-chlorophenyl	CH	CH	CH	CH	Me	Me	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl) phenyl
1-300	2-chloropyridin-3-yl	CH	CH	CH	CH	Me	Me	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl) phenyl
1-301	4-nitrophenyl	CH	CH	CH	CH	Me	Me	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl) phenyl
1-302	4-cyanophenyl	CH	CH	CH	CH	Me	Me	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl) phenyl
1-303	phenyl	CH	CH	CH	CH	H	H	6-bromo-8-heptafluoro isopropylquinolin-5-yl
1-304	2-fluorophenyl	CH	CH	CH	CH	H	H	6-bromo-8-heptafluoro isopropylquinolin-5-yl
1-305	4-nitrophenyl	CH	CH	CH	CH	H	H	6-bromo-8-heptafluoro isopropylquinolin-5-yl
1-306	phenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl) phenyl
1-307	phenyl	CH	CH	CH	CH	H	H	2,6-dichloro-4-(2,2,2-trifluoro-1-trifluoromethylethoxy) phenyl
1-308	2-fluorophenyl	CH	CH	CH	CH	H	H	2,6-dichloro-4-(2,2,2-trifluoro-1-trifluoromethylethoxy) phenyl
1-309	phenyl	CH	CH	CH	CH	H	H	5,7-dibromo-2,2,3,3-tetrafluoro-1,4-benzodioxan-5-yl
1-310	2-fluorophenyl	CH	CH	CH	CH	H	H	5,7-dibromo-2,2,3,3-tetrafluoro-1,4-benzodioxan-5-yl
1-311	4-fluorophenyl	CH	CH	CH	CH	H	H	5,7-dibromo-2,2,3,3-tetrafluoro-1,4-benzodioxan-5-yl
1-312	4-nitrophenyl	CH	CH	CH	CH	H	H	5,7-dibromo-2,2,3,3-tetrafluoro-1,4-benzodioxan-5-yl
1-313	phenyl	CH	CH	CH	CH	H	H	5,7-dibromo-2,2-difluoro-1,3-benzodioxolol-4-yl
1-314	2-fluorophenyl	CH	CH	CH	CH	H	H	2,6-dichloro-4-trifluoromethylphenyl
1-315	2,6-difluorophenyl	CH	CH	CH	CH	H	H	2,6-dichloro-4-trifluoromethylphenyl

Table 1-17

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
1-316	phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl phenyl
1-317	4-fluoro-3-nitrophenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl phenyl
1-318	5-fluoro-2-nitrophenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl phenyl
1-319	2-fluoro-6-iodophenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl phenyl
1-320	4-nitrophenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl phenyl
1-321	4-phenyl azophenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl phenyl
1-322	2-(4-trifluoromethylphenyl) phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl phenyl
1-323	4-methoxy carbonylphenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl phenyl
1-324	2,6-dimethoxy phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl phenyl
1-325	pyrrol-2-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl phenyl
1-326	5-(phenylethynyl) furan-2-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl phenyl
1-327	5-(phenylethynyl) pyridin-3-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl phenyl
1-328	4-pyridine	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl phenyl
1-329	2,4-dichloro-3-pyridine	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl phenyl
1-330	3-thienyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl phenyl
1-331	2-methoxyphenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl phenyl
1-332	2-phenoxyphenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl phenyl
1-333	2-quinolyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl phenyl
1-334	4-quinolyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl phenyl
1-335	2-phenylquinolin-4-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl phenyl

Table 1-18

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
1-336	1-naphthyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl phenyl
1-337	anthracen-9-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl phenyl
1-338	acridin-9-yl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl phenyl
1-339	phenyl	CH	CH	CH	CH	H	H	2-bromo-4,6-bis(trifluoromethyl)phenyl
1-340	phenyl	CH	CH	CH	CH	H	H	2,4-bis(trifluoromethyl) phenyl
1-341	2-cyanophenyl	CH	CH	CH	CH	H	H	2,4-bis(trifluoromethyl) phenyl
1-342	3,5-difluorophenyl	CH	CH	CH	CH	H	H	2,4-bis(trifluoromethyl) phenyl
1-343	2,6-difluorophenyl	CH	CH	CH	CH	H	H	2,4-bis(trifluoromethyl) phenyl
1-344	2,3,4-trifluoro phenyl	CH	CH	CH	CH	H	H	2,4-bis(trifluoromethyl) phenyl
1-345	4-chlorophenyl	CH	CH	CH	CH	H	H	2,4-bis(trifluoromethyl) phenyl
1-346	2,4-dichloro phenyl	CH	CH	CH	CH	H	H	2,4-bis(trifluoromethyl) phenyl
1-347	4,5-difluoro-2-nitrophenyl	CH	CH	CH	CH	H	H	2,4-bis(trifluoromethyl) phenyl
1-348	3-fluoro-2-methylphenyl	CH	CH	CH	CH	H	H	2,4-bis(trifluoromethyl) phenyl
1-349	4-methylphenyl	CH	CH	CH	CH	H	H	2,4-bis(trifluoromethyl) phenyl
1-350	4-ethylphenyl	CH	CH	CH	CH	H	H	2,4-bis(trifluoromethyl) phenyl
1-351	3-methoxyphenyl	CH	CH	CH	CH	H	H	2,4-bis(trifluoromethyl) phenyl
1-352	4-methoxyphenyl	CH	CH	CH	CH	H	H	2,4-bis(trifluoromethyl) phenyl
1-353	3,4,5-trimethoxy phenyl	CH	CH	CH	CH	H	H	2,4-bis(trifluoromethyl) phenyl
1-354	1-naphthyl	CH	CH	CH	CH	H	H	2,4-bis(trifluoromethyl) phenyl
1-355	2-naphthyl	CH	CH	CH	CH	H	H	2,4-bis(trifluoromethyl) phenyl

Table 1-19

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
1-356	5-chloro-2-thienyl	CH	CH	CH	CH	H	H	2,4-bis(trifluoromethyl)phenyl
1-357	2-chloro-3-pyridyl	CH	CH	CH	CH	H	H	2,4-bis(trifluoromethyl)phenyl
1-358	6-methyl-2-pyridyl	CH	CH	CH	CH	H	H	2,4-bis(trifluoromethyl)phenyl
1-359	5-chloro-2-pyridyl	CH	CH	CH	CH	H	H	2,4-bis(trifluoromethyl)phenyl
1-360	6-hydroxy-2-pyridyl	CH	CH	CH	CH	H	H	2,4-bis(trifluoromethyl)phenyl
1-361	5-methyl-pyrazin-2-yl	CH	CH	CH	CH	H	H	2,4-bis(trifluoromethyl)phenyl
1-362	pyrazin-2-yl	CH	CH	CH	CH	H	H	2,4-bis(trifluoromethyl)phenyl
1-363	5-methyl-2-thienyl	CH	CH	CH	CH	H	H	2,4-bis(trifluoromethyl)phenyl
1-364	3-methyl-2-thienyl	CH	CH	CH	CH	H	H	2,4-bis(trifluoromethyl)phenyl
1-365	phenyl	CH	CH	CH	CH	H	H	2,5-bis(trifluoromethyl)phenyl
1-366	phenyl	CH	CH	CH	CH	H	H	2-chloro-4,6-bis(trifluoromethyl)phenyl
1-367	2,6-difluorophenyl	CH	CH	CH	CH	H	H	2-chloro-4,6-bis(trifluoromethyl)phenyl
1-368	4-nitrophenyl	CH	CH	CH	CH	H	H	2-chloro-4,6-bis(trifluoromethyl)phenyl
1-369	phenyl	CH	CH	CH	CH	H	H	2-bromo-6-methyl-4-(trifluoromethanesulfonyloxy)phenyl
1-370	2-fluorophenyl	CH	CH	CH	CH	H	H	2-bromo-6-methyl-4-(trifluoromethanesulfonyloxy)phenyl
1-371	phenyl	CH	CH	CH	CH	H	H	2-chloro-6-methyl-4-(trifluoromethanesulfonyloxy)phenyl
1-372	phenyl	CH	CH	CH	CH	H	H	2-methyl-4-(trifluoromethanesulfonyloxy)phenyl
1-373	phenyl	CH	CH	CH	CH	H	H	4-(heptafluoroisopropyl)-2-methylnaphthyl
1-374	2-fluorophenyl	CH	CH	CH	CH	H	H	4-(heptafluoroisopropyl)-2-methylnaphthyl
1-375	phenyl	CH	CH	CH	CH	H	H	7-heptafluoroisopropylindan-4-yl

Table 1-20

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
1-376	phenyl	CH	CH	CH	CH	H	H	2,6-dichloro-4-pentafluoro sulfanylphenyl
1-377	phenyl	CH	CH	CH	CH	H	H	4-(3,4-difluorophenyl)-2,6-dimethylphenyl
1-378	phenyl	CH	CH	CH	CH	H	H	4-(4-fluoro-3-methylphenyl)-2,6-dimethylphenyl
1-379	phenyl	CH	CH	CH	CH	H	H	4-(furan-3-yl)-2,6-dimethylphenyl
1-380	2-chlorophenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-(thiophen-2-yl)phenyl
1-381	2-chlorophenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-(thiophen-3-yl)phenyl
1-382	phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-cyclohexylphenyl
1-383	phenyl	CH	CH	CH	CH	H	H	3-cyclohexylphenyl
1-384	phenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-(pentafluoropropionyl)phenyl
1-385	phenyl	CH	CH	CH	CH	H	H	4-(heptafluorobutyryl)-2,6-dimethylphenyl
1-386	phenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-(2,2,2-trifluoro-1-trifluoromethylethyl)phenyl
1-387	phenyl	CH	CH	CH	CH	H	H	2-bromo-6-(2,2,2-trifluoro-1-trifluoromethylethoxy)pyridin-3-yl
1-388	phenyl	CH	CH	CH	CH	H	H	2,2,3,3,4,4,4-pentafluorobutyl
1-389	phenyl	CH	CH	CH	CH	H	H	2,2,3,3,3-pentafluoropropyl
1-390	phenyl	CH	CH	CH	CH	H	H	2,4,6-tribromo-3-heptafluoropropylthiophenyl
1-391	2-chloropyridin-3-yl	CH	CH	CH	CH	H	H	2,4,6-tribromo-3-heptafluoropropylthiophenyl
1-392	2-fluorophenyl	CH	CH	CH	CH	H	H	2,4,6-tribromo-3-heptafluoropropylthiophenyl
1-393	2-fluorophenyl	CH	CH	CH	CH	H	H	4-trifluoromethylthiophenyl
1-394	2-fluorophenyl	CH	CH	CH	CH	H	H	4-trifluoromethylsulfonylphenyl
1-395	phenyl	CH	CH	CH	CH	H	H	4-heptafluoropropylthio phenyl

Table 1-21

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
1-396	phenyl	CH	CH	CH	CH	H	H	4-heptafluoroisopropyl thiophenyl
1-397	phenyl	CH	CH	CH	CH	H	H	4-heptafluoropropylthio-2-methylphenyl
1-398	4-hydroxyphenyl	CH	CH	CH	CH	Me	Me	4-heptafluoropropyl sulfonylphenyl
1-399	2-fluorophenyl	CH	CH	CH	CH	H	H	4-heptafluoropropylthio-2-methylphenyl
1-400	phenyl	CH	CH	CH	CH	H	H	4-methyl-6-(2,2,2-trifluoro-1-trifluoromethyl-ethoxy)pyridin-3-yl
1-401	2-fluorophenyl	CH	CH	CH	CH	H	H	4-methyl-6-(2,2,2-trifluoro-1-trifluoromethyl-ethoxy)pyridin-3-yl
1-402	2-fluorophenyl	CH	CH	CH	CH	H	H	2-bromo-6-(2,2,2-trifluoro-1-trifluoromethyl-ethoxy)pyridin-3-yl
1-403	phenyl	CH	CH	CH	CH	H	H	4-(2,2,2-trifluoro-1-(trifluoromethyl)-ethoxy)pyridin-3-yl
1-404	2-fluorophenyl	CH	CH	CH	CH	H	H	4-(2,2,2-trifluoro-1-(trifluoromethyl)-ethoxy)pyridin-3-yl
1-405	phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethoxy phenyl
1-406	2-fluorophenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethoxy phenyl
1-407	4-nitrophenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethoxy phenyl
1-408	phenyl	CH	CH	CH	CH	H	H	4-bromo-6-trifluoromethoxy phenyl
1-409	2,4-di fluorophenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethyl phenyl
1-410	phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-(heptafluoro propylthio)phenyl
1-411	2-fluorophenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-(heptafluoro propylthio)phenyl
1-412	4-nitrophenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-(heptafluoro propylthio)phenyl
1-413	phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-(nonafluoro butylthio)phenyl
1-414	2-fluorophenyl	CH	CH	CH	CH	H	H	2-bromo-4-chloro-6-trifluoro methylphenyl
1-415	phenyl	CH	CH	CH	CH	H	H	2-bromo-4-chloro-6-trifluoro methylphenyl

Table 1-22

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
1-416	2-fluorophenyl	CH	CH	CH	CH	H	H	2-bromo-6-chloro-4-trifluoromethylphenyl
1-417	phenyl	CH	CH	CH	CH	H	H	4-bromo-2-chloro-6-trifluoromethylphenyl
1-418	2,6-difluorophenyl	CH	CH	CH	CH	H	H	4-bromo-2-chloro-6-trifluoromethylphenyl
1-419	phenyl	CH	CH	CH	CH	H	H	2-bromo-4-fluoro-6-trifluoromethylphenyl
1-420	phenyl	CH	CH	CH	CH	H	H	4-fluoro-6-trifluoromethylphenyl
1-421	2-iodophenyl	CH	CH	CH	CH	H	H	4-heptafluoroisopropyl-2-methylphenyl
1-422	phenyl	CH	CH	CH	CH	H	H	2-sec-butyl-4-heptafluoroisopropylphenyl
1-423	phenyl	CH	CH	CH	CH	H	H	2-chloro-4-heptafluoroisopropylphenyl
1-424	2-fluorophenyl	CH	CH	CH	CH	H	H	4-heptafluoroisopropylphenyl
1-425	phenyl	CH	CH	CH	CH	H	H	2-methanesulfonyl-4-heptafluoroisopropylphenyl
1-426	4-nitrophenyl	CH	CH	CH	CH	H	H	2-methanesulfonyl-4-heptafluoroisopropylphenyl
1-427	phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-trifluoromethylphenyl
1-428	2-fluorophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-trifluoromethylphenyl
1-429	2,6-difluorophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-trifluoromethylphenyl
1-430	phenyl	CH	CH	CH	CH	H	H	2,6-dichloro-4-(2,2,3,3,3-pentafluoropropoxy)phenyl
1-431	2-fluorophenyl	CH	CH	CH	CH	H	H	2,6-dichloro-4-(2,2,3,3,3-pentafluoropropoxy)phenyl
1-432	phenyl	CH	CH	CH	CH	H	H	2-methyl-4-(2,2,2-trifluoroethoxy)phenyl
1-433	2-chloropyridin-3-yl	CH	CH	CH	CH	H	H	2,6-dichloro-4-(2,2,3,3,3-pentafluoropropoxy)phenyl
1-434	phenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-(2-chloro-2,2-difluoro-1-(chlorodifluoromethyl)-1-hydroxyethyl)phenyl
1-435	phenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-(2,2,2-trifluoro-1-trifluoromethyl-1-methoxy)phenyl

Table 1-23

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
1-436	2-fluorophenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-(2,2,2-trifluoro-1-trifluoromethyl-1-methoxy)phenyl
1-437	phenyl	CH	CH	CH	CH	H	H	2,6-dichloro-4-trifluoromethoxyphenyl
1-438	phenyl	CH	CH	CH	CH	H	H	2-methyl-4-(trifluoromethoxy)phenyl
1-439	phenyl	CH	CH	CH	CH	H	H	5-nitropyridin-2-yl
1-440	phenyl	CH	CH	CH	CH	H	H	5-chloropyridin-2-yl
1-441	phenyl	CH	CH	CH	CH	H	H	4-methyl-6-(heptafluoroisopropyl)pyridin-3-yl
1-442	phenyl	CH	CH	CH	CH	H	H	3-chloro-5-trifluoromethylpyridin-2-yl
1-443	phenyl	CH	CH	CH	CH	H	H	5-heptafluoroisopropyl-2-methoxycarbonyl-4-methylthiophen-3-yl
1-444	2-fluorophenyl	CH	CH	CH	CH	H	H	5-heptafluoroisopropyl-2-methoxycarbonyl-4-methylthiophen-3-yl
1-445	phenyl	CH	CH	CH	CH	H	H	2-bromo-6-chloro-4-methylpyridin-3-yl
1-446	phenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-trifluoromethylphenyl
1-447	2-fluorophenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-trifluoromethylphenyl
1-448	phenyl	CH	CH	CH	CH	H	H	4-trifluoromethylbenzyl
1-449	phenyl	CH	CH	CH	CH	H	H	3-trifluoromethylbenzyl
1-450	phenyl	CH	CH	CH	CH	H	H	2-trifluoromethylbenzyl
1-451	phenyl	CH	CH	CH	CH	H	H	4-nitrobenzyl
1-452	phenyl	CH	CH	CH	CH	H	H	3,5-bis(trifluoromethyl)benzyl
1-453	phenyl	CH	CH	CH	CH	H	H	4-chloro-2,6-dimethylphenyl
1-454	phenyl	CH	CH	CH	CH	H	H	4-bromo-2,6-dimethylphenyl
1-455	phenyl	CH	CH	CH	CH	H	H	4-iodine-2,6-dimethylphenyl

Table 1-24

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
1-456	2,6-difluorophenyl	CH	CH	CH	CH	H	H	4-iodine-2,6-dimethylphenyl
1-457	phenyl	CH	CH	CH	CH	H	H	4-chloro-2-trifluoromethyl phenyl
1-458	phenyl	CH	CH	CH	CH	H	H	2-chloro-6-trifluoromethyl phenyl
1-459	phenyl	CH	CH	CH	CH	H	H	4-iodine-2-trifluoromethyl phenyl
1-460	phenyl	CH	CH	CH	CH	H	H	2-chloro-4-iodine-6-methyl phenyl
1-461	phenyl	CH	CH	CH	CH	H	H	2,6-dimethylphenyl
1-462	phenyl	CH	CH	CH	CH	H	H	4-bromo-2-methyl-5-trifluoro methyl-2H-pyrazol-3-yl
1-463	phenyl	CH	CH	CH	CH	H	H	2,3,5,6-tetrafluoro-4-trifluoromethylphenyl
1-464	phenyl	CH	CH	CH	CH	H	H	2,3,4,5,6-pentafluorophenyl
1-465	2-fluorophenyl	CH	CH	CH	CH	H	H	2,3,4-trifluorophenyl
1-466	2-fluorophenyl	CH	CH	CH	CH	H	H	4-trifluoromethylphenyl
1-467	2-fluorophenyl	CH	CH	CH	CH	H	H	2-bromo-4-trifluoromethyl phenyl
1-468	phenyl	CH	CH	CH	CH	H	H	2-bromo-6-chloro-4-trifluoro methylphenyl
1-469	2-fluorophenyl	CH	CH	CH	CH	H	H	2-trifluoromethylphenyl
1-470	phenyl	CH	CH	CH	CH	H	H	2,4-dichloro-6-trifluoromethyl phenyl
1-471	phenyl	CH	CH	CH	CH	H	H	2-bromo-4-isopropyl-6-trifluoromethylphenyl
1-472	2-fluorophenyl	CH	CH	CH	CH	H	H	2-bromo-4-isopropyl-6-trifluoromethylphenyl
1-473	phenyl	CH	CH	CH	CH	H	H	4-(heptafluoroisopropyl carbonyl)phenyl
1-474	phenyl	CH	CH	CH	CH	H	H	2-methyl-4-nitrophenyl
1-475	phenyl	CH	CH	CH	CH	H	H	2,4-dichlorophenyl

Table 1-25

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
1-476	phenyl	CH	CH	CH	CH	H	H	3-iodine-5-nitrophenyl
1-477	phenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-nitrophenyl
1-478	phenyl	CH	CH	CH	CH	H	H	5-nitro-2-pyrimidinyl
1-479	phenyl	CH	CH	CH	CH	H	H	3-bromo-5-nitro-2-pyridine
1-480	phenyl	CH	CH	CH	CH	H	H	4-tert-butylcarbonyloxy-2-methylphenyl
1-481	phenyl	CH	CH	CH	CH	H	H	4-benzoyloxy-2-methylphenyl
1-482	phenyl	CH	CH	CH	CH	H	H	4-benzoyloxy-6-chloro-2-methylphenyl
1-483	phenyl	CH	CH	CH	CH	H	H	6-chloro-4-hydroxy-2-methylphenyl
1-484	phenyl	CH	CH	CH	CH	H	H	2-bromo-4-hydroxy-6-methylphenyl
1-485	phenyl	CH	CH	CH	CH	H	H	2-bromo-6-methyl-4-(p-toluenesulfonyl oxy)phenyl
1-486	phenyl	CH	CH	CH	CH	Me	H	2,6-dibromo-4-(pyrrolidine-1-carbonyl)phenyl
1-487	phenyl	CH	CH	CH	CH	Me	H	2,6-dibromo-4-ethoxy carbonylphenyl
1-488	phenyl	CH	CH	CH	CH	H	H	2,6-dichloro-4-(2,5-dioxo-3,3,4,4-tetrafluoropyrrolidin-1-yl)phenyl
1-489	phenyl	CH	CH	CH	CH	H	H	2,6-dichloro-4-(2,5-dioxopyrrolidin-1-yl)phenyl
1-490	phenyl	CH	CH	CH	CH	H	H	2,6-dichloro-4-(1,3-dioxoisindolin-2-yl)phenyl
1-491	phenyl	CH	CH	CH	CH	H	H	benzothiazol-2-yl
1-492	phenyl	CH	CH	CH	CH	H	H	benzothiazol-6-yl
1-493	phenyl	CH	CH	CH	CH	H	H	6-chlorobenzothiazol-2-yl
1-494	phenyl	CH	CH	CH	CH	H	H	5,6-dimethylbenzothiazol-2-yl
1-495	phenyl	CH	CH	CH	CH	H	H	6-methoxybenzothiazol-2-yl

Table 1-26

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
1-496	phenyl	CH	CH	CH	CH	H	H	5-chlorobenzoxazol-2-yl
1-497	phenyl	CH	CH	CH	CH	H	H	4,6-dibromo-3H-benzo[d]imidazol-5-yl
1-498	2-chloropyridin-3-yl	CH	CH	CH	CH	H	H	4,6-dibromo-3H-benzo[d]imidazol-5-yl
1-499	phenyl	CH	CH	CH	CH	H	H	quinolin-8-yl
1-500	phenyl	CH	CH	CH	CH	H	H	quinolin-3-yl
1-501	phenyl	CH	CH	CH	CH	H	H	isoquinolin-1-yl
1-502	phenyl	CH	CH	CH	CH	H	H	4-phenylazophenyl
1-503	phenyl	CH	CH	CH	CH	H	H	4-phenylthiazol-2-yl
1-504	phenyl	CH	CH	CH	CH	H	H	3-methylisothiazol-5-yl
1-505	phenyl	CH	CH	CH	CH	H	H	5-phenyl-2H-pyrazol-3-yl
1-506	phenyl	CH	CH	CH	CH	H	H	fluoren-2-yl
1-507	phenyl	CH	CH	CH	CH	H	H	9-oxofluoren-2-yl
1-508	phenyl	CH	CH	CH	CH	H	H	adamantan-1-yl
1-509	phenyl	CH	CH	CH	CH	H	H	adamantan-2-yl
1-510	phenyl	CH	CH	CH	CH	H	H	3H-isindol-1-yl
1-511	phenyl	CH	CH	CH	CH	H	H	2,6-dimethylpyrimidin-4-yl
1-512	phenyl	CH	CH	CH	CH	H	H	3,4-dicyanophenyl
1-513	phenyl	CH	CH	CH	CH	H	H	5-methylthio-1H-[1,2,4]triazol-3-yl
1-514	phenyl	CH	CH	CH	CH	H	H	5-bromothiazol-2-yl
1-515	phenyl	CH	CH	CH	CH	H	H	4-methylthiazol-2-yl

Table 1-27

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
1-516	phenyl	CH	CH	CH	CH	H	H	2-norbornyl
1-517	phenyl	CH	CH	CH	CH	H	H	4-methyl-6-(heptafluoro isopropyl)-benzothiazol-2-yl
1-518	2-fluorophenyl	CH	CH	CH	CH	H	H	4,6-dimethyl-2-(heptafluoro isopropyl)pyrimidin-5-yl
1-519	2-chloropyridin-3-yl	CH	CH	CH	CH	Me	H	4,6-dimethoxy-2-(heptafluoro isopropyl)pyrimidin-5-yl
1-520	phenyl	CH	CH	CH	CH	Me	H	4,6-dimethoxy-2-(heptafluoro isopropyl)pyrimidin-5-yl
1-521	phenyl	CH	CH	CH	CH	H	H	3,5-dichloro-2,6-difluoropyridin-4-yl
1-522	2-fluorophenyl	CH	CH	CH	CH	H	H	3,5-dichloro-2,6-difluoropyridin-4-yl
1-523	phenyl	CH	CH	CH	CH	Me	H	2-carboxy-6-nitrophenyl
1-524	phenyl	CH	CH	CH	CH	Me	H	2-(methylaninocarbonyl)-6-nitrophenyl
1-525	phenyl	CH	CH	CH	CH	Me	H	2-(isopropylaninocarbonyl)-6-nitrophenyl
1-526	phenyl	CH	CH	CH	CH	H	H	2-carboxy-6-nitrophenyl
1-527	phenyl	CH	CH	CH	CH	Me	H	2-carboxy-6-chlorophenyl
1-528	phenyl	CH	CH	CH	CH	Me	H	2,4-dibromo-6-carboxyphenyl
1-529	phenyl	CH	CH	CH	CH	Me	H	2-carboxy-4,6-dichlorophenyl
1-530	phenyl	CH	CH	CH	CH	Me	H	2,6-dichloro-4-methylsulfonyl
1-531	2-hydroxyphenyl	CH	CH	CH	CH	Me	Me	2,6-dibromo-4-methoxysulfonyl phenyl
1-532	3-hydroxyphenyl	CH	CH	CH	CH	Me	Me	2,6-dibromo-4-methoxysulfonyl phenyl
1-533	4-hydroxyphenyl	CH	CH	CH	CH	Me	Me	2,6-dibromo-4-methoxysulfonyl phenyl
1-534	2-fluorophenyl	CH	CH	CH	CH	H	H	4-propylthiophenyl
1-535	2-fluorophenyl	CH	CH	CH	CH	H	H	4-propylsulfinylphenyl

Table 1-28

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
1-536	2-fluorophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-propylthio phenyl
1-537	2-fluorophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-propylsulfonyl phenyl
1-538	2-fluorophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-propylsulfinyl phenyl
1-539	2-fluorophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-phenyl thiophenyl
1-540	phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-phenyl thiophenyl
1-541	phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(4-trifluoromethyl phenylmethylthio)phenyl
1-542	2-fluorophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(4-trifluoromethyl phenylmethylthio)phenyl
1-543	2-chloropyridin-3-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(4-trifluoromethyl phenylmethylthio)phenyl
1-544	4-nitrophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(4-trifluoromethyl phenylmethylthio)phenyl
1-545	4-fluorophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(4-trifluoromethyl phenylmethylthio)phenyl
1-546	phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(2,2,2-trifluoro ethylthio)phenyl
1-547	2-fluorophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(2,2,2-trifluoro ethylthio)phenyl
1-548	2-chloropyridin-3-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(2,2,2-trifluoro ethylthio)phenyl
1-549	4-nitrophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(2,2,2-trifluoro ethylthio)phenyl
1-550	phenyl	CH	CH	CH	CH	H	H	2,6-dichloro-4-nitrophenyl
1-551	phenyl	CH	CH	CH	CH	Me	H	2,6-dichloro-4-cyanophenyl
1-552	phenyl	CH	CH	CH	CH	H	H	4-amino-2,6-dichlorophenyl
1-553	phenyl	CH	CH	CH	CH	H	H	4-cyano-1-methyl-3-(4-trifluoromethylphenyl)-1H-pyrazol-5-yl
1-554	phenyl	CH	CH	CH	CH	H	H	4-acetamino-2,6-dichlorophenyl
1-555	phenyl	CH	CH	CH	CH	H	H	4-benzoylamino-2,6-dichlorophenyl

Table 1-29

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
1-556	phenyl	CH	CH	CH	CH	Me	H	2,6-dibromo-4-methylcarbamoyl phenyl
1-557	phenyl	CH	CH	CH	CH	H	H	1-(3-chloro-5-trifluoromethyl pyridin-2-yl)-4-cyano-1H-imidazol-5-yl
1-558	2-chloropyridin-3-yl	CH	CH	CH	CH	H	H	4-cyano-1-methyl-1H-pyrazol-5-yl
1-559	2-fluorophenyl	CH	CH	CH	CH	H	H	4-cyano-1-methyl-1H-pyrazol-5-yl
1-560	phenyl	CH	CH	CH	CH	H	H	4-cyano-1-t-butyl-1H-pyrazol-5-yl
1-561	phenyl	CH	CH	CH	CH	H	H	4-methyl-6-(heptafluoroisopropyl)benzo[d]thiazol-2-yl
1-562	phenyl	CH	CH	CH	CH	H	H	4-methyl-6-(4-trifluoromethyl phenyl)-1H-pyrazol-5-yl
1-563	phenyl	CH	CH	CH	CH	Me	H	2,6-dibromo-4-(1H-1,2,4-triazol-1-yl)phenyl
1-564	phenyl	CH	CH	CH	CH	Me	H	2,6-dibromo-4-(oxazol-4-yl)phenyl
1-565	phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,2,3-thiadiazol-4-yl)phenyl
1-566	phenyl	CH	CH	CH	CH	H	H	4-heptafluoroisopropyl-2-hydroxy-6-methylphenyl
1-567	phenyl	CH	CH	CH	CH	Me	H	4-heptafluoroisopropyl-2-hydroxy-6-methylphenyl
1-568	phenyl	CH	CH	CH	CH	Me	H	4-heptafluoroisopropyl-2-methanesulfonyloxy-6-methylphenyl
1-569	phenyl	CH	CH	CH	CH	Me	H	4-heptafluoroisopropyl-2-trifluoromethanesulfonyloxy-6-methylphenyl
1-570	phenyl	CH	CH	CH	CH	Me	H	2-acetoxy-4-heptafluoroisopropyl-6-methylphenyl
1-571	phenyl	CH	CH	CH	CH	H	H	4-heptafluoroisopropyl-2-hydroxymethyl-6-methylphenyl
1-572	phenyl	CH	CH	CH	CH	H	H	4-heptafluoroisopropyl-2-methoxymethyl-6-methylphenyl
1-573	phenyl	CH	CH	CH	CH	H	H	2-methylthiomethyl-4-heptafluoroisopropyl-6-trifluoromethylphenyl
1-574	phenyl	CH	CH	CH	CH	H	H	2-bromo-6-chloro-4-(3,5-dichloro-pyridin-2-yloxy)phenyl
1-575	phenyl	CH	CH	CH	CH	Me	H	2-bromo-4-(3-chloro-5-trifluoromethylpyridin-2-yloxy)-6-methylphenyl

Table 1-30

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
1-576	phenyl	CH	CH	CH	CH	H	H	2-bromo-4-(3-chloro-5-trifluoromethylpyridin-2-yloxy)-6-methylphenyl
1-577	2-fluorophenyl	CH	CH	CH	CH	H	H	2-bromo-4-(3-chloro-5-trifluoromethylpyridin-2-yloxy)-6-methylphenyl
1-578	2,6-difluorophenyl	CH	CH	CH	CH	H	H	2-bromo-4-(3-chloro-5-trifluoromethylpyridin-2-yloxy)-6-methylphenyl
1-579	2-cloropyridin-3-yl	CH	CH	CH	CH	H	H	2-bromo-4-(3-chloro-5-trifluoromethylpyridin-2-yloxy)-6-methylphenyl
1-580	phenyl	CH	CH	CH	CH	Me	H	2-chloro-4-(3,5-dichloro pyridin-2-yloxy)phenyl
1-581	phenyl	CH	CH	CH	CH	H	H	2-chloro-4-(4-fluorophenyl)-6-trifluoromethylthiophenyl
1-582	2-cloropyridin-3-yl	phenyl	CH	CH	CH	CH	H	2-chloro-4-(4-fluorophenyl)-6-trifluoromethylthiophenyl
1-583	phenyl	CH	CH	CH	CH	H	H	4-(2,4-bis(trifluoromethyl)phenyl)-2-chloro-6-trifluoromethylthiophenyl
1-584	phenyl	CH	CH	CH	CH	Me	H	4-(3,5-bis(trifluoromethyl)-1H-pyrazol-1-yl)-2,6-dibromophenyl
1-585	2-fluorophenyl	CH	CH	CH	CH	Me	H	4-(3,5-bis(trifluoromethyl)-1H-pyrazol-1-yl)-2,6-dibromophenyl
1-586	2-cloropyridin-3-yl	CH	CH	CH	CH	Me	H	4-(3,5-bis(trifluoromethyl)-1H-pyrazol-1-yl)-2,6-dibromophenyl
1-587	phenyl	CH	CH	CH	CH	H	H	4-(3,5-bis(trifluoromethyl)-1H-pyrazol-1-yl)-2,6-dibromophenyl
1-588	2-fluorophenyl	CH	CH	CH	CH	H	H	4-(3,5-bis(trifluoromethyl)-1H-pyrazol-1-yl)-2,6-dibromophenyl
1-589	2-cloropyridin-3-yl	CH	CH	CH	CH	H	H	4-(3,5-bis(trifluoromethyl)-1H-pyrazol-1-yl)-2,6-dibromophenyl
1-590	4-fluorophenyl	CH	CH	CH	CH	H	H	4-(3,5-bis(trifluoromethyl)-1H-pyrazol-1-yl)-2,6-dibromophenyl

Table 1-31

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
1-591	phenyl	CH	CH	CH	CH	Me	H	4-(3,5-bis(trifluoromethyl)-1H-pyrazol-1-yl)-2,6-dichlorophenyl
1-592	phenyl	CH	CH	CH	CH	H	H	4-(3,5-bis(trifluoromethyl)-1H-pyrazol-1-ylmethyl)-2-bromo-6-methylphenyl
1-593	2-fluorophenyl	CH	CH	CH	CH	H	H	4-(3,5-bis(trifluoromethyl)-1H-pyrazol-1-ylmethyl)-2-bromo-6-methylphenyl
1-594	2-chloropyridin-3-yl	CH	CH	CH	CH	H	H	4-(3,5-bis(trifluoromethyl)-1H-pyrazol-1-ylmethyl)-2-bromo-6-methylphenyl
1-595	phenyl	CH	CH	CH	CH	Me	H	4-(3,5-bis(trifluoromethyl)-1H-pyrazole-1-ylmethyl)-2-bromo-6-methylphenyl
1-596	phenyl	CH	CH	CH	CH	H	H	5-bromo-7-(heptafluoroisopropyl)-2,3-dihydro-1H-inden-4-yl
1-597	2-fluorophenyl	CH	CH	CH	CH	H	H	5-bromo-7-(heptafluoroisopropyl)-2,3-dihydro-1H-inden-4-yl
1-598	phenyl	CH	CH	CH	CH	H	H	5-chloro-7-(heptafluoroisopropyl)-2,3-dihydro-1H-inden-4-yl
1-599	2-fluorophenyl	CH	CH	CH	CH	H	H	5-chloro-7-(heptafluoroisopropyl)-2,3-dihydro-1H-inden-4-yl
1-600	2-fluorophenyl	CCI	CH	CH	CH	Me	H	4-methyl-6-(2,2,2-trifluoro-1-(trifluoromethyl)ethoxy)pyridin-3-yl
1-601	phenyl	CF	CH	CH	CF	H	H	4-heptafluoroisopropyl-2-methylphenyl
1-602	phenyl	CCI	CH	CH	CH	H	H	2,4-bis(trifluoromethyl)phenyl
1-603	2-fluorophenyl	CH	CH	CH	CH	H	Me	4-heptafluoroisopropyl-2-methanesulfonylphenyl
1-604	phenyl	CH	CH	CH	CH	H	n-Bu	2-tert-butyl-4-heptafluoroisopropylphenyl
1-605	phenyl	CH	CH	CH	CH	H	H	2-chloro-6-trifluoromethylthiophenyl

Table 2-1

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
2-1	phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-2	2-methylphenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-3	3-methylphenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-4	4-methylphenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-5	2-ethylphenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-6	3-ethylphenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-7	4-ethylphenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-8	2-fluorophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-9	3-fluorophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-10	4-fluorophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-11	2-chlorophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-12	3-chlorophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-13	4-chlorophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-14	2-bromophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-15	3-bromophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-16	4-bromophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-17	2-iodophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-18	3-iodophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-19	4-iodophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-20	3-cyanophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl

Table 2-2

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
2-21	4-cyanophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-22	2-nitrophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-23	3-nitrophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-24	4-nitrophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-25	2-aminophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-26	3-aminophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-27	4-aminophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-28	2-trifluoromethylphenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-29	3-trifluoromethylphenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-30	4-trifluoromethylphenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-31	2-hydroxyphenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-32	2-methoxyphenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-33	3-methoxyphenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-34	4-methoxyphenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-35	2-phenoxyphenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-36	4-(1,1-dimethylethyl)phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-37	3-(dimethylamino)phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-38	4-(dimethylamino)phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-39	4-trifluoromethoxyphenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-40	2-(acetylamino)phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl

Table 2-3

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
2-41	3-(acetylamino)phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-42	4-(acetylamino)phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-43	2-acetoxyphenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-44	2-(methoxy carbonyl)phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-45	4-(methoxy carbonyl)phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-46	2,3-dimethylphenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-47	2,4-dimethylphenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-48	2,6-dimethylphenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-49	2,3-difluorophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-50	2,4-difluorophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-51	2,5-difluorophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-52	2,6-difluorophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-53	3,4-difluorophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-54	3,5-difluorophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-55	2,3-dichlorophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-56	2,4-dichlorophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-57	2,5-dichlorophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-58	2,6-dichlorophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-59	3,4-dichlorophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-60	2,4-dinitrophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl

Table 2-4

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
2-61	3,4-dinitro phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy) phenyl
2-62	2,6-dimethoxy phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy) phenyl
2-63	3,5-dimethoxy phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy) phenyl
2-64	3-methyl-4-nitro phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy) phenyl
2-65	5-amino-2-fluoro phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy) phenyl
2-66	3-fluoro-2-methyl phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy) phenyl
2-67	2-fluoro-5-nitro phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy) phenyl
2-68	4-fluoro-3-nitro phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy) phenyl
2-69	5-fluoro-2-nitro phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy) phenyl
2-70	2-fluoro-6-iodine phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy) phenyl
2-71	2-fluoro-5-trifluoro methylphenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy) phenyl
2-72	2-chloro-4-nitro phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy) phenyl
2-73	2-chloro-4-fluoro phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy) phenyl
2-74	2-chloro-6-fluoro phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy) phenyl
2-75	3-chloro-4-fluoro phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy) phenyl
2-76	4-chloro-2-fluoro phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy) phenyl
2-77	4-chloro-2-nitro phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy) phenyl
2-78	3-methoxy-4-nitro phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy) phenyl
2-79	2-methoxy-4-nitro phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy) phenyl
2-80	2,3,4-trifluoro phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy) phenyl

Table 2-5

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
2-81	2,4,6-trimethyl phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-82	2,3,6-trifluoro phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-83	2,4,5-trimethoxy phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-84	3,4,5-trimethoxy phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-85	2,3,4,5,6-penta fluorophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-86	2-biphenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-87	3-biphenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-88	1-naphthyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-89	2-naphthyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-90	pyridin-2-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-91	pyridin-3-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-92	pyridin-4-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-93	2-methylpyridin-5-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-94	3-methylpyridin-2-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-95	2-fluoropyridin-3-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-96	2-chloropyridin-3-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-97	2-chloropyridin-4-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-98	2-chloropyridin-6-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-99	2-chloropyridin-5-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-100	5-chloropyridin-2-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl

Table 2-6

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
2-101	4-trifluoromethyl pyridin-3-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-102	3-hydroxy pyridin-2-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-103	2-phenoxy pyridin-3-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-104	2-methylthio pyridin-3-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-105	2,6-dimethoxy pyridin-3-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-106	2,3-dichloro pyridin-5-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-107	2,5-dichloro pyridin-3-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-108	2,6-dichloro pyridin-3-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-109	3,5-dichloro pyridin-4-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-110	pyridin-N-oxid-2-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-111	N-methylpyrrol-2-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-112	pyrazin-2-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-113	2-methylpyrazin-5-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-114	4-trifluoromethyl pyrimidin-5-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-115	furan-2-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-116	furan-3-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-117	2-tetrahydro furanyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-118	3-tetrahydro furanyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-119	benzofuran-2-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-120	tetrahydropyran-2-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl

Table 2-7

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
2-121	2-methyl-5,6-dihydro-4H-pyran-3-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-122	thiophen-2-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-123	thiophen-3-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-124	3-methylthiophen-2-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-125	2-nitrothiophen-4-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-126	2-methylthiophen-5-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-127	3-chlorothiophen-2-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-128	2-chlorothiophen-5-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-129	3-bromothiophen-2-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-130	2-bromothiophen-5-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-131	3-iodinethiophen-2-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-132	3-phenylthiophen-2-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-133	2,4-dimethylthiophen-5-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-134	benzothiophen-2-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-135	4-nitro-1H-pyrrol-2-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-136	3-ethyl-3H-pyrazol-4-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-137	1-methyl-3-nitro-1H-pyrazol-4-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-138	3-chloro-1-methyl-1H-pyrazol-4-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-139	3-bromo-1-methyl-1H-pyrazol-4-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-140	1-methyl-3-trifluoromethyl-1H-pyrazol-4-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl

Table 2-8

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
2-141	1-methyl-5-trifluoromethyl-1H-pyrazol-4-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-142	isoxazol-5-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-143	4-trifluoromethylthiazol-5-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-144	2,4-dimethylthiazol-5-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-145	2-ethyl-4-methylthiazol-5-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-146	2-chloro-4-methylthiazol-5-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-147	3-methyl-isothiazol-5-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-148	3,4-dichloro-isothiazol-5-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-149	3-chlorobenzo-thiazol-2-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-150	2,2-difluorobenzo[1.3]dioxol-5-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-151	2,2-difluorobenzo[1.3]dioxol-4-yl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-152	phenyl	CF	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-153	2-fluorophenyl	CF	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-154	4-fluorophenyl	CF	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-155	4-chlorophenyl	CF	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-156	2-chloropyridin-3-yl	CF	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-157	4-nitrophenyl	CF	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-158	4-cyanophenyl	CF	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-159	phenyl	CH	CH	CH	CH	Me	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-160	2-fluorophenyl	CH	CH	CH	CH	Me	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl

Table 2-9

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
2-161	4-fluorophenyl	CH	CH	CH	CH	Me	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-162	4-chlorophenyl	CH	CH	CH	CH	Me	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-163	2-chloropyridin-3-yl	CH	CH	CH	CH	Me	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-164	4-nitrophenyl	CH	CH	CH	CH	Me	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-165	4-cyanophenyl	CH	CH	CH	CH	Me	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-166	phenyl	CH	CH	CH	CH	H	Me	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-167	2-fluorophenyl	CH	CH	CH	CH	H	Me	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-168	4-fluorophenyl	CH	CH	CH	CH	H	Me	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-169	4-chlorophenyl	CH	CH	CH	CH	H	Me	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-170	2-chloropyridin-3-yl	CH	CH	CH	CH	H	Me	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-171	4-nitrophenyl	CH	CH	CH	CH	H	Me	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-172	4-cyanophenyl	CH	CH	CH	CH	H	Me	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-173	2-chloro-3-nitrophenyl	CH	CH	CH	CH	H	Me	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-174	phenyl	CH	CH	CH	CH	Me	Me	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-175	2-fluorophenyl	CH	CH	CH	CH	Me	Me	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-176	4-fluorophenyl	CH	CH	CH	CH	Me	Me	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-177	4-chlorophenyl	CH	CH	CH	CH	Me	Me	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-178	2-chloropyridin-3-yl	CH	CH	CH	CH	Me	Me	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-179	4-nitrophenyl	CH	CH	CH	CH	Me	Me	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-180	4-cyanophenyl	CH	CH	CH	CH	Me	Me	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl

Table 2-10

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
2-181	2-chloropyrazin-3-yl	CH	CH	CH	CH	Me	Me	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-182	pyrimidin-5-yl	CH	CH	CH	CH	Me	Me	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-183	phenyl	CH	CH	CH	CH	H	H	2-bromo-4-(1,1,2,3,3,3-hexafluoropropoxy)-6-methylphenyl
2-184	phenyl	CH	CH	CH	CH	Me	H	2-bromo-4-(1,1,2,3,3,3-hexafluoropropoxy)-6-trifluoromethylphenyl
2-185	phenyl	CH	CH	CH	CH	H	H	2-bromo-4-(1,1,2,3,3,3-hexafluoropropoxy)-6-trifluoromethylphenyl
2-186	2-chloro-3-pyridyl	CH	CH	CH	CH	H	H	2-bromo-4-(1,1,2,3,3,3-hexafluoropropoxy)-6-trifluoromethylphenyl
2-187	phenyl	CH	CH	CH	CH	Me	H	2-bromo-4-(1,1,2,3,3,3-hexafluoropropoxy)-6-nitrophenyl
2-188	2-chloro-3-pyridyl	CH	CH	CH	CH	Me	H	2-bromo-4-(1,1,2,3,3,3-hexafluoropropoxy)-6-nitrophenyl
2-189	phenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-190	2-chloro-3-pyridyl	CH	CH	CH	CH	Me	H	2,6-dimethyl-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-191	2-chloropyridin-3-yl	CH	CH	CH	CH	Me	H	2,6-dimethyl-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-192	phenyl	CF	CH	CH	CH	H	H	2,6-dimethyl-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-193	2-fluorophenyl	CF	CH	CH	CH	H	H	2,6-dimethyl-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-194	2-chloro-3-pyridyl	CF	CH	CH	CH	H	H	2,6-dimethyl-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-195	phenyl	CH	CF	CH	CH	H	H	2,6-dimethyl-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl

Table 2-11

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
2-196	2-chloro-3-pyridyl	CH	CF	CH	CH	H	H	2,6-dimethyl-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-197	phenyl	CH	CH	CH	CH	H	H	6-bromo-8-(1,1,2,3,3,3-hexafluoropropoxy)quinolin-5-yl
2-198	2-fluorophenyl	CH	CH	CH	CH	H	H	6-bromo-8-(1,1,2,3,3,3-hexafluoropropoxy)quinolin-5-yl
2-199	2-chloro-3-pyridyl	CH	CH	CH	CH	H	H	6-bromo-8-(1,1,2,3,3,3-hexafluoropropoxy)quinolin-5-yl
2-200	phenyl	CH	CH	CH	CH	Me	H	6-bromo-8-(1,1,2,3,3,3-hexafluoropropoxy)quinolin-5-yl
2-201	phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,2-tetrafluoroethoxy)phenyl
2-202	2-fluorophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,2-tetrafluoroethoxy)phenyl
2-203	2-chloro-3-pyridyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,2-tetrafluoroethoxy)phenyl
2-204	phenyl	CH	CH	CH	CH	H	H	2-bromo-4,6-bis(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-205	2-fluorophenyl	CH	CH	CH	CH	H	H	2-bromo-4,6-bis(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-206	2-chloro-3-pyridyl	CH	CH	CH	CH	H	H	2-bromo-4,6-bis(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-207	phenyl	CH	CH	CH	CH	H	H	2,4,6-tri(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-208	2-fluorophenyl	CH	CH	CH	CH	H	H	2,4,6-tri(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-209	2-chloro-3-pyridyl	CH	CH	CH	CH	H	H	2,4,6-tri(1,1,2,3,3,3-hexafluoropropoxy)phenyl
2-210	phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropylthio)phenyl

Table 2-12

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
2-211	2-fluorophenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropylthio)phenyl
2-212	2-chloro-3-pyridyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropylthio)phenyl
2-213	phenyl	CH	CH	CH	CH	H	H	2-bromo-6-chloro-4-(1,1,2,3,3,3-hexafluoropropylthio)phenyl
2-214	2-fluorophenyl	CH	CH	CH	CH	H	H	2-bromo-6-chloro-4-(1,1,2,3,3,3-hexafluoropropylthio)phenyl
2-215	2-chloro-3-pyridyl	CH	CH	CH	CH	H	H	2-bromo-6-chloro-4-(1,1,2,3,3,3-hexafluoropropylthio)phenyl
2-216	phenyl	CH	CH	CH	CH	Me	H	2-bromo-6-chloro-4-(1,1,2,3,3,3-hexafluoropropylthio)phenyl
2-217	2-fluorophenyl	CH	CH	CH	CH	Me	H	2-bromo-6-chloro-4-(1,1,2,3,3,3-hexafluoropropylthio)phenyl
2-218	2-chloro-3-pyridyl	CH	CH	CH	CH	Me	H	2-bromo-6-chloro-4-(1,1,2,3,3,3-hexafluoropropylthio)phenyl
2-219	2-chloro-3-pyridyl	CH	CH	CH	CH	Me	H	2,6-dimethyl-4-(1,1,2-trifluoro-2-trifluoromethoxyethoxy)phenyl
2-220	2-chloro-3-pyridyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl

General Formula (B)

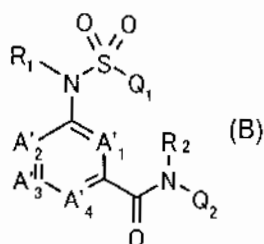


Table 3-1

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
4-1	phenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoroisopropylphenyl
4-2	2-methylphenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoroisopropylphenyl
4-3	2-fluorophenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoroisopropylphenyl
4-4	3-fluorophenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoroisopropylphenyl
4-5	4-fluorophenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoroisopropylphenyl
4-6	4-chlorophenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoroisopropylphenyl
4-7	2-bromophenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoroisopropylphenyl
4-8	2-iodophenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoroisopropylphenyl
4-9	4-cyanophenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoroisopropylphenyl
4-10	2-nitrophenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoroisopropylphenyl
4-11	4-nitrophenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoroisopropylphenyl
4-12	2-trifluoromethylphenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoroisopropylphenyl
4-13	4-methoxyphenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoroisopropylphenyl
4-14	2-(acetylamino)phenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoroisopropylphenyl
4-15	2,4-difluorophenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoroisopropylphenyl
4-16	2,3,4,5,6-pentafluorophenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoroisopropylphenyl
4-17	pyridin-2-yl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoroisopropylphenyl
4-18	pyridin-3-yl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoroisopropylphenyl
4-19	pyridin-4-yl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoroisopropylphenyl
4-20	2-fluoropyridin-3-yl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoroisopropylphenyl

Table 3-2

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
4-21	2-chloropyridin-3-yl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoroisopropylphenyl
4-22	pyridin-N-oxid-2-yl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoroisopropylphenyl
4-23	methyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoroisopropylphenyl
4-24	methyl	CH	CH	CH	CH	Me	H	2,6-dimethyl-4-heptafluoroisopropylphenyl
4-25	ethyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoroisopropylphenyl
4-26	ethyl	CH	CH	CH	CH	Me	H	2,6-dimethyl-4-heptafluoroisopropylphenyl
4-27	2,2,2-trifluoroethyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoroisopropylphenyl
4-28	2,2,2-trifluoroethyl	CH	CH	CH	CH	Me	H	2,6-dimethyl-4-heptafluoroisopropylphenyl
4-29	vinyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoroisopropylphenyl
4-30	vinyl	CH	CH	CH	CH	Me	H	2,6-dimethyl-4-heptafluoroisopropylphenyl
4-31	propyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoroisopropylphenyl
4-32	propyl	CH	CH	CH	CH	Me	H	2,6-dimethyl-4-heptafluoroisopropylphenyl
4-33	isopropyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoroisopropylphenyl
4-34	benzyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoroisopropylphenyl
4-37	phenyl	CH	CH	CH	CH	H	H	2-bromo-4,6-bis(trifluoromethyl)phenyl
4-38	phenyl	CH	CH	CH	CH	H	H	2,4-bis(trifluoromethyl)phenyl
4-39	phenyl	CH	CH	CH	CH	H	H	2-bromo-4-(heptafluoroisopropyl)-6-(methylsulfonyl)phenyl
4-40	phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(heptafluoron-propylthio)phenyl
4-41	phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(heptafluoron-propylsulfinyl)phenyl
4-42	phenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-(nonafluoro-2-butyl)phenyl

Table 3-3

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
4-43	phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl
4-44	phenyl	CH	CH	CH	CH	H	H	2-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)-6-methylphenyl
4-45	phenyl	CH	CH	CH	CH	H	H	6-bromo-8-heptafluoroisopropylquinolin-5-yl
4-46	phenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl)-phenyl
4-47	phenyl	CH	CH	CH	CH	H	H	2,6-dichloro-4-(2,2,2-trifluoro-1-trifluoromethylethoxy)phenyl
4-48	phenyl	CH	CH	CH	CH	H	H	2,6-dichloro-4-trifluoromethylphenyl
4-49	phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethylphenyl
4-50	phenyl	CH	CH	CH	CH	H	H	2-bromo-4,6-bis(trifluoromethyl)phenyl
4-51	phenyl	CH	CH	CH	CH	H	H	2,4-bis(trifluoromethyl)phenyl
4-52	phenyl	CH	CH	CH	CH	H	H	2-bromo-6-(2,2,2-trifluoro-1-trifluoromethylethoxy)pyridin-3-yl

General Formula (C)

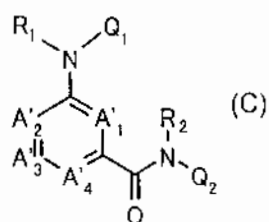


Table 4-1

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
5-1	phenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoro isopropylphenyl
5-2	2-methylphenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoro isopropylphenyl
5-3	2-fluorophenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoro isopropylphenyl
5-4	3-fluorophenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoro isopropylphenyl
5-5	4-bromophenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoro isopropylphenyl
5-6	2-iodophenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoro isopropylphenyl
5-7	4-cyanophenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoro isopropylphenyl
5-8	2-nitrophenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoro isopropylphenyl
5-9	4-nitrophenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoro isopropylphenyl
5-10	2-aminophenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoro isopropylphenyl
5-11	4-aminophenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoro isopropylphenyl
5-12	3-trifluoromethyl phenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoro isopropylphenyl
5-13	2-(acetylamino) phenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoro isopropylphenyl
5-14	4-(acetylamino) phenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoro isopropylphenyl
5-15	2,4-difluoro phenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoro isopropylphenyl
5-16	pyridin-2-yl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoro isopropylphenyl
5-17	pyridin-3-yl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoro isopropylphenyl
5-18	pyridin-4-yl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoro isopropylphenyl
5-19	2-fluoro pyridin-3-yl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoro isopropylphenyl
5-20	2-chloro pyridin-3-yl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoro isopropylphenyl

Table 4-2

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
5-21	6-bromopyridin-2-yl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoro isopropylphenyl
5-22	pyridin-N-oxid-2-yl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoro isopropylphenyl
5-23	5-amino-[1,2,4]oxadiazol-3-yl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoro isopropylphenyl
5-24	3-amino-[1,2,4]oxadiazol-5-yl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoro isopropylphenyl
5-25	5-amino-2H-[1,2,4]triazol-3-yl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-heptafluoro isopropylphenyl
5-26	Me	CF	CH	CH	CH	Me	H	2,6-dimethyl-4-heptafluoro isopropylphenyl
5-27	Me	CH	CH	CH	CH	Me	H	2,6-dimethyl-4-heptafluoro isopropylphenyl
5-28	Me	CH	CH	CH	CH	Me	H	2,6-dimethyl-4-heptafluoro isopropylphenyl
5-29	Me	CH	CH	CH	CH	Me	H	2-bromo-4-heptafluoro isopropyl-6-methyl sulfonylphenyl
5-30	Me	CH	CH	CH	CH	Me	H	2,6-dibromo-4-heptafluoropropylthio phenyl
5-31	Me	CH	CH	CH	CH	Me	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropyl thio)phenyl
5-32	Me	CH	CH	CH	CH	Me	Me	2,6-dibromo-4-hepta fluoropropylsulfonyl) phenyl
5-33	1-phenylethyl	CH	CH	CH	CH	Me	H	2,6-dimethyl-4-heptafluoroisopropyl phenyl
5-34	phenyl	CH	CH	CH	CH	H	Me	2-bromo-4,6-bis (trifluoromethyl) phenyl
5-35	phenyl	CH	CH	CH	CH	H	H	2,4-bis(trifluoromethyl) phenyl
5-36	phenyl	CH	CH	CH	CH	H	H	2-bromo-4-(heptafluoro isopropyl)-6-(methyl sulfonyl)phenyl
5-37	phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(hepta fluoro-n-propylthio) phenyl
5-38	phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(hepta fluoro-n-propylsulfinyl) phenyl
5-39	phenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-(nonafluoro-2-butyl) phenyl
5-40	phenyl	CH	CH	CH	CH	H	H	2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy) phenyl

Table 4-3

Compound No.	Q ₁	A' ₁	A' ₂	A' ₃	A' ₄	R ₁	R ₂	Q ₂
5-41	phenyl	CH	CH	CH	CH	H	H	2-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy) 6-methylphenyl
5-42	phenyl	CH	CH	CH	CH	H	H	6-bromo-8-heptafluoro isopropylquinolin-5-yl
5-43	phenyl	CH	CH	CH	CH	H	H	2,6-dimethyl-4-(2-bromo-1,2,2-trifluoro-1-trifluoromethylethyl)-phenyl
5-44	phenyl	CH	CH	CH	CH	H	H	2,6-dichloro-4-(2,2,2-trifluoro-1-trifluoromethyl ethoxy)phenyl
5-45	phenyl	CH	CH	CH	CH	H	H	2,6-dichloro-4-trifluoromethylphenyl
5-46	phenyl	CH	CH	CH	CH	H	H	2,4-dibromo-6-trifluoromethylphenyl
5-47	phenyl	CH	CH	CH	CH	H	H	2-bromo-4,6-bis (trifluoromethyl)phenyl
5-48	phenyl	CH	CH	CH	CH	H	H	2,4-bis(trifluoromethyl) phenyl
5-49	phenyl	CH	CH	CH	CH	H	H	2-bromo-6-(2,2,2-trifluoro-1-trifluoromethylethoxy) pyridin-3-yl
5-50	phenyl	CH	CH	CH	CH	H	H	2-bromo-4,6-bis (trifluoromethyl)phenyl
5-51	phenyl	CH	CH	CH	CH	H	H	2-bromo-4,6-bis (trifluoromethyl)phenyl
5-52	phenyl	CH	CH	CH	CH	H	H	2-bromo-4,6-bis (trifluoromethyl)phenyl
5-53	phenyl	CH	CH	CH	CH	H	H	2,4-bis(trifluoromethyl) phenyl
5-54	phenyl	CH	CH	CH	CH	H	H	2-bromo-6-(2,2,2-trifluoro-1-trifluoromethylethoxy) pyridin-3-yl

5 The physical properties of the compound of the present invention represented by general formula (1) or (5) are shown in Table 5 below. Tetramethylsilane is used as an internal standard substance to record shift values of ¹H-NMR as shown herein, unless otherwise particularly mentioned.

Table 5-1

Compound No.	Physical Property
1-1	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.51–7.62(4H, m), 7.78(1H, d, $J = 7.8\text{Hz}$), 7.97–8.00(2H, m), 8.05–8.08(2H, m), 8.30(1H, d, $J = 2.4\text{Hz}$), 8.37(1H, d, $J = 2.0\text{Hz}$), 10.48(1H, s), 10.65(1H, s).
1-159	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 3.47(3H, s), 7.12–7.16(2H, m), 7.21–7.32(5H, m), 7.70(1H, s), 7.72(1H, t, $J = 7.8\text{Hz}$), 7.82–7.83(2H, m), 8.56(1H, s).
1-163	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 3.57(3H, s), 7.11–7.14(1H, m), 7.40–7.41(2H, m), 7.58(1H, d, $J = 7.8\text{Hz}$), 7.69–7.78(2H, m), 7.91–8.02(3H, m), 8.24(1H, d, $J = 4.9\text{Hz}$).
1-264	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 7.49–7.63(4H, m), 7.70–7.73(1H, m), 7.76(1H, d, $J = 2.0\text{Hz}$), 7.86–7.93(3H, m), 7.98–8.02(3H, m), 8.23(1H, t, $J = 2.0\text{Hz}$).
1-265	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.52–7.64(4H, m), 7.79(1H, d, $J = 7.8\text{Hz}$), 7.97–8.02(3H, m), 8.06–8.09(1H, m), 8.21(1H, d, $J = 2.0\text{Hz}$), 8.38(1H, t, $J = 2.0\text{Hz}$), 10.48(1H, s), 10.60(1H, broad).
1-266	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.53–7.64(4H, m), 7.81(1H, d, $J = 7.8\text{Hz}$), 7.99–8.10(7H, m), 8.18(1H, s), 8.27(1H, d, $J = 2.0\text{Hz}$), 8.41(1H, s), 10.50(1H, s), 10.75(1H, s).
1-267	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 7.35(1H, d, $J = 7.3\text{Hz}$), 7.50–7.63(7H, m), 7.72–7.80(3H, m), 7.89–7.92(2H, m), 8.00(1H, s), 8.05–8.10(2H, m), 8.22(1H, t, $J = 2.0\text{Hz}$).
1-303	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.48–7.67(4H, m), 7.78(1H, dd, $J = 4.4, 8.8\text{Hz}$), 7.91(1H, d, $J = 7.8\text{Hz}$), 8.00–8.03(2H, m), 8.12–8.17(1H, m), 8.46–8.50(3H, m), 9.08(1H, dd, $J = 2.0, 4.4\text{Hz}$), 10.54(1H, s), 10.84(1H, s).
1-304	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.33–7.40(2H, m), 7.57–7.63(2H, m), 7.68–7.73(1H, m), 7.77(1H, dd, $J = 3.9, 8.8\text{Hz}$), 7.90(1H, d, $J = 7.8\text{Hz}$), 8.03(1H, d, $J = 7.8\text{Hz}$), 8.41–8.49(3H, m), 9.08(1H, dd, $J = 1.5, 3.9\text{Hz}$), 10.70(1H, s), 10.84(1H, s).
1-305	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.64(1H, t, $J = 7.8\text{Hz}$), 7.77(1H, dd, $J = 3.9, 8.8\text{Hz}$), 7.95(1H, d, $J = 7.8\text{Hz}$), 8.13(1H, d, $J = 7.8\text{Hz}$), 8.24(2H, d, $J = 8.3\text{Hz}$), 8.39–8.50(5H, m), 9.08(1H, dd, $J = 1.5, 3.9\text{Hz}$), 10.84(1H, s), 10.85(1H, s).

Table 5-2

Compound No.	Physical Property
1-306	¹ H-NMR(DMSO-d ₆) δ 10.5 (1H, s), 9.95 (1H, s), 8.36 (1H, t, J=1.5 Hz), 7.98-8.07 (3H, m), 7.75 (1H, d, J=7.8 Hz), 7.50-7.63 (4H, m), 7.42 (2H, s), 2.30 (6H, s).
1-307	¹ H-NMR(CDCl ₃) δ 4.76-4.82 (1H, m), 7.15 (2H, s), 7.45-8.17 (10H, m), 8.30 (1H, brs).
1-308	¹ H-NMR(CDCl ₃) δ 4.78-4.84 (1H, m), 7.19 (2H, s), 7.33-8.66 (10H, m).
1-309	¹ H-NMR(DMSO-d ₆) δ 7.53-7.63(4H, m), 7.79(1H, d, J = 7.8Hz), 7.99-8.02(2H, m), 8.08(1H, dd, J = 1.5, 7.8Hz), 8.18(1H, s), 8.39(1H, t, J = 1.5Hz), 10.50(1H, s), 10.56(1H, s).
1-310	¹ H-NMR(CDCl ₃) δ 7.19-7.25(1H, m), 7.35(1H, t, J = 7.8Hz), 7.51-7.60(3H, m), 7.76-7.78(2H, m), 7.92(1H, d, J = 7.8Hz), 8.19(1H, d, J = 7.8Hz), 8.34(1H, s), 8.63(1H, d, J = 16.1Hz).
1-311	¹ H-NMR(DMSO-d ₆) δ 7.37-7.41(2H, m), 7.56(1H, t, J = 7.8Hz), 7.79(1H, d, J = 7.8Hz), 8.06-8.14(3H, m), 8.18(1H, s), 8.36(1H, s), 10.51(1H, s), 10.56(1H, s).
1-312	¹ H-NMR(DMSO-d ₆) δ 7.60(1H, d, J = 6.8Hz), 7.83(1H, d, J = 6.8Hz), 8.09(1H, d, J = 7.3Hz), 8.18-8.25(4H, m), 8.40 (2H, d, J = 8.8Hz), 10.59(1H, s), 10.81(1H, s).
1-313	¹ H-NMR(DMSO-d ₆) δ 7.53-7.64(4H, m), 7.77(1H, d, J = 7.8Hz), 7.97-8.01(3H, m), 8.07(1H, dd, J = 1.5, 7.8Hz), 8.41 (1H, s), 10.49(1H, s), 10.52(1H, s).
1-314	¹ H-NMR(DMSO-d ₆) δ 7.33-7.40(2H, m), 7.54-7.63(2H, m), 7.68-7.72(1H, m), 7.78(1H, d, J = 7.8Hz), 7.98(1H, d, J = 8.3Hz), 8.10(2H, s), 8.36(1H, s), 10.62(1H, s), 10.67(1H, s).
1-315	¹ H-NMR(DMSO-d ₆) δ 7.25-7.30(2H, m), 7.56-7.65(2H, m), 7.80(1H, d, J = 8.3Hz), 7.92-7.95(1H, m), 8.10(2H, s), 8.32 (1H, s), 10.65(1H, s), 11.06(1H, s).
1-316	¹ H-NMR(DMSO-d ₆) δ 7.52-7.63(4H, m), 7.72(1H, d, J = 7.8Hz), 7.98-8.01(2H, m), 8.05-8.07(2H, m), 8.34(1H, t, J = 2.0Hz), 8.44(1H, d, J = 2.0Hz), 10.40(1H, s), 10.48(1H, s).
1-317	MS(APCI)=604(M+1)
1-318	MS(APCI)=604(M+1)
1-319	MS(APCI)=685(M+1)
1-320	MS(APCI)=586(M+1)

Table 5-3

Compound No.	Physical Property
1-321	MS(APCI)=645(M+1)
1-322	MS(APCI)=685(M+1)
1-323	MS(APCI)=599(M+1)
1-324	MS(APCI)=601(M+1)
1-325	MS(APCI)=530(M+1)
1-326	MS(APCI)=631(M+1)
1-327	MS(APCI)=642(M+1)
1-328	MS(APCI)=542(M+1)
1-329	MS(APCI)=610(M+1)
1-330	MS(APCI)=547(M+1)
1-331	MS(APCI)=571(M+1)
1-332	MS(APCI)=633(M+1)
1-333	MS(APCI)=592(M+1)
1-334	MS(APCI)=592(M+1)
1-335	MS(APCI)=668(M+1)

Table 5-4

Compound No.	Physical Property
1-336	MS(APCI)=591(M+1)
1-337	MS(APCI)=641(M+1)
1-338	MS(APCI)=642(M+1)
1-339	¹ H-NMR(DMSO-d ₆) δ 7.53-7.63(4H, m), 7.75(1H, d, J = 7.8Hz), 7.98-8.09(3H, m), 8.20(1H, s), 8.37(1H, s), 8.61(1H, s), 10.50(1H, s), 10.64(1H, s).
1-340	¹ H-NMR(DMSO-d ₆) δ 7.53-7.64(4H, m), 7.70-7.73(1H, m), 7.87(1H, d, J = 8.3Hz), 7.98-8.07(3H, m), 8.13-8.17(2H, m), 8.38(1H, t, J = 1.7Hz), 10.40(1H, s), 10.50(1H, s).
1-341	MS(APCI)=478(M+1)
1-342	MS(APCI)=489(M+1)
1-343	MS(APCI)=489(M+1)
1-344	MS(APCI)=507(M+1)
1-345	MS(APCI)=487(M+1)
1-346	MS(APCI)=521(M+1)
1-347	MS(APCI)=534(M+1)
1-348	MS(APCI)=485(M+1)
1-349	MS(APCI)=467(M+1)
1-350	MS(APCI)=481(M+1)

Table 5-5

Compound No.	Physical Property
1-351	MS(APCI)=483(M+1)
1-352	MS(APCI)=483(M+1)
1-353	MS(APCI)=543(M+1)
1-354	MS(APCI)=503(M+1)
1-355	MS(APCI)=503(M+1)
1-356	MS(APCI)=493(M+1)
1-357	MS(APCI)=488(M+1)
1-358	MS(APCI)=468(M+1)
1-359	MS(APCI)=488(M+1)
1-360	MS(APCI)=470(M+1)
1-361	MS(APCI)=469(M+1)
1-362	MS(APCI)=455(M+1)
1-363	MS(APCI)=473(M+1)
1-364	MS(APCI)=473(M+1)
1-365	¹ H-NMR(DMSO-d ₆) δ 7.53-7.73(5H,m), 7.93-8.09(6H,m), 8.38(1H,d,J=2.0Hz), 10.4(1H,s), 10.5(1H,s).

Table 5-6

Compound No.	Physical Property
1-366	¹ H-NMR(DMSO-d ₆) δ 7.53-7.63(4H, m), 7.74(1H, d, J = 7.8Hz), 7.98-8.01(2H, m), 8.07(1H, dd, J = 1.5, 7.8Hz), 8.18(1H, s), 8.37(1H, t, J = 1.5Hz), 8.51(1H, d, J = 1.5Hz), 10.50(1H, s), 10.62(1H, s).
1-367	¹ H-NMR(CDCl ₃) δ 7.00-7.06(2H, m), 7.43-7.58(2H, m), 7.73-7.79(3H, m), 7.91-7.93(2H, m), 8.00(1H, s), 8.26(1H, s).
1-368	¹ H-NMR(CDCl ₃) δ 7.27-7.29(1H, m), 7.54(1H, t, J=8.3 Hz), 7.77(1H, d, J=8.3 Hz), 7.91(1H, s), 8.00(1H, s), 8.21-8.34(5H, m), 8.91(1H, s), 9.95(1H, s).
1-369	¹ H-NMR(DMSO-d ₆) δ 2.32(3H, s), 7.52-7.63(5H, m), 7.76(1H, d, J=7.8Hz), 7.87(1H, d, J=2.7Hz), 8.00(2H, dd, J=1.5Hz, 7.8), 8.06(1H, d, J=7.8Hz), 8.37(1H, s), 10.18(1H, s), 10.47(1H, s).
1-371	¹ H-NMR(DMSO-d ₆) δ 2.32(3H, s), 7.54-7.61(5H, m), 7.72-7.77(2H, m), 7.98-8.08(3H, m), 8.37(1H, s), 10.17(1H, s), 10.46(1H, s).
1-372	¹ H-NMR(CDCl ₃) δ 2.32(3H, s), 7.04-8.23(14H, m).
1-373	¹ H-NMR(DMSO-d ₆) δ 2.46(3H, s), 7.53-7.71(6H, m), 7.80(1H, s), 7.90(1H, d, J = 7.8Hz), 8.00-8.02(2H, m), 8.10-8.17(2H, m), 8.38(1H, d, J = 7.8Hz), 8.45(1H, s), 10.51(1H, s), 10.52(1H, s).
1-374	¹ H-NMR(DMSO-d ₆) δ 2.46(3H, s), 7.33-7.40(2H, m), 7.57-7.63(2H, m), 7.66-7.73(3H, m), 7.79(1H, s), 7.88-7.91(1H, m), 8.02(1H, d, J = 7.8Hz), 8.10-8.12(1H, m), 8.36-8.40(2H, m), 10.54(1H, s), 10.68(1H, s).
1-375	¹ H-NMR(DMSO-d ₆) δ 2.04(2H, quint, J = 7.3Hz), 2.91(2H, t, J = 7.3Hz), 3.11(2H, dd, J = 7.3, 12.2Hz), 7.40(1H, d, J = 8.8Hz), 7.51-7.67(5H, m), 7.71(1H, d, J = 7.8Hz), 7.98-8.07(3H, m), 8.35(1H, s), 10.10(1H, s), 10.48(1H, s).
1-376	¹ H-NMR(DMSO-d ₆) δ 7.53-7.64(4H, m), 7.78(1H, d, J = 7.8Hz), 7.99-8.02(2H, m), 8.08(1H, dd, J = 2.0, 7.8Hz), 8.32(2H, s), 8.40(1H, t, J = 2.0Hz), 10.51(1H, s), 10.66(1H, s).
1-377	¹ H-NMR(CDCl ₃) δ 2.33(6H, s), 7.18-7.38(5H, m), 7.49-7.60(5H, m), 7.72(1H, d, J=7.8Hz), 7.87-7.96(3H, m), 8.10(1H, s), 8.29(1H, d, J=8.0Hz).
1-378	¹ H-NMR(CDCl ₃) δ 2.33(3H, s), 2.34(6H, s), 7.04(1H, t, J=8.8Hz), 7.33-7.57(8H, m), 7.77(1H, d, J=7.9Hz), 8.00-8.02(2H, m), 8.14(1H, dd, J=1.4, 8.3Hz), 8.36(1H, t, J=2.0Hz), 8.81(1H, s), 9.85(1H, s).
1-379	¹ H-NMR(CDCl ₃) δ 2.29(6H, s), 6.67(1H, s), 7.21(2H, s), 7.47-7.59(6H, m), 7.70-7.72(2H, m), 7.87-7.89(2H, m), 7.95(1H, d, J=7.8Hz), 8.13(1H, s), 8.25(1H, s).
1-380	¹ H-NMR(CDCl ₃) δ 2.32(6H, s), 7.07-7.09(1H, m), 7.27-7.29(1H, m), 7.37(2H), 7.38-7.57(6H, m), 7.73-7.78(2H, m), 7.88(1H, d, J=8.3Hz), 8.14(1H, s), 8.27(1H, s).
1-381	¹ H-NMR(CDCl ₃) δ 2.34(6H, s), 7.35-7.55(10H, m), 7.74-7.80(2H, m), 7.89(1H, d, J=8.3Hz), 8.11(1H, s), 8.28(1H, s).

Table 5-7

Compound No.	Physical Property
1-382	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 1.23-1.39(5H, m), 1.57-1.71(5H, m), 2.45-2.51(1H, m), 7.40-7.52(6H, m), 7.66(1H, d, $J = 7.8\text{Hz}$), 7.85-7.97(3H, m), 8.23(1H, s), 10.17(1H, s), 10.37(1H, s).
1-383	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 1.20-1.40(5H, m), 1.67-1.79(5H, m), 2.45-2.50(1H, m), 7.19(2H, d, $J = 8.8\text{Hz}$), 7.47-7.68(7H, m), 7.97-8.02(3H, m), 8.29(1H, t, $J = 2.0\text{Hz}$), 10.20(1H, s), 10.45(1H, s).
1-384	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.19(6H, s), 7.00-7.09(2H, m), 7.40-7.45(3H, m), 7.53(1H, t, $J = 7.8\text{Hz}$), 7.63(1H, d, $J = 7.8\text{Hz}$), 7.67(1H, s), 7.84(2H, d, $J = 7.8\text{Hz}$), 7.95(1H, dd, $J = 1.5, 7.8\text{Hz}$), 8.18(1H, s), 8.46(1H, s).
1-385	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.35(6H, s), 7.44-7.53(3H, m), 7.59(1H, t, $J = 7.8\text{Hz}$), 7.72(1H, d, $J = 7.8\text{Hz}$), 7.79-7.89(6H, m), 8.12(1H, s), 8.36(1H, s).
1-386	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.33(6H, s), 4.11(1H, septet, $J = 6.9\text{Hz}$), 7.17(2H, s), 7.50-7.61(5H, m), 7.71(1H, d, $J = 7.8\text{Hz}$), 7.87-7.90(3H, m), 8.03(1H, s), 8.29(1H, s).
1-387	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 6.30 (1H, septet, $J = 6.8\text{Hz}$), 7.01 (1H, d, $J = 8.8\text{Hz}$), 7.49-7.61 (4H, m), 7.68 (1H, dd, $J = 1.0, 7.8\text{Hz}$), 7.88-7.91 (2H, m), 7.96-8.01 (2H, m), 8.26 (1H, t, $J = 1.9\text{Hz}$), 8.33 (1H, s), 8.81 (1H, d, $J = 8.8\text{Hz}$).
1-389	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 4.13(2H, dt, $J = 6.4, 14.6\text{Hz}$), 7.41-7.57(4H, m), 7.62(1H, d, $J = 7.8\text{Hz}$), 7.99-8.01(2H, m), 8.09(2H, d, $J = 7.3\text{Hz}$), 8.22(1H, t, $J = 2.0\text{Hz}$), 9.79(1H, s).
1-390	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 7.50-7.61(4H, m), 7.75(1H, d, $J = 7.8\text{Hz}$), 7.89(2H, d, $J = 7.8\text{Hz}$), 7.93(1H, s), 7.95(1H, s), 8.07(1H, s), 8.10(1H, s), 8.33(1H, s).
1-391	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 7.44(1H, dd, $J = 4.9, 7.8\text{Hz}$), 7.57(1H, t, $J = 7.8\text{Hz}$), 7.79(1H, d, $J = 7.8\text{Hz}$), 7.87-7.91(2H, m), 8.13(1H, s), 8.23(1H, dd, $J = 2.0, 7.8\text{Hz}$), 8.31(1H, s), 8.42(1H, s), 8.55(1H, dd, $J = 2.0, 4.9\text{Hz}$).
1-392	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 7.22(1H, dd, $J = 7.8, 12.2\text{Hz}$), 7.35(1H, t, $J = 7.8\text{Hz}$), 7.53-7.60(2H, m), 7.77(1H, d, $J = 7.8\text{Hz}$), 7.90-7.92(2H, m), 8.13(1H, s), 8.19(1H, dt, $J = 1.4, 7.8\text{Hz}$), 8.34(1H, s), 8.64(1H, d, $J = 16.1\text{Hz}$).
1-393	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.31-7.38(2H, m), 7.50-7.62(2H, m), 7.66-7.72(4H, m), 7.92-7.96(3H, m), 8.27(1H, s), 10.61(1H, s), 10.63(1H, s).
1-394	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.32-7.38(2H, m), 7.52-7.60(2H, m), 7.65-7.73(2H, m), 7.94(1H, d, $J = 8.3\text{Hz}$), 8.11(2H, d, $J = 8.8\text{Hz}$), 8.20-8.23(2H, m), 8.29(1H, s), 10.67(1H, s), 11.01(1H, s).
1-395	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 7.45-7.62(6H, m), 7.69(1H, d, $J = 7.8\text{Hz}$), 7.93(2H, d, $J = 7.3\text{Hz}$), 8.01(2H, d, $J = 7.3\text{Hz}$), 8.14(1H, d, $J = 7.8\text{Hz}$), 8.28(1H, t, $J = 1.9\text{Hz}$), 9.95(1H, s), 9.99(1H, s).
1-396	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 7.44-7.61(5H, m), 7.73(1H, d, $J = 8.3\text{Hz}$), 7.93(2H, d, $J = 8.3\text{Hz}$), 8.01(2H, d, $J = 6.8\text{Hz}$), 8.07-8.13(2H, m), 8.29(1H, s), 9.97(1H, s), 10.10(1H, s).
1-397	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.41(3H, s), 7.51-7.58(6H, m), 7.67(1H, d, $J = 6.3\text{Hz}$), 7.86-7.91(4H, m), 7.99(1H, s), 8.23(1H, d, $J = 8.3\text{Hz}$), 8.30(1H, t, $J = 2.0\text{Hz}$).

Table 5-8

Compound No.	Physical Property
1-398	$^1\text{H-NMR}$ (CDCl_3) δ 3.32 (3H, s), 3.46 (3H, s), 6.65 (2H, d, $J = 8.0\text{Hz}$), 6.94 (1H, d, $J = 2.8\text{Hz}$), 7.07–7.12 (5H, m), 7.25 (2H, d, $J = 8.4\text{Hz}$), 7.94 (2H, d, $J = 8.8\text{Hz}$), 9.50 (1H, s, OH).
1-399	$^1\text{H-NMR}$ (CDCl_3) δ 2.41 (3H, s), 7.21 (1H, dd, $J = 1.0, 8.3\text{Hz}$), 7.35 (1H, t, $J = 7.3\text{Hz}$), 7.52–7.59 (4H, m), 7.69 (1H, d, $J = 8.3\text{Hz}$), 7.86 (1H, d, $J = 8.3\text{Hz}$), 7.91 (1H, s), 8.19 (1H, dt, $J = 1.4, 8.3\text{Hz}$), 8.23 (1H, d, $J = 8.3\text{Hz}$), 8.33 (1H, t, $J = 2.0\text{Hz}$), 8.63 (1H, d, $J = 15.6\text{Hz}$).
1-400	$^1\text{H-NMR}$ (CDCl_3) δ 2.36 (3H, s), 6.63 (1H, septet, $J = 6.3\text{Hz}$), 6.91 (1H, s), 7.45–7.57 (4H, m), 7.74 (1H, d, $J = 7.8\text{Hz}$), 8.03 (2H, d, $J = 8.8\text{Hz}$), 8.11 (1H, d, $J = 8.3\text{Hz}$), 8.17 (1H, s), 8.39 (1H, t, $J = 1.9\text{Hz}$), 9.75 (1H, brs), 10.2 (1H, brs).
1-401	$^1\text{H-NMR}$ ($\text{DMSO}-d_6$) δ 2.28 (3H, s), 7.12–7.19 (2H, m), 7.33–7.40 (2H, m), 7.52–7.63 (2H, m), 7.67–7.75 (2H, m), 7.94 (1H, d, $J = 6.8\text{Hz}$), 8.17 (1H, s), 8.33 (1H, s), 10.1 (1H, brs), 10.6 (1H, s).
1-402	$^1\text{H-NMR}$ (CDCl_3) δ 6.31 (1H, septet, $J = 5.9\text{Hz}$), 7.03 (1H, d, $J = 8.8\text{Hz}$), 7.20–7.25 (2H, m), 7.34–7.37 (1H, m), 7.54–7.57 (2H, m), 7.69 (1H, d, $J = 7.8\text{Hz}$), 8.18–8.23 (1H, m), 8.29–8.30 (2H, m), 8.60 (1/2H, brs), 8.64 (1/2H, brs), 8.83 (1H, d, $J = 8.8\text{Hz}$).
1-403	$^1\text{H-NMR}$ (CDCl_3) δ 6.58 (1H, septet, $J = 6.3\text{Hz}$), 6.95 (1H, d, $J = 8.8\text{Hz}$), 7.45–7.58 (4H, m), 7.70 (1H, d, $J = 7.8\text{Hz}$), 8.00–8.02 (2H, m), 8.12 (1H, d, $J = 7.8\text{Hz}$), 8.24–8.28 (2H, m), 8.56 (1H, d, $J = 2.5\text{Hz}$), 9.72 (1H, brs), 9.86 (1H, s).
1-404	$^1\text{H-NMR}$ (CDCl_3) δ 6.60 (1H, septet, $J = 6.3\text{Hz}$), 6.96 (1H, d, $J = 9.2\text{Hz}$), 7.19–7.23 (1H, m), 7.29–7.33 (1H, m), 7.46–7.54 (2H, m), 7.71 (1H, d, $J = 7.8\text{Hz}$), 7.87–7.91 (1H, m), 8.06 (1H, d, $J = 9.2\text{Hz}$), 8.24–8.28 (2H, m), 8.60 (1H, d, $J = 2.5\text{Hz}$), 9.72 (1H, d, $J = 5.3\text{Hz}$), 10.1 (1H, s).
1-405	$^1\text{H-NMR}$ ($\text{DMSO}-d_6$) δ 7.52–7.65 (4H, m), 7.74 (1H, d, $J = 7.8\text{Hz}$), 7.85 (1H, d, $J = 1.5\text{Hz}$), 7.98–8.01 (2H, m), 8.06 (1H, dd, $J = 1.5, 8.3\text{Hz}$), 8.13 (1H, d, $J = 1.5\text{Hz}$), 8.35 (1H, t, $J = 1.5\text{Hz}$), 10.34 (1H, s), 10.47 (1H, s).
1-406	$^1\text{H-NMR}$ ($\text{DMSO}-d_6$) δ 7.32–7.39 (2H, m), 7.52–7.63 (2H, m), 7.67–7.74 (2H, m), 7.84 (1H, s), 7.96 (1H, d, $J = 7.8\text{Hz}$), 8.13 (1H, d, $J = 2.0\text{Hz}$), 8.30 (1H, s), 10.36 (1H, s), 10.64 (1H, s).
1-407	$^1\text{H-NMR}$ ($\text{DMSO}-d_6$) δ 7.58 (1H, t, $J = 7.8\text{Hz}$), 7.78 (1H, d, $J = 7.8\text{Hz}$), 7.85 (1H, d, $J = 1.5\text{Hz}$), 8.05–8.08 (1H, m), 8.13 (1H, d, $J = 1.5\text{Hz}$), 8.21–8.24 (2H, m), 8.34 (1H, d, $J = 1.5\text{Hz}$), 8.37–8.40 (2H, m), 10.37 (1H, s), 10.78 (1H, s).

Table 5-9

Compound No.	Physical Property
1-408	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.50-7.69(7H, m), 7.72(1H, s), 7.97-8.04(3H, m), 8.34(1H, t, $J = 2.0\text{Hz}$), 10.27(1H, s), 10.46(1H, s).
1-409	$^1\text{H-NMR}(\text{CDCl}_3, \text{ppm})$ δ 6.88-7.95 (11H, m).
1-411	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 7.15-7.20(1H, m), 7.26-7.32(1H, m), 7.45-7.56(2H, m), 7.69(1H, d, $J = 7.8\text{Hz}$), 7.89(1H, d, $J = 2.0\text{Hz}$), 7.92(1H, d, $J = 2.0\text{Hz}$), 7.99(1H, dd, $J = 2.0, 7.8\text{Hz}$), 8.10-8.15(1H, m), 8.19(1H, s), 8.22(1H, s), 8.64(1H, d, $J = 15.1\text{Hz}$).
1-412	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.59(1H, t, $J = 7.8\text{Hz}$), 7.82(1H, d, $J = 7.8\text{Hz}$), 8.07-8.10(2H, m), 8.23(2H, d, $J = 8.8\text{Hz}$), 8.34-8.40(4H, m), 10.69(1H, s), 10.78(1H, s).
1-413	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 7.40-7.45(3H, m), 7.50-7.54(1H, m), 7.64(1H, d, $J = 7.8\text{Hz}$), 7.75(1H, d, $J = 1.5\text{Hz}$), 7.81-7.85(3H, m), 8.07(1H, d, $J = 7.8\text{Hz}$), 8.19(1H, s), 8.25(1H, s), 8.54(1H, s).
1-414	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.31-7.38(2H, m), 7.51-7.61(2H, m), 7.66-7.72(2H, m), 7.94-7.97(2H, m), 8.28(1H, d, $J = 2.4\text{Hz}$), 8.31(1H, d, $J = 2.4\text{Hz}$), 10.42(1H, s), 10.63(1H, s).
1-415	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.51-7.62(4H, m), 7.72(1H, d, $J = 7.8\text{Hz}$), 7.96-8.00(3H, m), 8.05(1H, dd, $J = 1.5, 7.8\text{Hz}$), 8.32(1H, d, $J = 2.0\text{Hz}$), 8.33(1H, d, $J = 2.0\text{Hz}$), 10.40(1H, s), 10.46(1H, s).
1-416	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.33-7.40(2H, m), 7.54-7.63(2H, m), 7.67-7.72(1H, m), 7.79(1H, d, $J = 7.8\text{Hz}$), 7.98(1H, d, $J = 7.8\text{Hz}$), 8.13(1H, d, $J = 1.5\text{Hz}$), 8.20(1H, d, $J = 1.5\text{Hz}$), 8.35(1H, s), 10.62(1H, s), 10.67(1H, s).
1-417	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.51-7.62(4H, m), 7.71(1H, d, $J = 7.8\text{Hz}$), 7.97-8.06(4H, m), 8.30-8.34(2H, m), 10.35(1H, s), 10.46(1H, s).
1-418	$^1\text{H-NMR}(\text{CDCl}_3, \text{ppm})$ δ 6.86-6.98 (3H, m), 7.18 (2H, t, $J = 7.8\text{Hz}$), 7.33-7.45 (2H, m), 7.58 (1H, t, $J = 7.8\text{Hz}$), 7.85-8.11 (3H, m).
1-419	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.52-7.85(6H, m), 7.99-8.06(3H, m), 8.15-8.19(1H, m), 8.34(1H, s), 10.4(1H, s), 10.5(1H, s).
1-420	$^1\text{H-NMR}(\text{DMSO}-d_6, \text{ppm})$ δ 7.518.05(11H, m), 8.34(1H, t, $J = 1.5$), 10.2(1H, s), 10.5(1H, s).
1-421	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.44 (3H, s), 7.16-7.21 (1H, m), 7.44-7.57 (5H, m), 7.66-7.72 (2H, m), 7.83 (1H, d, $J = 8.3\text{Hz}$), 7.92-7.95 (2H, m), 8.25 (1H, d, $J = 8.8\text{Hz}$), 8.31 (1H, s).
1-422	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 0.75(3H, t, $J = 7.3\text{Hz}$), 1.19(3H, d, $J = 6.8\text{Hz}$), 1.51-1.59(2H, m), 3.02-3.11(1H, m), 7.50-7.63(7H, m), 7.73(1H, d, $J = 7.8\text{Hz}$), 7.99-8.07(3H, m), 8.36(1H, s), 10.17(1H, s), 10.48(1H, s).
1-423	$^1\text{H-NMR}(\text{CDCl}_3, \text{ppm})$ σ 7.48-7.69(7H, m), 7.88-8.00(4H, m), 8.23(1H, t, $J = 2.0\text{Hz}$), 8.61(1H, br.s), 8.76(1H, d, $J = 8.8\text{Hz}$).

Table 5-10

Compound No.	Physical Property
1-424	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.33-7.40(2H, m), 7.52-7.63(2H, m), 7.66-7.73(4H, m), 7.95(1H, d, $J = 7.8\text{Hz}$), 8.05(2H, d, $J = 8.8\text{Hz}$), 8.30(1H, s), 10.67(2H, s).
1-425	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 3.21(3H, s), 3.41(3H, s), 7.46-7.75(6H, m), 7.86-7.93(4H, m), 8.00(1H, s), 8.01(1H, s), 8.40(1H, s).
1-426	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 3.21(3H, s), 3.41(3H, s), 7.51-7.57(2H, m), 7.64(1H, d, $J = 8.8\text{Hz}$), 7.89(2H, d, $J = 7.8\text{Hz}$), 7.93(1H, s), 8.02(2H, d, $J = 7.8\text{Hz}$), 8.08(1H, d, $J = 8.3\text{Hz}$), 8.33-8.40(3H, m).
1-427	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.53-7.63(4H, m), 7.79(1H, d, $J = 7.8\text{Hz}$), 7.98-8.01(2H, m), 8.06-8.09(1H, m), 8.23(2H, s), 8.39(1H, s), 10.50(1H, s), 10.62(1H, s).
1-428	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.33-7.40(2H, m), 7.54-7.63(2H, m), 7.68-7.72(1H, m), 7.79(1H, d, $J = 7.8\text{Hz}$), 7.98(1H, d, $J = 8.3\text{Hz}$), 8.23(2H, s), 8.35(1H, s), 10.64(1H, s), 10.67(1H, s).
1-429	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.25-7.30(2H, m), 7.56-7.65(2H, m), 7.81(1H, d, $J = 7.8\text{Hz}$), 7.94(1H, d, $J = 8.3\text{Hz}$), 8.23(2H, s), 8.31(1H, s), 10.67(1H, s), 11.06(1H, s).
1-430	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 4.41 (2H, t, $J = 11.7\text{Hz}$), 7.02 (2H, s), 7.50-7.64 (5H, m), 7.73-7.74 (1H, m), 7.89-7.90 (2H, m), 7.95-7.97 (1H, m), 8.04 (1H, s), 8.26 (1H, s).
1-431	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 4.43 (2H, t, $J = 12.0\text{Hz}$), 7.05 (2H, s), 7.20-8.21 (8H, m), 8.30 (1H, s), 8.61-8.65 (1H, m).
1-432	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.33 (3H, s), 4.38 (2H, q, $J = 8.3\text{Hz}$), 6.82 (1H, dd, $J = 2.9, 8.8\text{Hz}$), 7.44-7.57 (7H, m), 7.70 (1H, d, $J = 7.8\text{Hz}$), 7.99 (1H, dd, $J = 7.8, 1.5\text{Hz}$), 8.10 (1H, d, $J = 7.8\text{Hz}$), 8.34 (1H, s), 8.73 (1H, brs), 9.86 (1H, brs).
1-433	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 4.43 (2H, t, $J = 11.7\text{Hz}$), 7.04 (2H, s), 7.40-7.44 (1H, m), 7.52-7.56 (1H, m), 7.66 (1H, brs), 7.76-7.78 (1H, m), 7.91-7.93 (1H, m), 8.19-8.24 (2H, m), 8.45 (1H, s), 8.52-8.54 (1H, m).
1-434	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.34(6H, s), 7.47-7.57(6H, m), 7.68(1H, s), 7.74 (1H, d, $J = 7.8\text{Hz}$), 7.98-8.00(2H, m), 8.12(1H, d, $J = 7.8\text{Hz}$), 8.33 (1H, s), 8.64(1H, s), 9.63(1H, s).
1-435	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.35(6H, s), 3.51(3H, s), 7.32(2H, s), 7.50-7.62(4H, m), 7.66(1H, s), 7.72(1H, d, $J = 7.8\text{Hz}$), 7.86-7.90(3H, m), 8.04(1H, s), 8.31(1H, d, $J = 2.0\text{Hz}$).
1-436	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.37(6H, s), 3.52(3H, s), 7.23(1H, dd, $J = 7.8, 12.2\text{Hz}$), 7.33(2H, s), 7.35(1H, t, $J = 7.8\text{Hz}$), 7.52-7.60(2H, m), 7.63(1H, s), 7.74(1H, d, $J = 7.8\text{Hz}$), 7.87(1H, d, $J = 7.8\text{Hz}$), 8.19 (1H, dt, $J = 1.4, 7.8\text{Hz}$), 8.34(1H, s), 8.64(1H, d, $J = 16.6\text{Hz}$).
1-437	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.53-7.63(4H, m), 7.75-7.78(1H, m), 7.83(2H, s), 7.99-8.08(3H, m), 8.37(1H, s), 10.4(1H, br.), 10.5(1H, br.).
1-438	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.38(3H, s), 7.09-7.12(2H, m), 7.48-7.57(4H, m), 7.70(1H, d, $J = 8.3\text{Hz}$), 7.76(1H, d, $J = 8.3\text{Hz}$), 7.99-8.01(2H, m), 8.10(1H, d, $J = 8.3\text{Hz}$), 8.35(1H, d, $J = 2.0\text{Hz}$), 8.67(1H, s), 9.74(1H, s).

Table 5-11

Compound No.	Physical Property
1-439	$^1\text{H-NMR}$ (CDCl_3) δ 6.49(1H, d, $J = 9.3\text{Hz}$), 7.51–7.62(6H, m), 8.00(1H, d, $J = 7.3\text{Hz}$), 8.12(1H, d, $J = 7.3\text{Hz}$), 8.45(1H, d, $J = 9.3\text{Hz}$), 8.84(1H, s), 9.24(1H, s), 10.49(1H, s), 11.55(1H, s).
1-440	$\text{MS}(\text{APCI})=352(\text{M}+1)$
1-441	$^1\text{H-NMR}$ (CDCl_3) δ 2.44 (3H, s), 7.31–7.59 (5H, m), 7.73 (1H, d, $J = 7.8\text{Hz}$), 7.97 (2H, dd, $J = 1.5, 7.8\text{Hz}$), 8.06 (1H, d, $J = 7.8\text{Hz}$), 8.36 (1H, t, $J = 1.9\text{Hz}$), 8.94 (1H, s), 9.03 (1H, s), 9.32 (1H, s).
1-442	$^1\text{H-NMR}$ (CDCl_3) δ 7.46–7.68 (4H, m), 7.77 (1H, d, $J = 7.9\text{Hz}$), 8.00–8.02 (2H, m), 8.09 (1H, d, $J = 2.0\text{Hz}$), 8.17 (1H, dd, $J = 8.3, 1.5\text{Hz}$), 8.38 (1H, t, $J = 1.5\text{Hz}$), 8.67 (1H, d, $J = 2.0\text{Hz}$), 10.2 (1H, brs), 10.4 (1H, brs).
1-443	$^1\text{H-NMR}$ ($\text{DMSO}-d_6$) δ 2.23(3H, d, $J = 2.9\text{Hz}$), 3.81(3H, s), 7.53–7.63(4H, m), 7.75(1H, d, $J = 7.3\text{Hz}$), 8.01–8.06(3H, m), 8.37(1H, s), 10.29(1H, s), 10.49(1H, s).
1-444	$^1\text{H-NMR}$ ($\text{DMSO}-d_6$) δ 2.23(3H, d, $J = 2.0\text{Hz}$), 3.81(3H, s), 7.33–7.40(2H, m), 7.53–7.63(2H, m), 7.67–7.76(2H, m), 7.95(1H, d, $J = 7.8\text{Hz}$), 8.33(1H, s), 10.30(1H, s), 10.66(1H, s).
1-445	$^1\text{H-NMR}$ (CDCl_3) δ 2.36 (3H, s), 7.25 (1H, s), 7.47–7.57 (4H, m), 7.77 (1H, d, $J = 7.8\text{Hz}$), 7.99 (2H, dd, $J = 1.5, 8.7\text{Hz}$), 8.14 (1H, dd, $J = 1.5, 7.8\text{Hz}$), 8.38 (1H, t, $J = 1.5\text{Hz}$), 9.28 (1H, brs), 9.82 (1H, brs).
1-446	$^1\text{H-NMR}$ ($\text{DMSO}-d_6$) δ 2.29(6H, s), 7.51–7.63(6H, m), 7.76(1H, d, $J = 7.8\text{Hz}$), 7.98–8.01(2H, m), 8.05(1H, dd, $J = 2.0, 7.8\text{Hz}$), 8.37(1H, t, $J = 2.0\text{Hz}$), 10.02(1H, s), 10.47(1H, s).
1-447	$^1\text{H-NMR}$ ($\text{DMSO}-d_6$) δ 2.28(6H, s), 7.33–7.40(2H, m), 7.53(2H, s), 7.54–7.77(4H, m), 7.95(1H, d, $J = 8.3\text{Hz}$), 8.33(1H, s), 10.03(1H, s), 10.64(1H, s).
1-448	$^1\text{H-NMR}$ (CDCl_3) δ 4.67(2H, d, $J = 5.9\text{Hz}$), 7.40–7.65(9H, m), 7.97–8.03(4H, m), 8.27(1H, t, $J = 2.0\text{Hz}$), 9.73(1H, s).
1-449	$^1\text{H-NMR}$ (CDCl_3) δ 4.68(2H, d, $J = 5.8\text{Hz}$), 7.43–7.65(9H, m), 7.98–8.00(3H, m), 8.04(1H, d, $J = 8.2\text{Hz}$), 8.24(1H, d, $J = 1.9\text{Hz}$), 9.68 (1H, s).
1-450	$^1\text{H-NMR}$ (CDCl_3) δ 4.83(2H, d, $J = 5.8\text{Hz}$), 6.58(1H, brs), 7.40–7.69 (9H, m), 7.86–7.88(2H, m), 7.92(1H, d, $J = 8.3\text{Hz}$), 7.97(1H, s), 8.05 (1H, t, $J = 2.0\text{Hz}$).
1-451	$\text{MS}(\text{APCI})=376(\text{M}+1)$
1-452	$^1\text{H-NMR}$ (CDCl_3) δ 4.76(2H, d, $J = 5.9\text{Hz}$), 6.82(1H, brs), 7.45–7.63 (5H, m), 7.79(2H, s), 7.80(2H, s), 7.87(2H, d, $J = 7.4\text{Hz}$), 8.00(1H, s), 8.21(1H, t, $J = 2.0\text{Hz}$).
1-453	$^1\text{H-NMR}$ ($\text{DMSO}-d_6$) δ 2.19(6H, s), 7.24(2H, s), 7.49–7.63(4H, m), 7.73–7.75(1H, m), 7.98–8.05(3H, m), 8.35(1H, t, $J = 1.5\text{Hz}$), 9.83 (1H, s), 10.46(1H, s).

Table 5-12

Compound No.	Physical Property
1-454	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 2.19(6H, s), 7.37(2H, s), 7.49-7.63(4H, m), 7.74(1H, d, $J=7.8\text{Hz}$), 7.98-8.05(3H, m), 8.35(1H, t, $J=2.0\text{Hz}$), 9.82(1H, s), 10.44(1H, s).
1-455	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.24 (6H, s), 7.43-7.57 (6H, m), 7.74 (1H, d, $J=7.3\text{Hz}$), 8.01 (2H, d, $J=8.3\text{Hz}$), 8.12 (1H, d, $J=8.3\text{Hz}$), 8.36 (1H, brs), 9.32 (1H, brs), 10.1 (1H, brs).
1-456	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.19(6H, s), 6.97-7.04(2H, m), 7.39-7.49 (4H, m), 7.55(1H, brs), 7.69(1H, d, $J=8.3\text{Hz}$), 7.79(1H, dd, $J=8.3, 1.5\text{Hz}$), 8.04(1H, brs), 8.24(1H, t, $J=1.5\text{Hz}$).
1-457	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.50-7.62(5H, m), 7.67-7.69(1H, m), 7.83 (1H, dd, $J=2.4, 8.3\text{Hz}$), 7.88(1H, d, $J=2.4\text{Hz}$), 7.97-8.04(3H, m), 8.33(1H, t, $J=2.0\text{Hz}$), 10.20(1H, s), 10.46(1H, s).
1-458	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.51-7.64(5H, m), 7.72(1H, d, $J=7.8\text{Hz}$), 7.82(1H, d, $J=6.8\text{Hz}$), 7.94-8.00(3H, m), 8.03-8.06(1H, m), 8.33 (1H, s), 10.33(1H, s), 10.46(1H, s).
1-459	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.45-7.63 (6H, m), 7.91-8.01 (4H, m), 8.16 (1H, d, $J=8.3\text{Hz}$), 8.32 (1H, t, $J=1.5\text{Hz}$), 8.65 (1H, brs), 10.0 (1H, brs).
1-460	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 2.21 (3H, s), 7.51-7.63 (4H, m), 7.72-7.76 (2H, m), 7.80 (1H, d, $J=1.9\text{Hz}$), 7.99 (2H, d, $J=8.8\text{Hz}$), 8.05 (1H, d, $J=8.8\text{Hz}$), 8.36 (1H, brs), 10.0 (1H, brs), 10.5 (1H, brs).
1-461	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.27 (6H, s), 7.08-7.15 (3H, m), 7.48-7.60 (5H, m), 7.69 (1H, d, $J=7.8\text{Hz}$), 7.86-7.89 (2H, m), 7.95-7.97 (1H, m), 8.11 (1H, brs), 8.22 (1H, s).
1-462	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 3.87 (3H, s), 7.47-7.59 (3H, m), 7.72 (1H, d, $J=2.9\text{Hz}$), 7.78 (1H, d, $J=7.8\text{Hz}$), 7.99-8.03 (2H, m), 8.12 (1H, d, $J=7.8\text{Hz}$), 8.46 (1H, s), 10.3 (1H, brs), 10.4 (1H, brs).
1-463	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.53-7.64(4H, m), 7.77(1H, d, $J=8.3\text{Hz}$), 7.98-8.01(2H, m), 8.07(1H, dd, $J=1.5, 8.3\text{Hz}$), 8.43(1H, t, $J=1.5\text{Hz}$), 10.51(1H, s), 10.97(1H, s).
1-464	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.53-7.64(4H, m), 7.75(1H, d, $J=8.3\text{Hz}$), 7.99-8.08(3H, m), 8.41(1H, s), 10.50(1H, s), 10.59(1H, s).
1-465	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.33-7.44(4H, m), 7.51-7.63(2H, m), 7.67-7.74(2H, m), 7.95(1H, d, $J=7.8\text{Hz}$), 8.32(1H, s), 10.40(1H, s), 10.65 (1H, s).
1-466	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.33-7.40(2H, m), 7.52-7.63(2H, m), 7.68-7.71(2H, m), 7.74(2H, d, $J=8.8\text{Hz}$), 7.96(1H, d, $J=7.8\text{Hz}$), 8.02 (2H, d, $J=8.8\text{Hz}$), 8.30(1H, s), 10.67(2H, s).
1-467	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.33-7.40(2H, m), 7.53-7.63(2H, m), 7.68-7.72(1H, m), 7.77(1H, d, $J=7.8\text{Hz}$), 7.83(1H, dd, $J=2.0, 8.3\text{Hz}$), 7.89(1H, d, $J=8.3\text{Hz}$), 7.97(1H, d, $J=7.8\text{Hz}$), 8.13 (1H, s), 8.36(1H, s), 10.26(1H, s), 10.68(1H, s).
1-468	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.53-7.63(4H, m), 7.78(1H, d, $J=7.8\text{Hz}$), 7.98-8.01(2H, m), 8.06-8.07(1H, m), 8.13(1H, d, $J=2.0\text{Hz}$), 8.20 (1H, d, $J=2.0\text{Hz}$), 8.39(1H, d, $J=2.0\text{Hz}$), 10.50(1H, s), 10.60(1H, s).

Table 5-13

Compound No.	Physical Property
1-469	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.27-7.39(2H, m), 7.51-7.63(4H, m), 7.68-7.77(3H, m), 7.81(1H, d, $J = 7.8\text{Hz}$), 7.95-7.98(1H, m), 8.31(1H, s), 10.19(1H, s), 10.66(1H, s).
1-470	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.51-7.62(4H, m), 7.71(1H, d, $J = 7.8\text{Hz}$), 7.94(1H, d, $J = 2.4\text{Hz}$), 7.97-8.06(3H, m), 8.20(1H, d, $J = 2.4\text{Hz}$), 8.33(1H, t, $J = 2.0\text{Hz}$), 10.37(1H, s), 10.46(1H, s).
1-471	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 1.26(6H, d, $J = 6.8\text{Hz}$), 3.08(1H, septet, $J = 6.8\text{Hz}$), 7.52-7.63(4H, m), 7.69-7.74(2H, m), 7.98-8.01(3H, m), 8.06(1H, dd, $J = 1.5, 7.8\text{Hz}$), 8.32(1H, t, $J = 1.5\text{Hz}$), 10.28(1H, s), 10.47(1H, s).
1-472	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 1.26(6H, d, $J = 6.8\text{Hz}$), 3.08(1H, septet, $J = 6.8\text{Hz}$), 7.32-7.39(2H, m), 7.51-7.63(2H, m), 7.67-7.73(3H, m), 7.96-7.98(2H, m), 8.27(1H, s), 10.30(1H, s), 10.65(1H, s).
1-473	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.44-8.06(13H, m), 10.39(1H, s), 10.48(1H, s).
1-474	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 2.42(3H, s), 7.53-7.64(4H, m), 7.75(1H, d, $J = 7.8\text{Hz}$), 7.83(1H, d, $J = 7.8\text{Hz}$), 8.00(2H, d, $J = 6.8\text{Hz}$), 8.06(1H, d, $J = 8.3\text{Hz}$), 8.13(1H, d, $J = 8.3\text{Hz}$), 8.21(1H, s), 8.40(1H, s), 10.17(1H, s), 10.50(1H, s).
1-475	$\text{MS}(\text{APCI})=385(\text{M}+1)$
1-476	$\text{MS}(\text{APCI})=488(\text{M}+1)$
1-477	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 3.35(6H, s), 7.51-7.61(5H, m), 7.77(1H, t, $J = 8.8\text{Hz}$), 8.00(2H, d, $J = 7.8\text{Hz}$), 8.05-8.07(2H, m), 8.40(1H, s), 10.14(1H, s), 10.48(1H, s).
1-478	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.48-7.56(3H, m), 7.63-7.67(2H, m), 7.94-7.99(4H, m), 8.22(1H, s), 9.03(1H, s), 9.46(2H, s).
1-479	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 7.53-7.62(5H, m), 7.76(1H, d, $J = 7.8\text{Hz}$), 8.00(2H, d, $J = 7.3\text{Hz}$), 8.08(1H, d, $J = 7.8\text{Hz}$), 8.42(1H, s), 8.95(1H, s), 9.30(1H, s), 10.50(1H, s).
1-480	$^1\text{H-NMR}(\text{CDCl}_3, \text{ppm})$ δ 1.36(9H, s), 2.34(3H, s), 6.92-6.95(2H, m), 7.49-8.22(12H, m).
1-481	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 2.50(3H, s), 7.14(1H, dd, $J = 2.5, 8.8\text{Hz}$), 7.21(1H, d, $J = 2.4\text{Hz}$), 7.41(1H, d, $J = 8.8\text{Hz}$), 7.50-7.75(8H, m), 7.97-8.14(5H, m), 8.34(1H, s), 9.98(1H, s), 10.47(1H, s).
1-482	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 2.28(3H, s), 7.31(1H, s), 7.50-8.16(14H, m), 8.38(1H, s), 10.09(1H, s), 10.48(1H, s).
1-483	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 2.15(3H, s), 6.69(1H, d, $J = 2.4\text{Hz}$), 6.78(1H, d, $J = 2.4\text{Hz}$), 7.48-7.63(4H, m), 7.74(1H, d, $J = 8.8\text{Hz}$), 7.98-8.05(3H, m), 8.32(1H, t, $J = 2.4\text{Hz}$), 9.77(1H, s), 9.82(1H, s), 10.4(1H, s).

Table 5-14

Compound No.	Physical Property
1-484	$^1\text{H-NMR}$ (DMSO- d_6) δ 2.16(3H,s), 6.72(1H,d,J=2.4Hz), 6.94(1H,d,J=2.4Hz), 7.50-7.63(4H,m), 7.74(1H,d,J=8.3Hz), 7.98-8.05(3H,m), 8.32(1H,s), 9.79(1H,s), 9.81(1H,s), 10.4(1H,s).
1-485	$^1\text{H-NMR}$ (CDCl_3) δ 2.29(3H,s), 2.48(3H,s), 6.94(1H,d,J=2.9Hz), 7.14(1H,d,J=2.9Hz), 7.36(2H,d,J=8.3Hz), 7.51-7.61(5H,m), 7.71-7.77(3H,m), 7.88-7.92(3H,m), 7.99(1H,br.s), 8.28(1H,s).
1-486	$^1\text{H-NMR}$ (CDCl_3) δ 1.82-1.89 (4H, m), 3.30-3.60 (7H, m), 7.23-7.30 (5H, m), 7.44 (2H, s), 7.76 (2H, d, J=4.9 Hz), 7.87 (2H, d, J=6.4 Hz), 10.4 (1H, s).
1-487	$^1\text{H-NMR}$ (CDCl_3 , ppm) δ 1.41 (3H, t, J=7.3 Hz), 3.57 (3H, s), 4.41 (2H, q, J=7.3 Hz), 7.20-7.34 (6H, m), 7.40 (2H, t, J=7.8 Hz), 7.61 (1H, d, J=2.0 Hz), 7.71 (1H, d, J=7.8 Hz), 8.27 (2H, s).
1-488	$^1\text{H-NMR}$ (DMSO- d_6) δ 7.51-7.59 (3H, m), 7.62 (2H, s), 7.78 (1H, d, J=7.8 Hz), 7.86 (1H, d, J=7.8 Hz), 7.89-7.91 (2H, m), 8.05 (2H, d, J=7.3 Hz), 8.38 (1H, s), 9.47 (1H, s).
1-489	$^1\text{H-NMR}$ (CDCl_3 , ppm) δ 2.92 (4H, s), 7.48 (2H, s), 7.48-7.59 (4H, m), 7.76 (1H, d, J=7.8 Hz), 7.85 (1H, s), 7.90 (2H, d, J=7.8 Hz), 7.96 (1H, d, J=7.8 Hz), 8.03 (1H, s), 8.24 (1H, s).
1-490	$^1\text{H-NMR}$ (CDCl_3 , ppm) δ 7.49-8.02 (15H, m), 8.10 (1H, d, J=7.3 Hz), 8.22 (1H, s).
1-491	MS(APCI)=374(M+1)
1-492	MS(APCI)=374(M+1)
1-493	MS(APCI)=408(M+1)
1-494	MS(APCI)=402(M+1)
1-495	MS(APCI)=404(M+1)
1-496	MS(APCI)=392(M+1)
1-497	$^1\text{H-NMR}$ (DMSO- d_6) δ 7.52-7.62 (5H, m), 7.80 (1H, d, J=6.8Hz), 7.97-8.00 (2H, m), 8.05 (1H, d, J=7.8Hz), 8.32 (1H, d, J=5.9Hz), 8.38 (1H, s), 8.92 (1H, t, J=3.9Hz), 10.48-10.54 (2H, m).
1-498	$^1\text{H-NMR}$ (DMSO- d_6) δ 7.51-7.59 (3H, m), 7.80-7.85 (1H, m), 7.92-7.96 (1H, m), 8.09 (1H, dd, J=7.3, 2.0Hz), 8.21 (1H, dd, J=7.3, 2.0Hz), 8.40 (1H, brs), 8.54 (2H, d, J=2.0Hz), 10.38 (1H, s), 10.86 (1H, s).

Table 5-15

Compound No.	Physical Property
1-499	MS(APCI)=368(M+1)
1-500	MS(APCI)=368(M+1)
1-501	MS(APCI)=368(M+1)
1-502	MS(APCI)=421(M+1)
1-503	MS(APCI)=400(M+1)
1-504	MS(APCI)=338(M+1)
1-505	MS(APCI)=383(M+1)
1-506	MS(APCI)=405(M+1)
1-507	MS(APCI)=419(M+1)
1-508	MS(APCI)=375(M+1)
1-509	MS(APCI)=375(M+1)
1-510	MS(APCI)=356(M+1)
1-511	MS(APCI)=347(M+1)
1-512	MS(APCI)=367(M+1)
1-513	MS(APCI)=354(M+1)

Table 5-16

Compound No.	Physical Property
1-514	MS(APCI)=402(M+1)
1-515	MS(APCI)=338(M+1)
1-516	MS(APCI)=335(M+1)
1-517	$^1\text{H-NMR}$ (CDCl_3 , ppm) δ 2.72 (3H, s), 7.48–8.01 (12H, m), 8.41 (1H, d, $J=2.0$ Hz).
1-518	$^1\text{H-NMR}$ (CDCl_3) δ 2.56 (6H, s), 7.13–7.18 (1H, m), 7.24–7.31 (2H, m), 7.50–7.57 (2H, m), 7.94 (2H, d, $J=7.3$ Hz), 8.21 (1H, d, $J=7.3$ Hz), 8.50 (1H, s), 9.43 (1H, d, $J=8.8$ Hz).
1-519	$^1\text{H-NMR}$ (CDCl_3) δ 3.56 (3H, s), 4.05 (6H, s), 7.09 (1H, s), 7.14 (1H, t, $J=4.9$ Hz), 7.35 (1H, d, $J=5.3$ Hz), 7.56 (1H, d, $J=1.5$ Hz), 7.58 (1H, d, $J=1.5$ Hz), 7.65 (1H, d, $J=5.9$ Hz), 7.73 (1H, s), 8.27 (1H, t, $J=1.5$ Hz).
1-520	$^1\text{H-NMR}$ (CDCl_3) δ 3.53 (3H, s), 4.03 (6H, s), 7.16–7.27 (5H, m), 7.28–7.35 (4H, m), 7.66 (1H, d, $J=1.46$ Hz).
1-521	$^1\text{H-NMR}$ (CDCl_3 -DMSO- d_6) δ 7.43–7.53 (5H, m), 7.70 (1H, d, $J=7.8$ Hz), 7.99 (1H, d, $J=6.8$ Hz), 8.17 (1H, d, $J=7.8$ Hz), 8.28 (1H, s), 9.21 (1H, br.s.), 9.70 (1H, br.s.).
1-522	$^1\text{H-NMR}$ (CDCl_3 -DMSO- d_6) δ 7.13–7.32 (2H, m), 7.45–7.55 (2H, m), 7.75 (1H, t, $J=3.9$ Hz), 7.86–7.90 (1H, m), 7.94–8.12 (1H, m), 8.25 (1H, s), 9.73 (1H, d, $J=6.3$ Hz), 9.86 (1H, br.s.).
1-523	$^1\text{H-NMR}$ (CDCl_3) δ 2.56 (6H, s), 7.13–7.18 (1H, m), 7.24–7.31 (2H, m), 7.50–7.57 (2H, m), 7.94 (2H, d, $J=7.3$ Hz), 8.21 (1H, d, $J=7.3$ Hz), 8.50 (1H, s), 9.43 (1H, d, $J=8.8$ Hz).
1-524	$^1\text{H-NMR}$ (CDCl_3 -DMSO- d_6) δ 2.90 (3H, d, $J=4.4$ Hz), 3.51 (3H, s), 7.20–7.43 (8H, m), 7.74–7.79 (2H, m), 7.99–8.02 (2H, m), 8.75 (1H, d, $J=4.4$ Hz), 11.9 (1H, s).
1-525	$^1\text{H-NMR}$ (CDCl_3 -DMSO- d_6) δ 1.25 (6H, d, $J=6.8$ Hz), 3.53 (3H, s), 4.22 (1H, sep., $J=7.8$ Hz), 6.19 (1H, d, $J=7.8$ Hz), 7.13–7.27 (3H, m), 7.29–7.34 (5H, m), 7.72–7.75 (2H, m), 7.81 (1H, t, $J=2.0$ Hz), 8.01 (1H, d.d., $J=1.5, 6.8$ Hz), 11.21 (1H, s).
1-526	$^1\text{H-NMR}$ (CDCl_3 -DMSO- d_6) δ 6.82 (1H, q., $J=2.0, 7.2, 6.3, 2.0$ Hz), 7.48–7.62 (5H, m), 7.85 (1H, d.d., $J=1.5, 6.8, 1.0$ Hz), 8.00 (2H, m), 8.25–8.28 (1H, m), 8.34–8.52 (3H, m), 8.64 (1H, br.s.), 10.28 (1H, br.s.).
1-527	$^1\text{H-NMR}$ (CDCl_3 -DMSO- d_6) δ 3.53 (3H, s), 7.20–7.27 (3H, m), 7.32 (3H, t, $J=7.3$ Hz), 7.44 (1H, t, $J=7.8$ Hz), 7.54 (1H, t, $J=7.8$ Hz), 7.90–7.91 (1H, m), 7.95–7.98 (1H, m), 8.07–8.13 (3H, m).
1-528	$^1\text{H-NMR}$ (CDCl_3 -DMSO- d_6) δ 3.46 (3H, s), 7.22–7.31 (4H, m), 7.32–7.34 (2H, m), 7.47–7.53 (2H, t, $J=7.8$ Hz), 8.00–8.03 (2H, m), 8.21 (1H, d, $J=2.0$ Hz), 8.43 (1H, t, $J=1.5$ Hz).

Table 5-17

Compound No.	Physical Property
1-529	$^1\text{H-NMR}(\text{CDCl}_3\text{-DMSO-}d_6) \delta$ 3.43 (3H, s), 7.21-7.29 (4H, m), 7.30-7.32 (2H, m), 7.44-7.49 (2H, m), 7.98-8.00 (2H, m), 8.05 (1H, d, $J=2.0\text{Hz}$), 8.19 (1H, t, $J=2.4, 1.0\text{Hz}$).
1-530	$^1\text{H-NMR}(\text{CDCl}_3, \text{ppm}) \delta$ 3.11 (3H, s), 3.56 (3H, s), 7.21-7.34 (6H, m), 7.42 (1H, t, $J=8.3\text{Hz}$), 7.60 (1H, brs), 7.63 (1H, brs), 7.71 (1H, dd, $J=1.5\text{Hz}, J=8.3\text{Hz}$), 7.96 (2H, s).
1-531	$^1\text{H-NMR}(\text{CDCl}_3) \delta$ 2.07 (3H, s), 2.18 (3H, s), 3.19-3.50 (3H, m), 6.09-7.84 (8H, m), 8.00 (2H, s).
1-532	$^1\text{H-NMR}(\text{DMSO-}d_6) \delta$ 2.50 (3H, s), 3.39 (3H, s), 3.42 (3H, s), 6.30-7.30 (8H, m), 7.72 (2H, s).
1-533	$^1\text{H-NMR}(\text{DMSO-}d_6) \delta$ 3.17 (3H, s), 3.22 (3H, s), 3.72 (3H, s), 6.52-7.76 (11H, m).
1-534	$^1\text{H-NMR}(\text{CDCl}_3) \delta$ 1.02(3H, t, $J=7.3\text{Hz}$), 1.65(2H, tq, $J=7.3, 7.3\text{Hz}$), 2.87(2H, t, $J=7.3\text{Hz}$), 7.21(1H, dd, $J=8.3, 11.7\text{Hz}$), 7.31-7.34(3H, m), 7.49(1H, t, $J=8.3\text{Hz}$), 7.53-7.57(1H, m), 7.69-7.74 (3H, m), 8.04-8.08(2H, m), 8.14(1H, s), 9.11(1H, d, $J=11.7\text{Hz}$), 9.27(1H, s).
1-535	$^1\text{H-NMR}(\text{CDCl}_3) \delta$ 1.05(3H, t, $J=7.3\text{Hz}$), 1.66-1.79(2H, m), 2.72-2.86(2H, m), 7.22(1H, t, $J=8.3\text{Hz}$), 7.31-7.34(1H, m), 7.50 (1H, t, $J=8.3\text{Hz}$), 7.55-7.56(1H, m), 7.61(2H, d, $J=8.8\text{Hz}$), 7.75 (1H, d, $J=8.3\text{Hz}$), 7.98(2H, d, $J=8.8\text{Hz}$), 8.06-8.08(2H, m), 8.17 (1H, s), 9.06(1H, d, $J=11.7\text{Hz}$), 9.65(1H, s).
1-536	$^1\text{H-NMR}(\text{CDCl}_3) \delta$ 1.06(3H, t, $J=7.3\text{Hz}$), 1.72(2H, tq, $J=7.3, 7.3\text{Hz}$), 2.93(2H, t, $J=7.3\text{Hz}$), 7.19-7.25(1H, m), 7.35(1H, t, $J=7.8\text{Hz}$), 7.52(2H, s), 7.53-7.59(2H, m), 7.72(1H, s), 7.76(1H, d, $J=7.8\text{Hz}$), 7.96(1H, d, $J=8.3\text{Hz}$), 8.19(1H, t, $J=6.3\text{Hz}$), 8.27(1H, s), 8.62(1H, d, $J=16.1\text{Hz}$).
1-537	$^1\text{H-NMR}(\text{CDCl}_3) \delta$ 1.07(3H, t, $J=7.3\text{Hz}$), 1.80-1.86(2H, m), 3.12 (2H, t, $J=7.3\text{Hz}$), 7.20-7.23(1H, m), 7.38(1H, t, $J=7.3\text{Hz}$), 7.54-7.58(2H, m), 7.79(1H, d, $J=8.3\text{Hz}$), 7.90(1H, d, $J=7.8\text{Hz}$), 7.98 (1H, s), 8.16(2H, s), 8.18-8.20(1H, m), 8.38(1H, s), 8.6(1H, d).
1-538	$^1\text{H-NMR}(\text{CDCl}_3) \delta$ 1.11(3H, t, $J=7.3\text{Hz}$), 1.72-1.91(2H, m), 2.64-2.86(2H, m), 7.20-7.23(1H, m), 7.35(1H, t, $J=7.3\text{Hz}$), 7.53-7.57 (2H, m), 7.79(1H, d, $J=7.5\text{Hz}$), 7.85(2H, s), 7.95(1H, d, $J=7.8\text{Hz}$), 8.05(1H, s), 8.20(1H, t, $J=7.3\text{Hz}$), 8.33(1H, s), 8.64(1H, d, $J=16.0\text{Hz}$).

Table 5-18

Compound No.	Physical Property
1-539	¹ H-NMR (CDCl ₃) δ 7.19(1H, d, J = 8.3Hz), 7.34(1H, t, J = 8.3Hz), 7.41-7.59(9H, m), 7.65(1H, s), 7.74(1H, d, J = 7.3Hz), 7.96(1H, d, J = 7.3Hz), 8.18(1H, dt, J = 1, 8.3Hz), 8.60(1H, s), 8.62(1H, s).
1-540	¹ H-NMR (CDCl ₃) δ 7.39-7.41(4H, m), 7.42-7.59(7H, m), 7.67(1H, s), 7.72(1H, d, J = 7.3Hz), 7.88-7.90(2H, m), 7.98(1H, d, J = 8.3Hz), 8.04(1H, s), 8.22(1H, s).
1-541	¹ H-NMR (CDCl ₃) δ 4.18(2H, s), 7.44(2H, d, J = 7.8Hz), 7.50-7.61(8H, m), 7.74(1H, d, J = 7.8Hz), 7.78(1H, s), 7.88-7.94(3H, m), 8.03(1H, s), 8.27(1H, s).
1-542	¹ H-NMR (CDCl ₃) δ 4.18(2H, s), 7.19-7.25(1H, m), 7.35(1H, t, J = 7.3Hz), 7.44(2H, d, J = 7.5Hz), 7.52(2H, s), 7.54-7.58(2H, m), 7.60(2H, d, J = 7.8Hz), 7.75-7.77(2H, m), 7.92(1H, d, J = 6.8Hz), 8.19(1H, t, J = 7.8Hz), 8.30(1H, s), 8.65(1H, s).
1-543	¹ H-NMR (CDCl ₃) δ 4.18(2H, s), 7.41-7.46(3H, m), 7.51(2H, s), 7.55(1H, t, J = 7.8Hz), 7.60(2H, d, J = 7.8Hz), 7.72(1H, s), 7.77(1H, d, J = 7.8Hz), 7.91(1H, d, J = 7.8Hz), 8.21(1H, d, J = 2.0Hz), 8.24(1H, d, J = 8.3Hz), 8.42(1H, s), 8.54(1H, s).
1-544	¹ H-NMR (CDCl ₃) δ 4.19(2H, s), 7.46-7.54(5H, m), 7.60(2H, d, J = 8.3Hz), 7.79(1H, d, J = 8.3Hz), 8.22-8.26(4H, m), 8.32(2H, d, J = 9.3Hz), 8.95(1H, s), 10.18(1H, s).
1-545	¹ H-NMR (CDCl ₃) δ 4.16(2H, s), 7.13-7.20(2H, m), 7.40-7.46(4H, m), 7.52(1H, t, J = 8.3Hz), 7.60(2H, d, J = 8.3Hz), 7.71(1H, d, J = 7.3Hz), 7.82(1H, s), 7.86-7.93(2H, m), 7.98(1H, d, J = 7.8Hz), 8.21(2H, d, J = 9.3Hz).
1-546	¹ H-NMR (CDCl ₃) δ 3.48(2H, q, J = 9.8Hz), 7.49-7.60(4H, m), 7.69(2H, s), 7.73(1H, d, J = 7.8Hz), 7.87-7.90(3H, m), 7.95(1H, d, J = 7.8Hz), 8.14(1H, s), 8.27(1H, s).
1-547	¹ H-NMR (CDCl ₃) δ 3.49(2H, q, J = 9.8Hz), 7.20-7.25(1H, m), 7.35(1H, t, J = 7.8Hz), 7.52-7.58(2H, m), 7.74(2H, s), 7.76(1H, d, J = 7.8Hz), 7.83(1H, s), 7.92(1H, d, J = 7.8Hz), 8.19(1H, t, J = 7.8Hz), 8.31(1H, s), 8.64(1H, d, J = 15.6Hz).
1-548	¹ H-NMR (CDCl ₃) δ 3.49(2H, q, J = 9.8Hz), 7.42-7.45(1H, m), 7.54(1H, t, J = 7.3Hz), 7.73(2H, s), 7.77-7.79(2H, m), 7.92(1H, d, J = 7.8Hz), 8.21-8.23(1H, m), 8.26(1H, s), 8.43(1H, s), 8.53-8.55(1H, m).
1-549	¹ H-NMR (CDCl ₃) δ 3.54(2H, q, J = 9.3Hz), 7.52(1H, t, J = 7.8Hz), 7.73(2H, s), 7.82(1H, d, J = 7.8Hz), 8.23-8.27(4H, m), 8.32(2H, d, J = 9.3Hz), 9.33(1H, s), 10.29(1H, s).
1-550	¹ H-NMR (CDCl ₃ , ppm) δ 3.57 (3H, s), 7.22-7.33 (6H, m), 7.43 (1H, t, J=7.8 Hz), 7.67 (1H, s), 7.72-7.78 (2H, m), 8.30 (2H, s).
1-551	¹ H-NMR (CDCl ₃ , ppm) δ 3.56 (3H, s), 7.21-7.34 (6H, m), 7.41 (1H, t, J=7.8 Hz), 7.46 (1H, brs), 7.60 (1H, s), 7.69 (1H, d, J=1.5 Hz), 7.70 (2H, s).
1-552	¹ H-NMR (CDCl ₃ , ppm) δ 3.99 (2H, brs), 6.66 (2H, s), 6.95-7.02 (4H, m), 7.72 (1H, d, J=7.3 Hz), 7.93-7.96 (3H, m), 8.08 (1H, d, J=8.3 Hz), 8.25 (1H, s), 8.85 (1H, s).
1-553	¹ H-NMR (DMSO-d ₆) δ 3.88(3H, s), 7.48-7.57(4H, m), 7.71(2H, d, J = 8.3Hz), 7.82(1H, d, J = 7.8Hz), 8.02(2H, d, J = 8.3Hz), 8.10(2H, d, J = 8.3Hz), 8.17(1H, d, J = 8.3Hz), 8.41(1H, s), 10.06(1H, s), 10.9(1H, s).

Table 5-19

Compound No.	Physical Property
1-554	¹ H-NMR (DMSO-d ₆) δ 2.09 (3H, s), 7.50-7.63 (4H, m), 7.75 (1H, d, J=7.8 Hz), 7.79 (2H, s), 7.99-8.06 (3H, m), 8.35 (1H, s), 10.2 (1H, s), 10.3 (1H, s), 10.5 (1H, s).
1-555	¹ H-NMR (CDCl ₃) δ 7.40(2H, t, J = 7.3Hz), 7.47-7.52(5H, m), 7.57 (1H, t, J = 7.3Hz), 7.64(2H, s), 7.74(1H, d, J = 8.3Hz), 7.87-7.97 (6H, m), 8.25(1H, d, J = 8.3Hz), 8.86(1H, brs).
1-556	¹ H-NMR (CDCl ₃ , ppm) δ 3.01 (3H, d, J=4.8 Hz), 3.56 (3H, s), 6.27 (1H, d, J=4.8 Hz), 7.19-7.33 (6H, m), 7.38 (1H, t, J=7.8 Hz), 7.58 (1H, br), 7.65 (1H, s), 7.72 (1H, d, J=7.8 Hz), 7.94 (2H, s).
1-558	¹ H-NMR (DMSO-d ₆) δ 3.80(3H, s), 7.40-7.43(1H, m), 7.50(1H, t, J = 7.8Hz), 7.76(1H, s), 7.81(1H, d, J = 7.8Hz), 7.94(1H, d, J = 7.8Hz), 8.11(1H, dt, J = 8.3, 2.0Hz), 8.33(1H, t, J = 2.0Hz), 8.51 (1H, dd, J = 8.3, 2.0Hz), 10.48(1H, s), 10.78(1H, s).
1-559	¹ H-NMR (DMSO-d ₆) δ 3.80(3H, s), 7.21(1H, dd, J = 8.3, 10.2Hz), 7.30(1H, dd, J = 6.8, 7.8Hz), 7.51-7.55(2H, m), 7.76(1H, s), 7.81 (1H, dd, J = 1.5, 7.8Hz), 7.93(1H, d, J = 1.5Hz), 8.12(1H, d, J = 8.3Hz), 8.33(1H, s), 9.62(1H, d, J = 7.8Hz), 10.78(1H, s).
1-560	¹ H-NMR (CDCl ₃) δ 1.68(9H, s), 7.48-7.54(3H, m), 7.58(1H, d, J = 7.8Hz), 7.68(1H, d, J = 7.8Hz), 7.78(1H, s), 7.86-7.92(3H, m), 7.97(1H, s), 8.11(1H, s), 8.25(1H, s).
1-562	¹ H-NMR (CDCl ₃ , ppm) δ 3.44 (3H, s), 7.23-7.30 (5H, m), 7.41-7.45 (2H, m), 7.71 (1H, brs), 7.77 (1H, d, J=6.3 Hz), 7.80 (1H, s), 8.02 (2H, s), 8.22 (1H, s), 10.4 (1H, s).
1-563	¹ H-NMR (CDCl ₃ , ppm) δ 3.57 (3H, s), 7.21-7.44 (8H, m), 7.61 (1H, s), 7.72 (1H, d, J=7.8 Hz), 8.01 (2H, s), 8.13 (1H, s), 8.58 (1H, s).
1-564	¹ H-NMR (CDCl ₃ , ppm) δ 3.57 (3H, s), 7.21-7.30 (7H, m), 7.34 (1H, dt, J=7.3 Hz, J=1.5 Hz), 7.41 (1H, t, J=7.3 Hz), 7.87 (1H, s), 7.96 (1H, dt, J=1.5 Hz, J=8.3 Hz), 8.17 (1H, d, J=1.5 Hz), 8.35 (1H, s), 8.65 (1H, d, J=7.8 Hz).
1-565	¹ H-NMR (CDCl ₃ , ppm) δ 7.53-7.62 (4H, m), 7.81 (1H, d, J=7.8 Hz), 8.00-8.02 (2H, m), 8.07 (1H, d, J=7.3 Hz), 8.40 (1H, s), 8.57 (2H, s), 9.90 (1H, s), 10.49 (1H, s), 10.51 (1H, s).
1-566	¹ H-NMR (CDCl ₃) δ 2.48(3H, s), 7.05(1H, s), 7.23(1H, s), 7.50-7.62 (4H, m), 7.69(1H, d, J = 7.8Hz), 7.84(1H, dd, J = 2.0, 7.8Hz), 7.89 (2H, d, J = 6.8Hz), 8.13(1H, s), 8.16(1H, d, J = 6.8Hz), 8.39(1H, t, J = 1.9Hz), 8.89(1H, s).
1-567	¹ H-NMR (CDCl ₃) δ 2.33(3H, s), 3.56(3H, s), 7.03(1H, s), 7.22-7.38 (6H, m), 7.45(1H, t, J = 7.8Hz), 7.58(1H, s), 7.62(1H, s), 7.67(1H, d, J = 7.8Hz), 8.63(1H, s).
1-568	¹ H-NMR (CDCl ₃) δ 2.37(3H, s), 3.21(3H, s), 3.56(3H, s), 7.20-7.29 (4H, m), 7.33-7.41(4H, m), 7.52(1H, s), 7.69(1H, d, J = 7.8Hz), 7.72 (1H, s), 8.30(1H, s).
1-569	¹ H-NMR (CDCl ₃) δ 2.38(3H, s), 3.56(3H, s), 7.19-7.33(6H, m), 7.38-7.40(2H, m), 7.42(1H, s), 7.57(1H, s), 7.61(1H, s), 7.66(1H, d, J = 7.8Hz).
1-570	¹ H-NMR (CDCl ₃) δ 2.03(3H, s), 2.37(3H, s), 3.55(3H, s), 6.75 (1H, s), 7.20-7.44(9H, m), 7.92(1H, s), 7.99(1H, d, J = 7.8Hz).

Table 5-20

Compound No.	Physical Property
1-571	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 2.30(3H, s), 4.55(2H, d, $J = 2.9\text{Hz}$), 5.48(1H, broad), 7.51-7.60(5H, m), 7.69-7.73(2H, m), 7.98-8.00(2H, m), 8.06(1H, dd, $J = 1.5, 8.3\text{Hz}$), 8.35(1H, t, $J = 1.5\text{Hz}$), 9.93(1H, s), 10.48(1H, s).
1-572	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.31(3H, s), 3.36(3H, s), 3.53(3H, s), 4.44(2H, s), 7.17-7.40(8H, m), 7.49(1H, s), 7.67-7.71(2H, m), 8.69(1H, s).
1-573	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 1.96(3H, s), 3.84(2H, broad), 7.53-7.63(4H, m), 7.73(1H, d, $J = 7.8\text{Hz}$), 7.89(1H, s), 7.99-8.01(2H, m), 8.07(1H, dd, $J = 1.5, 7.8\text{Hz}$), 8.19(1H, s), 8.33(1H, t, $J = 2.0\text{Hz}$), 10.43(1H, s), 10.49(1H, s).
1-574	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 7.31(1H, d, $J = 2.9\text{Hz}$), 7.41(1H, d, $J = 2.9\text{Hz}$), 7.50-7.61(4H, m), 7.65(1H, broad-s), 7.74(1H, d, $J = 7.8\text{Hz}$), 7.81(1H, d, $J = 2.0\text{Hz}$), 7.88-7.91(2H, m), 8.01-8.05(3H, m), 8.23(1H, broad-s).
1-575	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 2.30(3H, s), 3.56(3H, s), 6.32(1H, septet, $J = 5.9\text{Hz}$), 6.85(1H, s), 7.19-7.43(8H, m), 7.58(1H, broad-s), 7.70(1H, d, $J = 7.8\text{Hz}$).
1-576	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 2.35(3H, s), 7.05(1H, d, $J = 2.4\text{Hz}$), 7.33(1H, d, $J = 2.4\text{Hz}$), 7.48-7.59(4H, m), 7.67(1H, broad-s), 7.72(1H, d, $J = 7.8\text{Hz}$), 7.88-7.90(2H, m), 7.99-8.03(2H, m), 8.17(1H, broad-s), 8.24(1H, broad-s), 8.28(1H, t, $J = 1.0\text{Hz}$).
1-577	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 2.40(3H, s), 7.11(1H, d, $J = 2.5\text{Hz}$), 7.20-7.25(1H, m), 7.30-7.37(2H, m), 7.53-7.59(2H, m), 7.60(1H, s), 7.76(1H, d, $J = 7.8\text{Hz}$), 7.97-8.00(2H, m), 8.17-8.22(1H, m), 8.29(2H, d, $J = 8.8\text{Hz}$), 8.61, 8.65(1H, two broad-s).
1-578	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 2.37(3H, s), 7.01(2H, t, $J = 8.3\text{Hz}$), 7.09(1H, d, $J = 2.5\text{Hz}$), 7.35(1H, d, $J = 2.5\text{Hz}$), 7.42-7.46(1H, m), 7.53(1H, t, $J = 8.3\text{Hz}$), 7.65(1H, s), 7.76(1H, d, $J = 7.8\text{Hz}$), 7.92-8.00(3H, m), 8.23(1H, s), 8.29(1H, s).
1-579	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 2.39(3H, s), 7.11(1H, d, $J = 2.4\text{Hz}$), 7.36(1H, d, $J = 2.4\text{Hz}$), 7.42-7.44(1H, m), 7.57(1H, t, $J = 7.8\text{Hz}$), 7.63(1H, s), 7.78(1H, d, $J = 7.8\text{Hz}$), 7.95(1H, d, $J = 8.3\text{Hz}$), 7.99(1H, d, $J = 2.0\text{Hz}$), 8.21-8.25(2H, m), 8.29(1H, s), 8.41(1H, s), 8.54-8.55(1H, m).
1-580	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 3.56(3H, s), 7.13(1H, dd, $J = 9.3, 2.4\text{Hz}$), 7.19-7.23(2H, m), 7.27-7.34(5H, m), 7.39(1H, d, $J = 8.3\text{Hz}$), 7.61(1H, t, $J = 1.5\text{Hz}$), 7.65(1H, d, $J = 8.3\text{Hz}$), 7.78(1H, d, $J = 2.4\text{Hz}$), 7.98(1H, d, $J = 2.4\text{Hz}$), 8.13(1H, broad-s), 8.55(1H, d, $J = 9.3\text{Hz}$).

Table 5-21

Compound No.	Physical Property
1-581	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 7.12-7.18(2H, m), 7.36-7.53(6H, m), 7.63(1H, d, $J = 2.0\text{Hz}$), 7.68(1H, d, $J = 7.8\text{Hz}$), 7.75(1H, s), 7.82(2H, d, $J = 7.8\text{Hz}$), 8.02-8.05(1H, m), 8.21(1H, s), 8.31(1H, s), 8.53(1H, s).
1-582	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 7.13-7.18(2H, m), 7.31(1H, dd, $J = 4.9, 7.8\text{Hz}$), 7.45-7.53(3H, m), 7.70-7.73(2H, m), 7.84(1H, d, $J = 1.5\text{Hz}$), 7.90(1H, dd, $J = 1.5, 7.8\text{Hz}$), 8.04(1H, dd, $J = 2.0, 7.8\text{Hz}$), 8.20(1H, s), 8.33(1H, s), 8.42(1H, dd, $J = 2.0, 4.9\text{Hz}$), 8.83(1H, s).
1-583	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 7.49-7.60(4H, m), 7.76(1H, d, $J = 7.8\text{Hz}$), 7.83(1H, d, $J = 2.4\text{Hz}$), 7.88-8.03(7H, m), 8.08(1H, s), 8.18(1H, s), 8.29(1H, t, $J = 2.0\text{Hz}$).
1-584	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 3.45(3H, s), 7.24-7.32(5H, m), 7.45-7.47(2H, m), 7.77-7.80(2H, m), 7.92(1H, s), 8.22(2H, s), 10.49(1H, broad).
1-585	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 3.48(3H, broad-s), 6.80(1H, broad), 7.01(1H, broad), 7.11(1H, s), 7.14(1H, broad), 7.21-7.30(3H, broad-m), 7.78(4H, broad), 8.38(1H, s).
1-586	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 3.52(3H, s), 7.09(1H, dd, $J = 4.9, 7.3\text{Hz}$), 7.13(1H, s), 7.34-7.36(2H, m), 7.53(1H, dd, $J = 1.5, 7.8\text{Hz}$), 7.77-7.82(4H, m), 8.21(1H, dd, $J = 2.0, 4.9\text{Hz}$), 8.41(1H, s).
1-587	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.53-7.64(4H, m), 7.80(1H, d, $J = 7.8\text{Hz}$), 7.92(1H, s), 7.99-8.02(2H, m), 8.07-8.09(1H, m), 8.23(2H, s), 8.40(1H, s), 10.50(1H, s), 10.57(1H, s).
1-588	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.33-7.40(2H, m), 7.54-7.63(2H, m), 7.68-7.72(1H, m), 7.80(1H, d, $J = 7.8\text{Hz}$), 7.92(1H, s), 7.99(1H, d, $J = 7.8\text{Hz}$), 8.23(2H, s), 8.35(1H, s), 10.05(1H, broad), 10.66(1H, s).
1-589	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.56-7.60(2H, m), 7.82(1H, d, $J = 7.8\text{Hz}$), 7.92-7.97(2H, m), 8.12(1H, dd, $J = 2.0, 7.8\text{Hz}$), 8.23(2H, s), 8.33(1H, d, $J = 2.0\text{Hz}$), 8.55(1H, dd, $J = 2.0, 4.9\text{Hz}$), 10.55(1H, broad), 10.90(1H, s).
1-590	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.36-7.42(2H, m), 7.57(1H, t, $J = 7.8\text{Hz}$), 7.80(1H, d, $J = 7.8\text{Hz}$), 7.92(1H, s), 8.06-8.11(3H, m), 8.23(2H, s), 8.38(1H, s), 10.50(1H, s), 10.56(1H, s).

Table 5-22

Compound No.	Physical Property
1-591	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 3.56(3H, s), 7.12(1H, s), 7.20–7.33(6H, m), 7.40(1H, t, $J = 7.8\text{Hz}$), 7.55(1H, s), 7.62(2H, s), 7.64(1H, d, $J = 1.0\text{Hz}$), 7.72(1H, d, $J = 7.8\text{Hz}$).
1-592	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 2.23(3H, s), 5.64(2H, s), 7.15(1H, s), 7.42(1H, d, $J = 1.5\text{Hz}$), 7.50–7.63(4H, m), 7.68(1H, s), 7.75(1H, d, $J = 7.8\text{Hz}$), 7.98–8.01(2H, m), 8.03–8.06(1H, m), 8.35(1H, s), 10.08(1H, s), 10.46(1H, s).
1-593	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.30(3H, s), 5.39(2H, s), 6.94(1H, s), 7.12(1H, s), 7.15–7.21(1H, m), 7.28–7.33(1H, m), 7.36(1H, d, $J = 2.0\text{Hz}$), 7.44–7.54(2H, m), 7.72(1H, d, $J = 7.8\text{Hz}$), 7.86(1H, s), 7.90(1H, dd, $J = 1.5, 7.8\text{Hz}$), 8.10–8.15(1H, m), 8.25(1H, s), 8.64(1H, d, $J = 15.6\text{Hz}$).
1-594	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.24(3H, s), 5.39(2H, s), 6.94(1H, s), 7.09(1H, s), 7.28(1H, dd, $J = 4.9, 7.3\text{Hz}$), 7.33(1H, d, $J = 1.5\text{Hz}$), 7.42(1H, t, $J = 7.8\text{Hz}$), 7.67(1H, d, $J = 7.8\text{Hz}$), 7.83(1H, d, $J = 7.8\text{Hz}$), 7.92(1H, s), 7.99(1H, dd, $J = 2.0, 7.3\text{Hz}$), 8.18(1H, s), 8.40(1H, dd, $J = 2.0, 4.9\text{Hz}$), 8.85(1H, s).
1-595	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.21(3H, s), 3.50(3H, s), 5.39(2H, s), 6.94(1H, s), 7.10(1H, s), 7.13–7.19(2H, m), 7.21–7.27(4H, m), 7.32(1H, t, $J = 7.8\text{Hz}$), 7.35(1H, d, $J = 1.5\text{Hz}$), 7.63(1H, s), 7.70(1H, d, $J = 7.8\text{Hz}$), 7.76(1H, s).
1-596	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 2.06(2H, quint, $J = 7.3\text{Hz}$), 2.87(2H, t, $J = 7.3\text{Hz}$), 3.12–3.14(2H, m), 7.52–7.63(5H, m), 7.75(1H, d, $J = 7.8\text{Hz}$), 7.99–8.01(2H, m), 8.07(1H, d, $J = 7.8\text{Hz}$), 8.37(1H, s), 10.33(1H, s), 10.49(1H, s).
1-597	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 2.06(2H, quint, $J = 7.3\text{Hz}$), 2.87(2H, t, $J = 7.3\text{Hz}$), 3.13(2H, dd, $J = 7.3, 12.2\text{Hz}$), 7.33–7.40(2H, m), 7.52–7.63(3H, m), 7.67–7.72(1H, m), 7.75(1H, d, $J = 7.8\text{Hz}$), 7.97(1H, d, $J = 7.8\text{Hz}$), 8.33(1H, s), 10.35(1H, s), 10.66(1H, s).
1-598	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 2.07(2H, quint, $J = 7.3\text{Hz}$), 2.87(2H, t, $J = 7.3\text{Hz}$), 3.15(2H, dd, $J = 7.3, 12.2\text{Hz}$), 7.45(1H, s), 7.52–7.64(4H, m), 7.75(1H, d, $J = 8.3\text{Hz}$), 7.98–8.01(2H, m), 8.06(1H, dd, $J = 1.5, 7.8\text{Hz}$), 8.37(1H, t, $J = 1.5\text{Hz}$), 10.34(1H, s), 10.49(1H, s).
1-599	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 2.07(2H, quint, $J = 7.3\text{Hz}$), 2.87(2H, t, $J = 7.3\text{Hz}$), 3.15(2H, dd, $J = 7.3, 12.2\text{Hz}$), 7.33–7.40(2H, m), 7.45(1H, s), 7.52–7.63(2H, m), 7.67–7.76(2H, m), 7.98(1H, d, $J = 7.8\text{Hz}$), 8.33(1H, s), 10.37(1H, s), 10.66(1H, s).
1-600	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.35 (3H, s), 7.12–7.16 (2H, m), 7.50–7.65 (5H, m), 7.72 (1H, dd, $J = 1.5, 7.8\text{Hz}$), 8.01 (2H, d, $J = 8.3\text{Hz}$), 8.24 (1H, s), 10.2 (1H, brs), 10.3 (1H, brs).

Table 5-23

Compound No.	Physical Property
1-601	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 2.37(3H,s), 7.29-8.01(10H,m), 10.3(1H,s), 10.6(1H,s).
1-602	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.47-7.65(5H, m), 7.75(1H, dd, $J = 1.5$, 7.8Hz), 7.93(1H, d, $J = 7.8$ Hz), 8.01-8.04(2H, m), 8.12(1H, s), 8.17(1H, d, $J = 8.8$ Hz), 10.17(1H, s), 10.71(1H, s).
1-603	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 3.22(3H, s), 3.42(3H, s), 7.17-7.23(1H, m), 7.29-7.35(2H, m), 7.49-7.57(2H, m), 7.64(1H, d, $J = 8.3$ Hz), 7.81-7.83(1H, m), 8.00-8.10(2H, m), 8.14-8.18(1H, m), 8.41(1H, s), 8.62(1H, d, $J = 15.1$ Hz).
1-604	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 1.09(3H, t, $J = 7.3$ Hz), 1.51(9H, s), 1.84-1.93(2H, m), 4.38(2H, t, $J = 6.8$ Hz), 6.34(1H, d, $J = 8.3$ Hz), 6.95(1H, d, $J = 8.3$ Hz), 7.09(1H, d, $J = 7.8$ Hz), 7.18(1H, d, $J = 8.3$ Hz), 7.48-7.72(7H, m), 7.79-7.81(2H, m).
1-605	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.51-7.63(5H, m), 7.79(1H, d, $J = 7.8$ Hz), 7.83-7.86(2H, m), 7.99-8.02(2H, m), 8.07(1H, dd, $J = 1.0$, 8.3Hz), 8.38(1H, s), 10.48(1H, s), 10.63(1H, s).
1-96	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 7.54-7.59(2H, m), 7.80(1H, d, $J = 7.8$ Hz), 7.93(1H, dd, $J = 1.0$, 7.8Hz), 8.06-8.11(2H, m), 8.29-8.31(2H, m), 8.54(1H, dd, $J = 2.0$, 4.9Hz), 10.68(1H, s), 10.88(1H, s).
2-1	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 6.15(1H, dddd, $J = 42.0$, 11.6, 11.6, 5.6Hz), 7.47-7.59(4H, m), 7.62(2H, s), 7.78(1H, d, $J = 7.2$ Hz), 8.01(2H, d, $J = 7.2$ Hz), 8.11(1H, s), 8.38(1H, s), 10.35(1H, s), 10.40(1H, s).
2-159	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 3.53(3H, s), 5.80(1H, brdd, $J = 42.4$, 5.6Hz), 7.21-7.49(7H, m), 7.55(2H, s), 7.84(2H, brs), 10.18(1H, s).
2-160	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 3.53(3H, brs), 5.02(1H, dddd, $J = 44.0$, 10.8, 10.8, 5.2Hz), 6.83(1H, brs), 7.07(1H, brs), 7.16-7.38(5H, m), 7.52(2H, s), 7.61(1H, brs), 7.73(1H, brs).
2-163	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 3.57(3H, s), 5.02(1H, brdd, $J = 44.0$, 5.6Hz), 7.11-7.14(1H, m), 7.39(2H, brs), 7.49-7.59(4H, m), 7.73(2H, brs), 8.26(1H, brs).
2-166	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 3.31(3H, s), 4.97(1H, dddd, $J = 44.0$, 11.2, 11.2, 5.2Hz), 7.15-7.18(2H, m), 7.40(2H, s), 7.45-7.57(3H, m), 7.70(1H, s), 7.76(1H, ddd, $J = 7.2$, 2.0, 2.0Hz), 7.82-7.92(3H, m).
2-167	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 3.33(3H, s), 4.96(1H, dddd, $J = 44.0$, 11.2, 11.2, 6.0Hz), 7.18-7.21(3H, m), 7.31-7.33(1H, m), 7.40(2H, s), 7.52-7.56(1H, m), 7.71(1H, brs), 7.74-7.76(1H, m), 8.11-8.16(1H, m), 8.40(1H, brs).
2-170	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 3.31(3H, s), 4.96(1H, dddd, $J = 44.0$, 11.2, 11.2, 6.0Hz), 7.21-7.28(2H, m), 7.38-7.41(3H, m), 7.69(2H, brs), 8.14(1H, dd, $J = 8.0$, 2.0Hz), 8.26(1H, s), 8.52(1H, t, $J = 2.0$ Hz).
2-173	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 3.19(3H, s), 4.97(1H, dddd, $J = 43.9$, 10.7, 10.7, 5.7Hz), 7.16-7.20(2H, m), 7.39(2H, s), 7.47-7.51(1H, m), 7.67(1H, s), 7.72-7.75(2H, m), 7.85(1H, dd, $J = 7.8$, 1.5Hz), 8.49(1H, s).
2-174	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 3.30(3H, s), 3.35(3H, s), 5.00(1H, brdd, $J = 44.0$, 5.2Hz), 6.81(1H, d, $J = 7.2$ Hz), 6.97(1H, t, $J = 8.0$ Hz), 7.09-7.24(6H, m), 7.36-7.39(3H, m).

Table 5-24

Compound No.	Physical Property
2-175	¹ H-NMR (CDCl ₃) δ 3.30 (3H, s), 3.34 (3H, s), 5.00 (1H, dddd, J=44.0, 10.8, 10.8, 5.2Hz), 6.73-7.00 (4H, m), 7.15-7.26 (3H, m), 7.34 (1H, s), 7.38 (2H, s).
2-178	¹ H-NMR (CDCl ₃) δ 3.29 (3H, s), 3.37 (3H, s), 5.00 (1H, dddd, J=44.0, 10.8, 10.8, 5.2Hz), 7.02 (3H, brd, J=4.8Hz), 7.22 (1H, brd, J=4.8Hz), 7.33-7.40 (4H, m), 8.22 (1H, brs).
2-181	¹ H-NMR (CDCl ₃) δ 3.29 (3H, s), 3.37 (3H, s), 4.99 (1H, brdd, J=43.9, 5.4Hz), 6.99-7.07 (2H, m), 7.23-7.26 (1H, m), 7.37-7.41 (1H, m), 7.38 (2H, s), 8.18 (1H, d, J=2.4Hz), 8.26 (1H, d, J=2.4Hz).
2-182	¹ H-NMR (CDCl ₃) δ 3.30 (3H, s), 3.41 (3H, s), 5.00 (1H, brdd, J=43.9, 17.9Hz), 6.89-6.91 (1H, m), 7.08 (1H, t, J=7.8Hz), 7.26-7.29 (1H, m), 7.43 (2H, s), 7.44 (1H, t, J=2.0Hz), 8.48 (2H, s), 9.02 (1H, s).
2-183	¹ H-NMR (DMSO-d ₆) δ 2.30 (3H, s), 6.47 (1H, brdd, J=41.0, 5.9Hz), 7.34 (1H, d, J=2.4Hz), 7.50-7.63 (5H, m), 7.77 (1H, d, J=7.8Hz), 7.94-8.01 (2H, m), 8.06 (1H, dd, J=8.3, 1.5Hz), 8.37 (1H, t, J=1.5Hz), 10.14 (1H, s), 10.48 (1H, s).
2-184	¹ H-NMR (CDCl ₃) δ 3.55 (3H, s), 5.43 (1H, brdd, J=43.2, 5.6Hz), 7.18-7.37 (6H, m), 7.54-7.55 (2H, m), 7.78-7.82 (3H, m), 9.91 (1H, s).
2-185	¹ H-NMR (DMSO-d ₆ ; CDCl ₃ =1:1) δ 5.51 (1H, brdd, J=43.0, 5.4Hz), 7.44-7.57 (5H, m), 7.76 (1H, d, J=7.8Hz), 7.80 (1H, d, J=2.4Hz), 8.01-8.03 (2H, m), 8.20 (1H, d, J=8.3Hz), 8.30 (1H, s), 9.97 (1H, s), 10.15 (1H, s).
2-186	¹ H-NMR (CDCl ₃) δ 5.06 (1H, brdd, J=44.0, 5.9Hz), 7.44 (1H, dd, J=7.3, 4.9Hz), 7.55-7.59 (2H, m), 7.74-7.80 (3H, m), 7.94 (1H, d, J=7.8Hz), 8.22-8.24 (2H, m), 8.40 (1H, s), 8.54-8.57 (1H, m).
2-187	¹ H-NMR (CDCl ₃) δ 3.54 (3H, s), 5.47 (1H, brddd, J=5.9, 11.7, 42.9 Hz), 7.19-7.30 (4H, m), 7.31-7.36 (3H, m), 7.82-7.84 (4H, m), 10.15 (1H, s).
2-188	¹ H-NMR (CDCl ₃) δ 3.56 (3H, s), 5.01 (1H, brddd, J=5.4, 11.2, 49.3Hz), 7.13 (1H, d.d., J=4.9, 7.3Hz), 7.41 (2H, s), 7.58 (1H, m), 7.72 (2H, s), 7.80 (1H, d, J=2.5Hz), 7.86 (1H, d, J=2.5Hz), 8.25 (1H, d, J=2.9Hz), 8.34 (1H, s).

Table 5-25

Compound No.	Physical Property
2-189	$^1\text{H-NMR}$ (CDCl_3) δ 2.29 (6H, s), 4.95 (1H, brd, $J=44.0\text{Hz}$), 6.86 (1H, d, $J=6.3\text{Hz}$), 6.96 (1H, s), 7.44–7.53 (3H, m), 7.57–7.61 (1H, m), 7.63 (1H, brs), 7.71 (1H, d, $J=8.3\text{Hz}$), 7.86–7.90 (2H, m), 8.06 (1H, dd, $J=8.3, 1.5\text{Hz}$), 8.12 (1H, brs), 8.32 (1H, t, $J=1.5\text{Hz}$)
2-190	$^1\text{H-NMR}$ (CDCl_3) δ 2.20 (6H, s), 3.55 (3H, s), 5.00 (1H, brdd, $J=43.9, 5.9\text{Hz}$), 6.95 (2H, s), 7.10 (1H, dd, $J=7.8, 4.9\text{Hz}$), 7.35 (2H, brd, $J=4.4\text{Hz}$), 7.44 (1H, s), 7.55 (1H, dd, $J=7.8, 1.5\text{Hz}$), 7.68 (1H, brd, $J=3.4\text{Hz}$), 7.73 (1H, s), 8.23 (1H, dd, $J=4.9, 2.0\text{Hz}$)
2-192	$^1\text{H-NMR}$ (CDCl_3) δ 2.31 (6H, s), 5.00 (1H, brdd, $J=43.9, 5.9\text{Hz}$), 6.99 (2H, s), 7.35 (1H, t, $J=8.3\text{Hz}$), 7.47–7.63 (3H, m), 7.71 (1H, d, $J=11.2\text{Hz}$), 7.82 (1H, t, $J=2.0\text{Hz}$), 7.92 (2H, d, $J=7.3\text{Hz}$), 8.08–8.14 (1H, m), 8.58–8.63 (1H, m)
2-193	$^1\text{H-NMR}$ (CDCl_3) δ 2.32 (6H, s), 4.98–5.02 (1H, m), 7.00 (2H, brs), 7.23–7.24 (1H, m), 7.34–7.39 (2H, m), 7.56–7.60 (1H, m), 7.74 (1H, d, $J=11.7\text{Hz}$), 7.85 (1H, ddd, $J=9.3, 1.5, 1.5\text{Hz}$), 8.22 (1H, ddd, $J=7.8, 7.8, 2.0\text{Hz}$), 8.67 (1H, ddd, $J=8.3, 8.3, 2.0\text{Hz}$), 8.80–8.90 (1H, m)
2-194	$^1\text{H-NMR}$ (CDCl_3) δ 2.31 (6H, s), 4.99 (1H, brdd, $J=44.4, 5.9\text{Hz}$), 6.99 (2H, brs), 7.38 (1H, t, $J=8.3\text{Hz}$), 7.46 (1H, dd, $J=7.8, 4.9\text{Hz}$), 7.71 (1H, d, $J=11.2\text{Hz}$), 7.88 (1H, ddd, $J=7.3, 7.3, 1.5\text{Hz}$), 8.32 (1H, dd, $J=7.8, 2.0\text{Hz}$), 8.57 (1H, dd, $J=4.9, 2.0\text{Hz}$), 8.61 (1H, ddd, $J=8.3, 8.3, 1.5\text{Hz}$), 8.74 (1H, brs)
2-195	$^1\text{H-NMR}$ ($\text{DMSO}-d_6$) δ 2.30 (6H, s), 4.92–5.07 (1H, m), 6.98 (2H, s), 7.29–7.32 (1H, m), 7.53–7.57 (3H, m), 7.60–7.64 (1H, m), 7.80–7.84 (1H, m), 7.89–7.91 (2H, m), 8.20 (1H, broad-s), 9.10–9.13 (1H, m)
2-196	$^1\text{H-NMR}$ ($\text{DMSO}-d_6$) δ 2.31 (6H, s), 5.80–6.10 (1H, m), 6.99 (2H, s), 7.29–7.34 (1H, m), 7.44–7.50 (2H, m), 7.82–7.86 (1H, m), 8.27 (1H, dd, $J=7.3, 1.5\text{Hz}$), 8.57 (1H, dd, $J=4.9, 2.0\text{Hz}$), 8.75 (1H, broad-s), 9.68 (1H, dd, $J=6.8, 2.0\text{Hz}$)
2-197	$^1\text{H-NMR}$ ($\text{DMSO}-d_6$) δ 6.59 (1H, brd, $J=41.5\text{Hz}$), 7.53–7.63 (4H, m), 7.72–7.76 (1H, m), 7.90 (1H, d, $J=7.8\text{Hz}$), 8.01–8.05 (3H, m), 8.10–8.13 (1H, m), 8.38 (1H, d, $J=8.8\text{Hz}$), 8.45 (1H, s), 9.08 (1H, t, $J=2.0\text{Hz}$), 10.50 (1H, s), 10.66 (1H, s)
2-198	$^1\text{H-NMR}$ ($\text{DMSO}-d_6$) δ 6.63 (1H, brdd, $J=41.0, 6.3\text{Hz}$), 7.34–7.40 (2H, m), 7.58–7.62 (2H, m), 7.70–7.76 (2H, m), 7.90 (1H, d, $J=7.8\text{Hz}$), 8.01 (1H, d, $J=7.8\text{Hz}$), 8.08 (1H, s), 8.37–8.40 (2H, m), 9.09 (1H, dd, $J=4.4, 1.5\text{Hz}$), 10.69 (2H, s)
2-199	$^1\text{H-NMR}$ ($\text{DMSO}-d_6$) δ 6.63 (1H, brdd, $J=41.0, 5.9\text{Hz}$), 7.57–7.64 (2H, m), 7.75 (1H, dd, $J=8.8, 3.9\text{Hz}$), 7.93 (1H, d, $J=7.8\text{Hz}$), 7.98 (1H, dd, $J=7.8, 1.5\text{Hz}$), 8.08–8.13 (2H, m), 8.38–8.40 (2H, m), 8.56 (1H, dd, $J=4.9, 2.0\text{Hz}$), 9.08 (1H, dd, $J=3.9, 1.5\text{Hz}$), 10.71 (1H, s), 10.91 (1H, s)

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Compound No.	Physical Property
2-200	$^1\text{H-NMR}$ ($\text{DMSO}-d_6$) δ 3.46 (3H, s), 6.61 (1H, brdd, $J=41.0$, 2.1Hz), 7.25–7.48 (7H, m), 7.73 (1H, brdd, $J=8.8$, 3.9Hz), 7.83–7.88 (2H, m), 8.05 (1H, brs), 8.25 (1H, dd, $J=8.8$, 1.5Hz), 9.06 (1H, dd, $J=3.9$, 1.5Hz), 10.58 (1H, s).
2-201	$^1\text{H-NMR}$ (CDCl_3) δ 6.07 (1H, dddd, $J=53.2$, 53.2, 2.9, 2.9Hz), 7.43–7.58 (6H, m), 7.79 (1H, d, $J=7.8$ Hz), 8.00–8.02 (2H, m), 8.18 (1H, d, $J=8.3$ Hz), 8.34 (1H, s), 9.61 (1H, s), 9.95 (1H, s).
2-202	$^1\text{H-NMR}$ (CDCl_3) δ 5.93 (1H, dddd, $J=53.2$, 53.2, 2.9, 2.9Hz), 7.18–7.36 (3H, m), 7.50–7.57 (3H, m), 7.77 (1H, d, $J=7.3$ Hz), 7.82 (1H, s), 7.92–7.94 (1H, m), 8.17 (1H, brd, $J=1.5$ Hz), 8.31 (1H, s), 8.65 (1H, brd, $J=1.5$ Hz).
2-203	$^1\text{H-NMR}$ (CDCl_3) δ 5.93 (1H, dddd, $J=53.2$, 53.2, 2.9, 2.9Hz), 7.38 (1H, dd, $J=7.8$, 4.9Hz), 7.49–7.53 (3H, m), 7.76 (1H, brd, $J=7.8$ Hz), 7.89 (1H, s), 7.91 (1H, d, $J=1.5$ Hz), 8.14 (1H, dd, $J=7.8$, 2.0Hz), 8.24 (1H, s), 8.50 (1H, dd, $J=4.9$, 2.0Hz), 8.61 (1H, s).
2-204	$^1\text{H-NMR}$ (CDCl_3) δ 5.06–5.20 (2H, m), 7.25 (1H, d, $J=2.0$ Hz), 7.46–7.57 (5H, m), 7.71 (1H, d, $J=7.8$ Hz), 7.96 (2H, dd, $J=7.3$, 1.5Hz), 8.15 (1H, dd, $J=7.8$, 1.0Hz), 8.29 (1H, t, $J=2.0$ Hz), 8.72 (1H, s), 9.51 (1H, s).
2-205	$^1\text{H-NMR}$ (CDCl_3) δ 5.12–5.25 (2H, m), 7.21 (1H, ddd, $J=11.7$, 8.3, 1.0Hz), 7.27 (1H, s), 7.32 (1H, ddd, $J=7.3$, 7.3, 1.0Hz), 7.48–7.55 (3H, m), 7.76 (1H, d, $J=7.8$ Hz), 8.03 (1H, ddd, $J=7.8$, 7.8, 2.0Hz), 8.11 (1H, d, $J=8.3$ Hz), 8.20 (1H, brs), 9.07 (1H, s), 9.19 (1H, d, $J=10.7$ Hz).
2-206	$^1\text{H-NMR}$ (CDCl_3) δ 4.97–5.12 (2H, m), 7.40 (1H, dd, $J=7.8$, 4.9Hz), 7.50–7.54 (2H, m), 7.67–7.70 (2H, m), 7.91 (1H, dd, $J=8.3$, 1.5Hz), 8.15–8.20 (2H, m), 8.50–8.52 (2H, m).
2-207	$^1\text{H-NMR}$ (CDCl_3 ; $\text{DMSO}-d_6=1:1$) δ 5.51–5.67 (3H, m), 7.24 (2H, s), 7.42–7.57 (3H, m), 7.66–7.69 (2H, m), 8.00–8.02 (2H, m), 8.08 (1H, dd, $J=8.3$, 1.5Hz), 8.36 (1H, s), 8.61 (1H, brd, $J=11.2$ Hz), 10.19 (1H, brs).
2-208	$^1\text{H-NMR}$ (CDCl_3 ; $\text{DMSO}-d_6=1:1$) δ 5.99–6.25 (3H, m), 7.23–7.33 (4H, m), 7.46 (1H, t, $J=7.8$ Hz), 7.54–7.56 (1H, m), 7.68–7.72 (2H, m), 7.98–8.00 (1H, m), 8.29 (1H, s), 10.00 (1H, s), 10.46 (1H, s).
2-209	$^1\text{H-NMR}$ (CDCl_3 ; $\text{DMSO}-d_6=1:1$) δ 6.00–6.25 (3H, m), 7.29 (2H, s), 7.45–7.52 (2H, m), 7.72 (1H, d, $J=7.8$ Hz), 7.96–8.02 (2H, m), 8.24 (1H, d, $J=2.0$ Hz), 8.50 (1H, dd, $J=4.9$, 2.0Hz), 10.03 (1H, s), 10.75 (1H, s).

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Compound No.	Physical Property
2-210	$^1\text{H-NMR}$ (CDCl_3) δ 5.15–5.31 (1H, m), 7.41–7.57 (4H, m), 7.79 (1H, d, $J=7.8\text{Hz}$), 7.92 (2H, s), 8.01–8.04 (2H, brd, $J=7.3\text{Hz}$), 8.18 (1H, d, $J=8.3\text{Hz}$), 8.35 (1H, s), 9.85 (1H, s), 10.04 (1H, s).
2-211	$^1\text{H-NMR}$ (CDCl_3) δ 4.89–4.97 (1H, m), 7.18–7.26 (1H, m), 7.32–7.36 (1H, m), 7.50–7.57 (2H, m), 7.76 (1H, d, $J=7.8\text{Hz}$), 7.89 (1H, d, $J=1.5\text{Hz}$), 7.91 (2H, s), 8.02 (1H, s), 8.16 (1H, ddd, $J=7.8, 7.8, 2.0\text{Hz}$), 8.32 (1H, t, $J=1.5\text{Hz}$), 8.65 (1H, brd, $J=16.1\text{Hz}$).
2-212	$^1\text{H-NMR}$ (CDCl_3) δ 4.96 (1H, brd, $J=44.0\text{Hz}$), 7.37 (1H, dd, $J=7.8, 4.9\text{Hz}$), 7.52 (1H, brd, $J=7.8\text{Hz}$), 7.75 (1H, d, $J=7.8\text{Hz}$), 7.89 (1H, d, $J=8.3\text{Hz}$), 7.90 (2H, s), 8.02 (1H, s), 8.12 (1H, dd, $J=7.8, 2.0\text{Hz}$), 8.25 (1H, s), 8.48 (1H, dd, $J=4.9, 2.0\text{Hz}$), 8.64 (1H, s).
2-213	$^1\text{H-NMR}$ (CDCl_3 : $\text{DMSO}-d_6$ (5:1)) δ 5.79 (1H, brd, $J=44.0\text{Hz}$), 7.46–7.59 (5H, m), 7.79 (1H, t, $J=2.0\text{Hz}$), 7.90 (1H, t, $J=2.0\text{Hz}$), 8.00 (1H, d, $J=1.5\text{Hz}$), 8.03 (1H, s), 8.12 (1H, dd, $J=7.8, 1.5\text{Hz}$), 8.39 (1H, t, $J=2.0\text{Hz}$), 10.29 (1H, s), 10.32 (1H, s).
2-214	$^1\text{H-NMR}$ (CDCl_3) δ 5.30–5.95 (1H, m), 7.19–7.24 (1H, m), 7.32–7.36 (1H, m), 7.51–7.59 (2H, m), 7.76 (2H, d, $J=2.0\text{Hz}$), 7.88 (1H, d, $J=2.0\text{Hz}$), 7.90–7.92 (2H, m), 8.18 (1H, ddd, $J=7.8, 7.8, 2.0\text{Hz}$), 8.34 (1H, t, $J=2.0\text{Hz}$), 8.64 (1H, d, $J=16.1\text{Hz}$).
2-215	$^1\text{H-NMR}$ (CDCl_3) δ 5.80–5.10 (1H, m), 7.40 (1H, dd, $J=7.8, 4.9\text{Hz}$), 7.53 (1H, t, $J=7.8\text{Hz}$), 7.75–7.78 (2H, m), 7.87 (1H, d, $J=2.0\text{Hz}$), 7.88–7.91 (1H, m), 7.97 (1H, s), 8.16 (1H, dd, $J=7.8, 2.0\text{Hz}$), 8.26 (1H, d, $J=2.0\text{Hz}$), 8.51 (1H, dd, $J=4.4, 2.0\text{Hz}$), 8.56 (1H, s).
2-216	$^1\text{H-NMR}$ (CDCl_3) δ 3.55 (3H, s), 4.81–4.97 (1H, m), 7.19–7.33 (6H, m), 7.39 (1H, t, $J=7.8\text{Hz}$), 7.50 (1H, s), 7.58–7.61 (1H, m), 7.70–7.74 (1H, m), 7.74 (1H, d, $J=1.5\text{Hz}$), 7.85 (1H, d, $J=1.5\text{Hz}$).
2-217	$^1\text{H-NMR}$ (CDCl_3) δ 3.53 (3H, brs), 4.74–4.98 (2H, m), 6.84 (1H, brs), 7.08 (1H, brs), 7.17 (1H, dd, $J=10.7, 8.3\text{Hz}$), 7.39–7.47 (3H, m), 7.55–7.60 (2H, m), 7.74 (1H, d, $J=2.0\text{Hz}$), 7.86 (1H, d, $J=2.0\text{Hz}$).
2-218	$^1\text{H-NMR}$ (CDCl_3) δ 3.57 (3H, s), 4.91 (1H, brd, $J=43.9\text{Hz}$), 7.13 (1H, dd, $J=7.8, 4.9\text{Hz}$), 7.39 (2H, d, $J=4.4\text{Hz}$), 7.58 (2H, brs), 7.71–7.75 (3H, m), 7.88 (1H, brs), 8.25 (1H, d, $J=3.4\text{Hz}$).
2-219	$^1\text{H-NMR}$ (CDCl_3) δ 2.20 (6H, s), 3.55 (3H, s), 5.93 (1H, ddd, $J=54.2, 2.9, 2.9\text{Hz}$), 6.96 (2H, s), 7.10 (1H, dd, $J=7.3, 4.9\text{Hz}$), 7.35 (2H, d, $J=4.4\text{Hz}$), 7.46 (1H, s), 7.54 (1H, dd, $J=7.8, 2.0\text{Hz}$), 7.68 (1H, brd, $J=3.9\text{Hz}$), 7.73 (1H, s), 8.23 (1H, dd, $J=4.4, 1.5\text{Hz}$).
2-220	$^1\text{H-NMR}$ (CDCl_3) δ 2.28 (6H, s), 5.00 (1H, brdd, $J=43.9, 5.4\text{Hz}$), 6.87 (1H, d, $J=6.8\text{Hz}$), 6.97 (1H, s), 7.41 (1H, dd, $J=7.8, 4.9\text{Hz}$), 7.52 (1H, t, $J=8.3\text{Hz}$), 7.58 (1H, brs), 7.72–7.74 (1H, m), 7.83–7.86 (1H, m), 8.17 (1H, dd, $J=7.8, 2.0\text{Hz}$), 8.27 (1H, brs), 8.52 (2H, brs).
2-8	$^1\text{H-NMR}$ ($\text{DMSO}-d_6$) δ 6.18 (1H, brdd, $J=42.0, 5.2\text{Hz}$), 7.23–7.32 (2H, m), 7.47–7.55 (2H, m), 7.62 (2H, s), 7.70 (1H, t, $J=6.4\text{Hz}$), 7.78 (1H, d, $J=6.8\text{Hz}$), 8.03 (1H, d, $J=7.6\text{Hz}$), 8.34 (1H, s), 10.38 (1H, s), 10.50 (1H, s).
4-1	$^1\text{H-NMR}$ (CDCl_3) δ 2.28 (6H, s), 7.30–7.44 (5H, m), 7.34 (2H, s), 7.51–7.64 (4H, m), 7.75–7.78 (2H, m).
4-2	$^1\text{H-NMR}$ (CDCl_3) δ 2.29 (6H, s), 2.64 (3H, s), 7.22–7.36 (4H, m), 7.34 (2H, s), 7.43–7.47 (2H, m), 7.57–7.68 (3H, m), 7.99 (1H, d, $J=7.3\text{Hz}$).
4-6	$^1\text{H-NMR}$ (CDCl_3) δ 2.29 (6H, s), 7.32–7.39 (6H, m), 7.58–7.66 (6H, m).

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Compound No.	Physical Property
4-10	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.31(6H, s), 7.35(2H, s), 7.43–7.47(2H, m), 7.49(1H, s), 7.53(1H, s), 7.61–7.65(1H, m), 7.71–7.77(3H, m), 7.87–7.91(2H, m).
4-16	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.33(6H, s), 7.36(2H, s), 7.42–7.49(3H, m), 7.71(1H, d, $J = 6.8\text{Hz}$), 7.81(1H, s), 7.89(1H, s).
4-24	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.29(6H, s), 2.85(3H, s), 3.35(3H, s), 7.34(2H, s), 7.49(1H, t, $J = 7.8\text{Hz}$), 7.58(1H, dd, $J = 1.0, 7.8\text{Hz}$), 7.80–7.83(2H, m), 7.96(1H, s).
4-25	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 1.35(3H, t, $J = 7.3\text{Hz}$), 2.32(6H, s), 3.14(2H, q, $J = 7.3\text{Hz}$), 7.29(1H, s), 7.35(2H, s), 7.42–7.48(2H, m), 7.66–7.71(2H, m), 7.80(1H, s).
4-26	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 1.33(3H, t, $J = 7.3\text{Hz}$), 2.27(6H, s), 3.03(2H, q, $J = 7.3\text{Hz}$), 3.35(3H, s), 7.33(2H, s), 7.44(1H, t, $J = 7.8\text{Hz}$), 7.57(1H, d, $J = 7.8\text{Hz}$), 7.79(1H, d, $J = 7.8\text{Hz}$), 7.97(1H, s), 8.05(1H, s).
4-27	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.27(6H, s), 3.73(2H, q, $J = 8.8\text{Hz}$), 7.33(2H, s), 7.39–7.45(2H, m), 7.68–7.71(1H, m), 7.83–7.85(2H, m), 8.09(1H, s).
4-28	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.27(6H, s), 3.40(3H, s), 3.75(2H, q, $J = 8.8\text{Hz}$), 7.34(2H, s), 7.51(1H, t, $J = 7.8\text{Hz}$), 7.58(1H, d, $J = 7.8\text{Hz}$), 7.86(1H, d, $J = 7.8\text{Hz}$), 7.90(1H, s), 7.97(1H, s).
4-29	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.25(6H, s), 5.87(1H, d, $J = 9.8\text{Hz}$), 6.19(1H, d, $J = 16.1\text{Hz}$), 6.46(1H, dd, $J = 9.8, 16.1\text{Hz}$), 7.23–7.35(5H, m), 7.61(1H, s), 7.75(1H, s), 7.94(1H, s).
4-30	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.28(6H, s), 3.25(3H, s), 6.03(1H, d, $J = 9.8\text{Hz}$), 6.18(1H, d, $J = 16.6\text{Hz}$), 6.42(1H, dd, $J = 9.8, 16.6\text{Hz}$), 7.33(2H, s), 7.44(1H, t, $J = 7.8\text{Hz}$), 7.51(1H, d, $J = 7.8\text{Hz}$), 7.80(1H, d, $J = 7.8\text{Hz}$), 7.91(1H, s), 7.94(1H, s).
4-31	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 1.02(3H, t, $J = 7.3\text{Hz}$), 1.80–1.90(2H, m), 2.35(6H, s), 3.05–3.09(2H, m), 7.32(2H, s), 7.42(1H, t, $J = 7.8\text{Hz}$), 7.50–7.53(1H, m), 7.71(1H, d, $J = 7.8\text{Hz}$), 7.86(1H, d, $J = 2.0\text{Hz}$), 8.54(1H, s), 9.24(1H, s).
4-32	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 1.01(3H, t, $J = 7.8\text{Hz}$), 1.77–1.87(2H, m), 2.28(6H, s), 2.97(2H, t, $J = 7.8\text{Hz}$), 3.35(3H, s), 7.34(2H, s), 7.45(1H, t, $J = 7.8\text{Hz}$), 7.57(1H, d, $J = 7.8\text{Hz}$), 7.80(1H, d, $J = 7.8\text{Hz}$), 7.97(2H, s).
4-33	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 1.37(6H, d, $J = 6.8\text{Hz}$), 2.32(6H, s), 3.31(1H, septet, $J = 6.8\text{Hz}$), 7.24(1H, s), 7.35(2H, s), 7.41–7.49(2H, m), 7.66(1H, d, $J = 7.3\text{Hz}$), 7.71(1H, s), 7.81(1H, s).
4-34	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.35(6H, s), 4.37(2H, s), 6.72(1H, s), 7.27–7.37(8H, m), 7.43–7.47(2H, m), 7.62(1H, d, $J = 2.0\text{Hz}$), 7.68(1H, d, $J = 7.8\text{Hz}$).
5-1	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.35(6H, s), 5.89(1H, brs), 7.01(1H, t, $J = 7.3\text{Hz}$), 7.14(2H, d, $J = 7.3\text{Hz}$), 7.28–7.40(8H, m), 7.60(1H, brs).
5-2	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.28(3H, s), 2.35(6H, s), 5.58(1H, brs), 7.00(1H, t, $J = 7.3\text{Hz}$), 7.09(1H, d, $J = 7.3\text{Hz}$), 7.18(1H, t, $J = 7.3\text{Hz}$), 7.24–7.35(7H, m), 7.53(1H, brs).

Table 5-29

Compound No.	Physical Property
5-4	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.35 (6H, s), 5.98 (1H, brs), 6.64-6.69 (1H, m), 6.80-6.85 (2H, m), 7.20-7.24 (1H, m), 7.31-7.43 (6H, m), 7.63 (1H, brs).
5-5	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.34 (6H, s), 5.88 (1H, brs), 7.00 (2H, d, $J=8.8\text{Hz}$), 7.36 (2H, s), 7.38-7.41 (6H, m), 7.59 (1H, brs).
5-8	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.37 (6H, s), 6.85-6.89 (1H, m), 7.32 (1H, d, $J=8.8\text{Hz}$), 7.37-7.46 (4H, m), 7.51-7.59 (2H, m), 7.71 (1H, d, $J=7.3\text{Hz}$), 7.87 (1H, brs), 8.23 (1H, dd, $J=8.8, 1.5\text{Hz}$), 9.54 (1H, brs).
5-9	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.36 (6H, s), 6.50 (1H, brs), 7.02 (2H, d, $J=8.7\text{Hz}$), 7.38 (2H, s), 7.42 (1H, s), 7.46 (1H, d, $J=7.8\text{Hz}$), 7.53 (1H, t, $J=7.8\text{Hz}$), 7.60 (1H, d, $J=7.8\text{Hz}$), 7.91 (1H, brs), 8.19 (2H, d, $J=8.7\text{Hz}$).
5-10	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.32 (6H, s), 3.81 (2H, brs), 5.42 (1H, brs), 6.76-6.83 (2H, m), 6.87-6.89 (1H, m), 7.05-7.09 (1H, m), 7.12 (1H, d, $J=7.8\text{Hz}$), 7.27-7.37 (6H, m).
5-11	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.33 (6H, s), 5.60 (1H, brs), 6.64 (2H, brs), 6.69 (2H, d, $J=8.8\text{Hz}$), 7.00-7.02 (3H, m), 7.23-7.37 (6H, m).
5-12	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.34 (6H, s), 6.04 (1H, brs), 7.20-7.52 (10H, m), 7.64 (1H, brs).
5-13	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.08 (3H, s), 2.32 (6H, s), 5.98 (1H, brs), 6.98 (1H, d, $J=7.3\text{Hz}$), 7.16-7.22 (2H, m), 7.29-7.40 (7H, m), 7.59 (1H, brs), 7.68 (1H, d, $J=7.3\text{Hz}$).
5-14	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.13 (3H, s), 2.33 (6H, s), 5.87 (1H, brs), 7.06 (2H, d, $J=8.8\text{Hz}$), 7.19 (1H, brs), 7.30-7.41 (7H, m), 7.50 (1H, brs), 7.53 (1H, brs).
5-15	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.34 (6H, s), 5.74 (1H, broad-s), 6.83-6.95 (2H, m), 7.15-7.18 (1H, m), 7.18-7.39 (6H, m), 7.54 (1H, broad-s).
5-21	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.36 (6H, s), 6.73-6.77 (2H, m), 6.96 (1H, d, $J=7.3\text{Hz}$), 7.33-7.38 (3H, m), 7.43-7.49 (2H, m), 7.56-7.58 (2H, m), 8.12 (1H, s).
5-23	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.31 (6H, s), 6.08 (2H, brs), 7.35 (2H, s), 7.43-7.59 (2H, m), 7.70-7.82 (3H, m), 8.29 (1H, brs).
5-24	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.33 (6H, s), 5.93 (2H, brs), 7.36 (2H, s), 7.45-7.49 (2H, m), 7.63 (1H, s), 7.85 (1H, d, $J=7.3\text{Hz}$), 7.92 (1H, s), 8.04 (1H, s).
5-25	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 2.29 (6H, s), 5.90 (2H, brs), 7.30-7.36 (2H, m), 7.43 (2H, s), 7.75 (1H, d, $J=7.8\text{Hz}$), 8.04 (1H, brs), 8.85 (1H, brs), 9.80 (1H, brs), 11.2 (1H, brs).
5-26	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 2.33 (6H, s), 2.83 (6H, s), 7.10-7.21 (3H, m), 7.43 (2H, s), 9.96 (1H, s).

Table 5-30

Compound No.	Physical Property
5-27	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 0.92(3H, t, $J = 7.3\text{Hz}$), 1.59-1.69(2H, m), 2.72(2H, t, $J = 7.8\text{Hz}$), 3.03(6H, s), 6.93(1H, dd, $J = 2.4, 8.3\text{Hz}$), 7.23(1H, d, $J = 8.3\text{Hz}$), 7.32-7.39(2H, m), 7.50(1H, s), 7.55(1H, s), 7.95(1H, d, $J = 1.5\text{Hz}$).
5-28	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 1.23(6H, d, $J = 6.8\text{Hz}$), 3.04(6H, s), 3.25(1H, septet, $J = 6.8\text{Hz}$), 6.93(1H, dd, $J = 2.0, 7.8\text{Hz}$), 7.23(1H, t, $J = 7.8\text{Hz}$), 7.33-7.39(2H, m), 7.51(1H, s), 7.57(1H, s), 7.95(1H, d, $J = 2.0\text{Hz}$).
5-29	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 3.05(6H, s), 3.07(3H, s), 6.97(1H, dd, $J = 2.0, 7.8\text{Hz}$), 7.25-7.27(1H, m), 7.32-7.33(1H, m), 7.39(1H, t, $J = 7.8\text{Hz}$), 8.20(1H, d, $J = 2.0\text{Hz}$), 8.26(1H, d, $J = 2.0\text{Hz}$), 8.89(1H, s).
5-30	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 3.04(6H, s), 6.95(1H, d, $J = 7.8\text{Hz}$), 7.21-7.23(1H, m), 7.33-7.39(2H, m), 7.66(1H, s), 7.93(2H, s).
5-31	$^1\text{H-NMR}(\text{DMSO}-d_6)$ δ 2.97(6H, s), 6.38-6.52(1H, m), 6.96(1H, brdd, $J = 8.8, 2.0\text{Hz}$), 7.28-7.36(3H, m), 8.06(2H, s), 10.34(1H, s).
5-32	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.84(6H, s), 3.35(3H, s), 6.63-6.65(1H, m), 6.73(1H, d, $J = 3.9\text{Hz}$), 6.75(1H, s), 7.03(1H, t, $J = 8.3\text{Hz}$), 8.09(2H, s).
5-33	$^1\text{H-NMR}(\text{CDCl}_3)$ δ 1.57(3H, d, $J = 6.8\text{Hz}$), 2.28(6H, s), 2.74(3H, s), 5.18(1H, q, $J = 6.8\text{Hz}$), 6.99(1H, dd, $J = 2.4, 8.3\text{Hz}$), 7.15(1H, d, $J = 7.3\text{Hz}$), 7.22-7.35(8H, m), 7.41(1H, s), 7.55(1H, s).

Harmful organisms in the present invention refer to insect pests in the fields of agriculture and horticulture, stockbreeding, and hygiene and sanitation. An insecticide comprising the compound represented by the general formula (1) or (5) of the present invention as an active ingredient is suitable for preventing insect pests such as various agricultural, forest insect pests and horticultural insect pests, stored grain insect pests, hygienic insect pests, nematodes or the like which are injurious to paddy rice, fruit trees, vegetables, other crops, flowers and the like, and has a strong insecticidal effect, for example, on LEPIDOPTERA such as cucumber moth (*Diaphania indica*), oriental tea tortrix moth (*Homona magnanima*), cabbage webworm (*Hellulla undalis*), summer fruit tortrix (*Adoxophyes orana fasciata*), smaller tea tortrix (*Adoxophyes* sp.), apple tortrix (*Archips*

fuscocupreanus), peach fruit moth (*Carposina niponensis*), Manchurian
 apple moth (*Grapholita inopinata*), oriental fruit moth (*Grapholita*
molesta), soybean pod borer (*Leguminivora glycinivorella*), mulberry
 leafroller (*Olethreutes mori*), citrus leafminer (*Phyllocnistis*
 5 *citrella*), persimmon fruit moth (*Stathmopoda masinissa*), tea
 leafroller (*Caloptilia theviva*), azalea leafminer (*Caloptilia*
zachrysa), apple leafminer (*Phyllonorycter ringoniella*), pear
 barkminer (*Spulerrina astaurota*), swallowtail butterfly (*Papilio*
xuthus), common white (*Pieris rapae crucivora*), tobacco budworm
 10 (*Heliothis armigera*), codling moth (*Lapsey resia pomonella*),
 diamondback moth (*Plutella xylostella*), apple fruit moth (*Argyresthia*
conjugella), peach fruit moth (*Carposina niponensis*), rice stem borer
 (*Chilo suppressalis*), rice leafroller (*Cnaphalocrocis medinalis*),
 tobacco moth (*Ephestia elutella*), mulberry pyralid (*Glyphodes*
 15 *pyloalis*), yellow rice borer (*Scirpophaga incertulas*), rice skipper
 (*Parnara guttata*), rice armyworm (*Pseudaletia separata*), pink borer
 (*Sesamia inferens*), cabbage moth (*Mamestra brassicae*), common cutworm
 (*Spodoptera litura*), beet armyworm (*Spodoptera exigua*), black cutworm
 (*Agrotis ipsilon*), turnip moth (*Agrotis segetum*), semilooper
 20 (*Autographa nigrisigna*), cabbage looper (*Trichoplusia ni*) and the
 like; HEMIPTERA such as aster leafhopper (*Macrostelus fascifrons*),
 green rice leafhopper (*Nephotettix cincticeps*), brown rice planthopper
 (*Nilaparvata lugens*), small brown planthopper (*Laodelphax*
striatellus), whitebacked rice planthopper (*Sogatella furcifera*),
 25 citrus psylla (*Diaphorina citri*), grape whitefly (*Aleurolobus*
taenabae), silverleaf whitefly (*Bemisia argentifolii*), sweetpotato
 whitefly (*Bemisia tabaci*), greenhouse whitefly (*Trialeurodes*

vaporariorum), turnip aphid (*Lipaphis erysimi*), cotton melon aphid (*Aphis gossypii*), spirea aphid (*Aphis citricola*), green peach aphid (*Myzus persicae*), Indian wax scale (*Ceroplastes ceriferus*), comstock mealybug (*Pseudococcus comstocki*), Japanese mealybug (*Planococcus*
5 *kraunhiae*), cottony citrus scale (*Pulvinaria aurantii*), camphor scale (*Pseudaonidia duplex*), San Jose scale (*Comstockaspis perniciosus*), arrowhead scale (*Unaspis yanonensis*), brown-winged green bug (*Plautia stali*), brown marmorated stink bug (*Halyomorpha mista*) and the like; COLEOPTERA such as soybean beetle (*Anomala rufocuprea*), Japanese
10 beetle (*Popillia japonica*), tobacco beetle (*Lasioderma serricorne*), powderpost beetle (*Lyctus brunneus*), twenty-eight-spotted ladybird (*Epilachna vigintioctopunctata*), adzuki bean weevil (*Callosobruchus chinensis*), vegetable weevil (*Listroderes costirostris*), maize weevil (*Sitophilus zeamais*), boll weevil (*Anthonomus grandis grandis*), rice
15 water weevil (*Lissorhoptrus oryzophilus*), cucurbit leaf beetle (*Aulacophora femoralis*), rice leaf beetle (*Oulema oryzae*), striped flea beetle (*Phyllotreta striolata*), pine shoot beetle (*Tomicus piniperda*), Colorado potato beetle (*Leptinotarsa decemlineata*), Mexican beetle (*Epilachna varivestis*), corn rootworm (*Diabrotica* sp.),
20 yellow-spotted longicorn beetle (*Psacotha hilaris*), white-spotted longicorn beetle (*Anoplophora malasiaca*) and the like; DIPTERA such as oriental fruit fly (*Dacus*(*Bactrocera*) *dorsalis*), rice leafminer (*Agromyza oryzae*), onion maggot (*Delia antiqua*), seedcorn maggot (*Delia platura*), soybean pod gall midge (*Asphondylia* sp.), muscid fly
25 (*Musca domestica*), leafminer (*Chromatomyia horticola*), serpentine leafminer (*Liriomyza trifolii*), tomato leafminer (*Liriomyza bryoniae*), house mosquito (*Culex pipiens pipiens*) and the like; TYLENCHIDA such

as coffee root-lesion nematode (*Pratylenchus coffeae*), lesion nematode (*Pratylenchus* sp.), potato cyst nematode (*Globodera rostochiensis*), root-knot nematode (*Meloidogyne* sp.), citrus nematode (*Tylenchulus semipenetrans*), phagous nematode (*Aphelenchus avenae*), chrysanthemum

5 foliar nematode (*Aphelenchoides ritzemabosi*) and the like;

THYSANOPTERA such as melon thrip (*Thrips palmi*), western flower thrip (*Frankliniella occidentalis*), yellow tea thrip (*Scirtothrips dorsalis*), yellow flower thrip (*Thrips flavus*), onion thrip (*Thrips tabaci*) and the like; and ORTHOPTERA such as German cockroach

10 (*Blattella germanica*), American cockroach (*Periplaneta americana*), rice grasshopper (*Oxya yezoensis*) and the like.

The insecticide comprising the compound represented by the general formula (1) or (5) of the present invention as an active ingredient has a remarkable control effect on the above-exemplified
15 insect pests which are injurious to paddy field crops, upland crops, fruit trees, vegetables, other crops, flowers and the like. Therefore, the desired effect as an insecticide of the present invention can be obtained by applying the insecticide to the paddy field, upland, paddy field water, stalks and leaves of fruit trees, vegetables, other crops,
20 flowers and the like, or soil at a season at which the insect pests are expected to appear, before their appearance or at the time when their appearance is confirmed.

The insecticide of the present invention is generally prepared into conveniently usable forms according to an ordinary manner for
25 preparation of agricultural and horticultural chemicals. That is, the compound represented by the general formula (1) or (5) and, optionally, an adjuvant may be blended with a suitable inert carrier in a proper

proportion and prepared into a suitable preparation form such as a suspension, emulsifiable concentrate, soluble concentrate, wettable powder, granules, dust, tablets or the like through dissolution, separation, suspension, mixing, impregnation, adsorption or adhering.

5 The inert carrier which can be used in the present invention may be either solid or liquid. Such a material which can be an inert solid carrier includes, for example, soybean flour, cereal flour, wood flour, bark flour, saw dust, powered tobacco stalks, powered walnut shells, bran, powered cellulose, extraction residue of vegetables, synthetic
10 polymers such as powdered synthetic resins, inorganic mineral powder such as clays (for example, kaolin, bentonite, acid clay and the like), talcs (for example, talc, pyrophyllite and the like), silica powders or flakes (for example, diatomaceous earth, silica sand, mica, white carbon [synthetic, high-dispersion silicic acid, also called finely
15 divided hydrated silicon, hydrated silicic acid, some of commercially available products contain calcium silicate as the major component]), activated carbon, powdered sulfur, pumice stone, calcined diatomite, brick groats, fly ash, sand, calcium carbonate powder, calcium phosphate powder and other inorganic mineral powders, chemical
20 fertilizers (for example, ammonium sulfate, ammonium phosphate, ammonium nitrate, urea, ammonium chloride and the like), compost and the like. These carriers can be used singly or in combination of two or more kinds.

 A material which can be the inert liquid carrier is selected from
25 such a material which itself has solvency or which does not have such solvency but is capable of dispersing an effective ingredient compound with the aid of an adjuvant. The following are typical examples of

the carrier and can be used singly or in combination of two or more kinds. Examples thereof include water, alcohols (for example, methanol, ethanol, isopropanol, butanol, ethylene glycol and the like), ketones (for example, acetone, methylethyl ketone, methylisobutyl ketone, diisobutyl ketone, cyclohexanone and the like), ethers (for example, diethyl ether, dioxane, cellosolve, diisopropyl ether, tetrahydrofuran and the like), aliphatic hydrocarbons (for example, kerosene, mineral oil and the like), aromatic hydrocarbons (for example, benzene, toluene, xylene, solvent naphtha, alkyl naphthalene and the like), halogenated hydrocarbons (for example, dichloromethane, chloroform, carbon tetrachloride, chlorobenzene and the like), esters (for example, ethyl acetate, butyl acetate, ethyl propionate, diisobutyl phthalate, dibutyl phthalate, dioctyl phthalate and the like), amides (for example, dimethylformamide, diethylformamide, dimethylacetamide and the like), nitriles (for example, acetonitrile and the like).

The following typical adjuvants can be exemplified. These adjuvants can be used depending on purposes and used singly or in combination of two or more kinds or need not to be used at all in some cases.

To emulsify, disperse, dissolve and/or wet a compound as an active ingredient, a surfactant is used. Examples thereof include surfactants such as polyoxyethylene alkyl ethers, polyoxyethylene alkylaryl ethers, polyoxyethylene higher fatty acid esters, polyoxyethylene resinsates, polyoxyethylene sorbitan monolaurate, polyoxyethylene sorbitan monooleate, alkylarylsulfonates, naphthalenesulfonates, lignin sulfonates, higher alcohol sulfate

esters and the like.

Furthermore, to stabilize the dispersion of a compound as an active ingredient, adhere it and/or bind it, the following adjuvants can be used. Examples thereof include casein, gelatin, starch, methyl
5 cellulose, carboxymethyl cellulose, gum Arabic, polyvinyl alcohols, pine oil, bran oil, bentonite, Xanthan gum, lignin sulfonates and the like.

In order to improve fluidity of a solid product, the following adjuvants can be used. Examples thereof include waxes, stearates,
10 alkyl phosphates and the like. Adjuvants such as naphthalenesulfonic acid condensation products, polycondensates of phosphates and the like can be used as a peptizer for suspendible products. As a defoaming agent, adjuvants such as silicon oils and the like can also be used.

Incidentally, the compound represented by the general formula
15 (1) or (5) of the present invention is stable to light, heat, oxidation and the like. However, an anti-oxidant or an ultraviolet absorber including a phenol derivative, for example, BHT (2,6-di-t-butyl-4-methylphenol) and BHA (butylated hydroxyanisole), a bisphenol derivative or arylamines such as phenyl- α -naphthylamine,
20 phenyl- β -naphthylamine, condensates of phenetidine and acetone and the like, or a benzophenone-based compound is added as a stabilizer in a proper amount when necessary, whereby a composition with much stabilized effect can be obtained.

The amount of the active ingredient of the compound represented
25 by the general formula (1) or (5) of the present invention is usually from 0.5 weight % to 20 weight % for dust formulation, from 5 weight % to 50 weight % for emulsifiable concentrate, from 10 weight % to 90

weight % for wettable powder, from 0.1 weight % to 20 weight % for granule, and from 10 weight % to 90 weight % for flowable formulation. On the other hand, the amount of the carrier in each formulation is usually from 60 weight % to 99 weight % for dust formulation, from 40 weight % to 95 weight % for emulsifiable concentrate, from 10 weight % to 90 weight % for wettable powder, from 80 weight % to 99 weight % for granule, and from 10 weight % to 90 weight % for flowable formulation. Meanwhile, the amount of the adjuvant is usually from 0.1 weight % to 20 weight % for dust formulation, from 1 weight % to 20 weight % for emulsifiable concentrate, from 0.1 weight % to 20 weight % for wettable powder, from 0.1 weight % to 20 weight % for granule, and from 0.1 weight % to 20 weight % for flowable formulation.

In order to control various kinds of insect pests, the compound of the present invention may be suitably applied to crops which are expected to create insect pests or places where such creation is not desired in an amount effective in controlling insect pests as intact, as appropriately diluted with water or the like, or as suspended, and used accordingly. The amount thereof is varied according to various factors such as purpose, target insect pests, reared status of crops, occurrence trend of insect pests, weather, environmental conditions, the type of formulation, method of application, place of application, time of application and the like. However, usually, the amount is preferably at a concentration of 0.0001 ppm to 5000 ppm and preferably at a concentration of 0.01 ppm to 1000 ppm as an active ingredient. Furthermore, the application amount is generally from 1 to 300 g per 10 are as an active ingredient.

The insecticide comprising the compound represented by the

general formula (1) or (5) of the present invention as an active ingredient may be used singly for preventing insect pests such as various agricultural, forest and horticultural insect pests, stored grain insect pests, hygienic insect pests, nematodes or the like which are injurious to paddy rice, fruit trees, vegetables, other crops, flowers and the like. Also, it may be used in combination of one or more kinds of other insecticides and/or fungicides in order to obtain a much higher control effect on controlling various diseases and insect pests occurring at the same time.

EXAMPLES

The representative examples of the present invention are now more specifically illustrated below with reference to the following Examples. However, the present invention is not restricted to these Examples.

Example 1-1

Preparation of 5-amino-6-bromo-8-heptafluoroisopropylquinoline

A solution containing 1.21 g of 5-amino-8-heptafluoroisopropylquinoline in 5 ml of N,N-dimethylformamide was stirred under an ice-water bath, and 0.69 g of N-bromosuccinic acid imide dissolved in 10 ml of N,N-dimethylformamide was subsequently introduced dropwise thereto. The reaction solution was stirred under an ice-water bath for 1 hour and at room temperature for 4 hours, and then ethyl acetate and water were added thereto for separating the organic phase. The organic phase was washed with water two times and dried over anhydrous magnesium sulfate, and a solvent was removed under a reduced pressure. The

resulting residue was purified by silica gel column chromatography (n-hexane : EtOAc = 8:1 → 4:1) to obtain 1.09 g of the desired product (Yield: 72%) as a light brown solid.

¹H-NMR(CDCl₃) δ 4.98(2H, broad-s), 7.43(1H, dd, J=3.9, 8.3 Hz),
5 8.08(1H, d, J=1.0 Hz), 8.13(1H, dd, J=1.5, 8.3 Hz), 8.91(1H, dd, J=1.5,
3.9 Hz).

Example 1-2

Preparation of

N-(6-bromo-8-heptafluoroisopropylquinolin-5-yl) 3-nitrobenzamide

10 0.47 g of 3-nitrobenzoyl chloride and 1.5 g of
5-amino-6-bromo-8-heptafluoroisopropylquinoline were added to 5 ml of
pyridine, and the resulting mixture was stirred at room temperature.
After 5 hours, to the reaction solution were added ethyl acetate and
1N hydrochloric acid for separating the organic phase. The organic
15 phase was washed with water two times and with saturated sodium
hydrogen carbonate solution three times. The solvent was removed under
a reduced pressure to obtain a residue. The resulting residue was
dissolved in a mixed solvent of 8 ml of THF and 2 ml of MeOH, and stirred
under an ice-water bath. As that time, 0.10 g of NaOH was added thereto
20 and stirred for 1 hour and further stirred at room temperature for 4
hours. To the reaction solution were added ethyl acetate and water
for taking the organic phase and the organic phase was dried over
anhydrous magnesium sulfate. The solvent was removed under a reduced
pressure to obtain a residue. The resulting residue was purified by
25 silica gel column chromatography (n-hexane : EtOAc = 4:1) to obtain
0.72 g of the desired product (Yield: 52%) as a white amorphous
substance.

¹H-NMR(CDCl₃) δ 7.41(1H, dd, J=3.9, 8.3 Hz), 7.61(1H, t, J=7.8 Hz), 8.15(1H, dd, J=1.5, 8.3 Hz), 8.25(1H, s), 8.28(1H, d, J=7.8 Hz), 8.39(1H, d, J=7.8 Hz), 8.84(1H, s), 8.87(1H, s), 8.92(1H, dd, J=1.5, 3.9 Hz).

5 Example 1-3

Preparation of

N-(6-bromo-8-heptafluoroisopropylquinolin-5-yl) 3-aminobenzamide

To a solution of 0.70 g of

N-(6-bromo-8-heptafluoroisopropylquinolin-5-yl) 3-nitrobenzamide

10 and 0.98 g of tin(II)chloride (anhydrous) in 10 ml of EtOH was added 1 ml of concentrated hydrochloric acid and the resulting mixture was stirred at 60°C for 1 hour. The reaction solution was poured into ice water, neutralized with potassium carbonate, and then filtered off to remove the precipitated insoluble substance with celite. The insoluble
15 substance was washed with ethyl acetate and combined with the filtrate for separating the organic phase, and then the organic phase was dried over anhydrous magnesium sulfate. The solvent was removed under a reduced pressure to precipitate a solid. The precipitated solid was washed with hexane to obtain 0.56 g of the desired product (Yield: 85%)
20 as a pale orange solid.

¹H-NMR(DMSO-d₆) δ 5.41(2H, broad-s), 6.83(1H, dd, J=1.5, 9.3 Hz), 7.20-7.27(3H, m), 7.76(1H, dd, J=4.4, 8.8 Hz), 8.40-8.43(2H, m), 9.06(1H, dd, J=1.5, 4.4 Hz), 10.58(1H, s).

Example 1-4

25 Preparation of

N-(6-bromo-8-heptafluoroisopropylquinolin-5-yl)

3-[(2-fluorobenzoyl)amino]benzamide (Compound No. 1-304)

To a solution with 0.15 g of
 N-(6-bromo-8-heptafluoroisopropylquinolin-5-yl) 3-aminobenzamide
 and 0.03 g of pyridine added to 5 ml of tetrahydrofuran and stirred
 at room temperature was introduced dropwise 0.05 g of 2-fluorobenzoyl
 5 chloride with 1 ml of tetrahydrofuran dissolved therein. The reaction
 solution was stirred at room temperature for 1 hour, and then ethyl
 acetate and 1N hydrochloric acid were added thereto for separating the
 organic phase. The organic phase was washed with saturated sodium
 hydrogen carbonate solution one time and then dried over anhydrous
 10 magnesium sulfate. The solution was filtered off, the filtrate was
 collected and the solvent was removed under a reduced pressure to
 precipitate a solid. The precipitated solid was washed with
 diisopropyl ether to obtain 0.17 g of the desired product (Yield: 88%)
 as a white solid.

15 ¹H-NMR(DMSO-d₆) δ 7.33-7.40(2H, m), 7.57-7.63(2H, m),
 7.68-7.73(1H, m), 7.77(1H, dd, J=3.9, 8.8 Hz), 7.90(1H, d, J=7.8 Hz),
 8.03(1H, d, J=7.8 Hz), 8.41-8.49(3H, m), 9.08(1H, dd, J=1.5, 3.9 Hz),
 10.70(1H, s), 10.84(1H, s).

Example 2-1

20 Preparation of
 N-(4-heptafluoroisopropyl-2-methylsulfonylphenyl)-N-methyl
 3-nitrobenzamide

To a solution of 0.15 g of 60% sodium hydride suspended in 5 ml
 of tetrahydrofuran was introduced dropwise 1.5 g of
 25 N-(4-heptafluoroisopropyl-2-methylsulfonylphenyl) 3-nitrobenzamide
 dissolved in 5 ml of tetrahydrofuran at room temperature. The
 resulting mixture was stirred at room temperature for 30 minutes, and

then 0.94 g of methyl iodide dissolved in 5 ml of tetrahydrofuran was introduced dropwise thereto. Subsequently, the reaction solution was elevated to 70°C to stir for 12 hours and then returned to room temperature, and ethyl acetate and water were added thereto. The organic phase was separated and washed with water one time, and then dried over anhydrous magnesium sulfate. The solvent was removed under a reduced pressure. The resulting residue was purified by silica gel column chromatography (n-hexane : ethyl acetate = 6:1) to obtain 0.98 g of the desired product (Yield: 64%) as a light yellow solid.

1H-NMR(CDCl₃) δ 3.21(3H, s), 3.39(3H, s), 7.64(1H, d, J=8.3 Hz), 7.73(1H, t, J=7.8 Hz), 8.03(1H, d, J=8.3 Hz), 8.07(1H, d, J=7.8 Hz), 8.38-8.41(2H, m), 8.55(1H, s).

Example 2-2

Preparation of

N-(4-heptafluoroisopropyl-2-methylsulfonylphenyl)-N-methyl
3-aminobenzamide

0.93 g of

N-(4-heptafluoroisopropyl-2-methylsulfonylphenyl)-N-methyl
3-nitrobenzamide and 1.40 g of tin(II)chloride (anhydrous) were added to 20 ml of EtOH, and 2 ml of concentrated hydrochloric acid was then introduced dropwise thereto. After the introduction, the reaction solution was elevated to 60°C to stir for 1.5 hour, and poured into ice water. The reaction solution was neutralized with potassium carbonate and ethyl acetate was added thereto, and then filtered off to remove the precipitated insoluble substance with celite. The filtered product on celite was well washed with ethyl acetate. The organic phase of the filtrate was separated and dried over anhydrous

magnesium sulfate, and the solvent was removed under a reduced pressure to obtain a residue. The resulting residue was purified by silica gel column chromatography (n-hexane : EtOAc = 1:1) to obtain 0.82 g of the desired product (Yield: 94%) as colorless oil.

5 ¹H-NMR(CDCl₃) δ 3.19(3H, s), 3.39(3H, s), 3.88(2H, broad-s), 6.80(1H, d, J=7.8 Hz), 6.96(1H, s), 7.04(1H, d, J=7.8 Hz), 7.26(1H, t, J=7.8 Hz), 7.60(1H, d, J=7.8 Hz), 7.99(1H, d, J=7.8 Hz), 8.40(1H, s).

Example 2-3

10 Preparation of

N-(4-heptafluoroisopropyl-2-methylsulfonylphenyl)-N-methyl
3-(2-fluorobenzoylamino)benzamide (Compound No. 1-603)

The desired title product was prepared according to the conditions as described in Example 1-4. White solid.

15 ¹H-NMR(CDCl₃) δ 3.22(3H, s), 3.42(3H, s), 7.17-7.23(1H, m), 7.29-7.35(2H, m), 7.49-7.57(2H, m), 7.64(1H, d, J=8.3Hz), 7.81-7.83(1H, m), 8.00-8.10(2H, m), 8.14-8.18(1H, m), 8.41(1H, s), 8.62(1H, d, J=15.1Hz).

Example 3-1

20 Preparation of 3-(benzoylamino)benzoic acid

To a solution of 1.37 g of 3-aminobenzoic acid and 0.4 g of sodium hydroxide added to 50 ml of water was added dropwise 1.41 g of benzoyl chloride and a solution of 0.4 g of sodium hydroxide dissolved in 5 ml of water under an ice bath at the same time, and the resulting mixture
25 was stirred at room temperature for 6 hours. The reaction solution with 1N hydrochloric acid added thereto was adjusted to pH 1, and then the precipitated solid was filtered off and collected to obtain 1.92

g of the desired product (Yield: 80%) as a white solid.

$^1\text{H-NMR}$ (CDCl_3 , ppm) δ 7.40–7.56(5H, m), 7.78(1H, d, $J=7.8$ Hz), 8.00(2H, d, $J=8.3$ Hz), 8.15(1H, d, $J=7.8$ Hz), 8.35(1H, t, $J=2.0$ Hz), 9.89(1H, s).

5 Example 3-2

Preparation of 3-(benzoylamino)benzoyl chloride

To a solution of 1.5 g of 3-(benzoylamino)benzoic acid suspended in 10 ml of toluene was added 2 ml of thionyl chloride, and the resulting mixture was stirred under a reflux condition for 2 hours. The reaction
10 solution was returned to room temperature, and then the solvent was removed under a reduced pressure to obtain 1.53 g of the desired product (Yield: 95%) as a white solid.

$^1\text{H-NMR}$ (CDCl_3 , ppm) δ 7.51–7.62(4H, m), 7.90(2H, d, $J=7.3$ Hz), 7.93(1H, s), 7.97(1H, s), 8.15(1H, dt, $J = 1.0, 5.9$ Hz), 8.28(1H, t,
15 $J = 2.0$ Hz).

Example 3-3

Preparation of N-benzothiazol-6-yl 3-(benzoylamino)benzamide
(Compound No. 1-492)

To a solution of 0.1 g of 6-aminobenzothiazole and 0.1 g of
20 pyridine added to 5 ml of tetrahydrofuran and stirred at room temperature was introduced dropwise 0.2 g of 3-(benzoylamino)benzoyl chloride dissolved in 1 ml of tetrahydrofuran. The resulting solution was stirred at room temperature for 1 hour, and then ethyl acetate and 1N hydrochloric acid were added thereto for separating the organic
25 phase. The organic phase was washed with saturated sodium hydrogen carbonate solution one time, and then dried over anhydrous magnesium sulfate. The solution was filtered off, the filtrate was collected,

and the solvent was removed under a reduced pressure to obtain a residue. The resulting residue was purified by silica gel column chromatography (n-hexane : ethyl acetate = 3:1) to obtain 0.15 g of the desired product (Yield: 52%) as a white solid.

5 MS (APCI)=374 (M+1).

Example 4-1

Preparation of 2,6-difluoro-3-nitrobenzoic acid

0.73 g of 2,6-difluoro-3-nitrobenzonitrile was added to 5 ml of 90% aqueous sulfuric acid solution and the resulting mixture was
10 stirred at 120°C for 2 hours. The solution was cooled to room temperature and 5 ml of an aqueous solution with 21.9 g of sodium nitrite dissolved therein was added thereto, and then the resulting mixture was stirred at 80°C for 1 hour. The solution was cooled to room temperature, poured into ice and extracted with ethyl acetate.
15 The organic phase was dried over anhydrous magnesium sulfate and the solvent was removed under a reduced pressure. The resulting residue was purified by silica gel column chromatography (ethyl acetate) to obtain 1.80 g of the desired product (Yield: 96%) as a white solid.

IR(KBr, cm⁻¹); 3098, 1720, 1625, 1545, 1477, 1353.

20 Example 4-2

Preparation of 3-amino-2,6-difluorobenzoic acid

A solution of 2,6-difluoro-3-nitrobenzoic acid and 10% palladium carbon added to 10 ml of methanol was stirred in a hydrogen atmosphere at room temperature for 2 hours. The catalyst was filtered
25 off and then the solvent was removed under a reduced pressure to obtain the desired product (Yield: 93%) as a white solid.

Example 4-3

Preparation of N-(4-heptafluoroisopropyl-2-methylphenyl)
3-(benzoylamino)-2,6-difluorobenzamide (Compound No. 1-601)

Using 3-amino-2,6-difluorobenzoic acid, 3-(benzoylamino)-2,6-difluorobenzoic acid was prepared according to the conditions as
5 described in Examples 3-1, and then 3-(benzoylamino)-2,6-difluorobenzoyl chloride was prepared according to the conditions as described in Examples 3-2. Then, using heptafluoroisopropyl-2-methylaniline, the desired product was prepared according to the conditions as described in Examples 3-3.

10 $^1\text{H NMR}$ (DMSO- d_6) δ 2.37 (3H, s), 7.29-8.01 (10H, m), 10.3 (1H, s), 10.6 (1H, s).

Example 5-1

Preparation of 3-(heptafluoro-n-propylthio)aniline

To a solution 1.25 g of 3-aminothiophenol and 1.11 g of
15 triethylamine in 20 ml of acetonitrile was added 5.91 g of 1-iodineheptafluoro-n-propane, and the resulting mixture was stirred at room temperature for 3 hours. The resultant was diluted with ether, and then washed with aqueous 1N sodium hydroxide solution, purified by silica gel column chromatography (hexane : ethyl acetate = 4:1) to
20 obtain 0.38 g of the desired product (Yield: 14%).

Example 5-2

Preparation of

2,4,6-tribromo-3-(heptafluoro-n-propylthio)aniline

To a solution of 0.38 g of 3-(heptafluoro-n-propylthio)aniline
25 added to 10 ml of N,N-dimethylformamide was introduced 0.72 g of N-bromosuccinic acid imide. The resulting solution was stirred at 60°C for 2 hours, and then ether and water were added thereto for

separating the organic phase. The organic phase was washed with water two times, and then dried over anhydrous magnesium sulfate, and the solvent was removed under a reduced pressure to obtain a residue. The resulting residue was purified by silica gel column chromatography (n-hexane: ethyl acetate = 8:1) to obtain 0.61 g of the desired product (Yield: 89%) as red oil.

$^1\text{H NMR}(\text{CDCl}_3)$ δ 4.87(2H, s), 7.83(1H, s).

Example 5-3

Preparation of

10 N-{2,4,6-tribromo-3-(heptafluoro-n-propylthio)}phenyl
3-nitrobenzamide

0.61 g of 2,4,6-tribromo-3-(heptafluoro-n-propylthio)aniline and 0.43 g of 3-nitrobenzoyl chloride were added to 20 ml of pyridine, and the resulting mixture was stirred at 70°C for 2 hours. Then, ethyl acetate and water were added to the reaction solution. The organic phase was separated and dried over anhydrous magnesium sulfate. The solution was filtered off, the filtrate was collected, and the solvent was removed under a reduced pressure to obtain a residue. The resulting residue was purified by silica gel column chromatography (hexane : ethyl acetate = 4:1) to obtain 0.69 g of the desired product (Yield: 89%) as a white solid.

$^1\text{H NMR}(\text{CDCl}_3)$ δ 7.76(1H, t, J=7.8 Hz), 7.78(1H, s), 8.15(1H, s), 8.32(1H, d, J=7.8 Hz), 8.47-8.50(1H, m), 8.79(1H, s).

Example 5-4

25 Preparation of

N-{2,4,6-tribromo-3-(heptafluoro-n-propylthio)}phenyl
3-aminobenzamide

To a solution of 0.69 g of
N-{2,4,6-tribromo-3-(heptafluoro-n-propylthio)}phenyl
3-nitrobenzamide and 0.60 g of anhydrous tin(II)chloride added to 20
ml of ethanol and stirred at room temperature was added 1ml of
5 concentrated hydrochloric acid, and the resulting mixture was heated
and stirred at 60°C for 2 hours. The reaction solution was returned
to room temperature, poured into water, and then neutralized with
potassium carbonate. Ethyl acetate was added thereto and the insoluble
substance was filtered off, and then the organic phase was separated
10 and dried over anhydrous magnesium sulfate. The solution was filtered
off, the filtrate was collected, and the solvent was removed under a
reduced pressure to obtain a residue. The resulting residue was washed
with hexane to obtain 0.62 g of the desired product (Yield: 94%) as
a white solid.

15 ¹H NMR(CDCl₃) δ 3.89(2H, s), 6.89(1H, dt, J= 6.4, 2.4 Hz),
7.27-7.31(3H, m), 7.64(1H, s), 8.11(1H, s).

Example 5-5

Preparation of

N-(2,4,6-tribromo-3-heptafluoro-n-propylthio)phenyl

20 3-(2-chloropyridine-3-carbonylamino)benzamide (Compound No. 1-391)

To a solution of 0.15 g of

N-{2,4,6-tribromo-3-(heptafluoro-n-propylthio)}phenyl

3-aminobenzamide and 0.04 g of pyridine added to 5 ml of

tetrahydrofuran and stirred at room temperature was introduced

25 dropwise 0.05 g of 2-chloronicotinoyl chloride dissolved in 1 ml of
tetrahydrofuran. The resulting solution was stirred at room
temperature for 1 hour, and then ethyl acetate and 1N hydrochloric acid

were added thereto for separating the organic phase. The organic phase was washed with saturated sodium hydrogen carbonate solution one time, and then dried over anhydrous magnesium sulfate. The solution was filtered off, the filtrate was collected, and the solvent was removed under a reduced pressure to obtain a residue. The resulting residue was purified by silica gel column chromatography (n-hexane : ethyl acetate =3:1) to obtain 0.17 g of the desired product (Yield: 94%) as oil.

¹H NMR(CDCl₃) δ 7.44(1H, dd, J=4.9, 7.8 Hz), 7.57(1H, t, J=7.8 Hz), 7.79(1H, d, J=7.8 Hz), 7.87-7.91(2H, m), 8.13(1H, s), 8.23(1H, dd, J=2.0, 7.8 Hz), 8.31(1H, s), 8.42(1H, s), 8.55(1H, dd, J=2.0, 4.9 Hz).

Example 6-1

Preparation of

5-nitro-2-(2,2,2-trifluoro-1-trifluoromethylethoxy)pyridine

2.45 g (61.2 mmol) of sodium hydride was introduced to 15 ml of THF and cooled to 5°C, and then 10.6 g of 1,1,1,3,3,3-hexafluoro-2-propanol was added dropwise thereto. The resulting solution was stirred at 5°C for 30 minutes, and then 5.0 g of 2-chloro-5-nitropyridine dissolved in 10 ml of THF was added dropwise thereto and stirred at room temperature for 3 hours. The reaction solution was allowed to stand at room temperature for 3 days, the water was added thereto, and the mixture was extracted with ethyl acetate and then washed with saturated salt water. The resultant was dried over anhydrous magnesium sulfate, and then the solvent was removed under a reduced pressure to obtain a residue. The resulting residue was purified by silica gel column chromatography (n-hexane :

AcOEt = 10:1) to obtain 8.4 g of the desired product (Yield: 92%) as yellow oil.

$^1\text{H NMR}(\text{CDCl}_3)$ δ 6.57(1H, septet), 7.13(1H, d, $J=8.8$ Hz), 8.54(1H, dd, $J=8.8$, 2.9 Hz), 9.09 (1H, d, $J=2.9$ Hz).

5 Example 6-2

Preparation of

5-amino-2-(2,2,2-trifluoro-1-trifluoromethylethoxy)pyridine

Using

5-nitro-2-(2,2,2-trifluoro-1-trifluoromethylethoxy)pyridine, the
10 desired title product was prepared according to the conditions as
described in Example 2-2 (Yield: 97%).

$^1\text{H NMR}(\text{CDCl}_3)$ δ 3.53(2H, brs), 6.40(1H, septet, $J=6.4$ Hz),
6.77(1H, d, $J=8.8$ Hz), 7.09(1H, dd, $J=2.9$, 8.8 Hz), 7.60(1H, d, $J=2.9$
Hz).

15 Example 6-3

Preparation of

6-bromo-5-amino-2-(2,2,2-trifluoro-1-trifluoromethylethoxy)
pyridine

2.0 g of

20 5-amino-2-(2,2,2-trifluoro-1-trifluoromethylethoxy)pyridine was
introduced to 15 ml of N,N-dimethylformamide and 1.36 g of
N-bromosuccinic acid was added thereto at room temperature. The
resulting mixture was stirred at room temperature for 2 hours, and then
ethyl acetate was added thereto and washed with water. The resultant
25 was dried over anhydrous magnesium sulfate, and then purified by silica
gel column chromatography (n-hexane : AcOEt = 10:1) to obtain 2.35 g
of the desired product as oil (Yield: 90%).

^1H NMR(CDCl_3) δ 3.92(2H, brs), 6.23(1H, septet, $J=7.4$ Hz), 6.77(1H, d, $J=8.3$ Hz), 7.12(1H, d, $J=8.3$ Hz).

Example 6-4

Preparation of

5 N-[2-bromo-4-(2,2,2-trifluoro-1-trifluoromethylethoxy)-pyridin-3-yl] 3-nitrobenzamide

Using

6-bromo-5-amino-2-(2,2,2-trifluoro-1-trifluoromethylethoxy)pyridine, the desired title product was prepared according to the
10 conditions as described in Example 1-2 (Yield: 92%).

^1H NMR(CDCl_3) δ 6.31(1H, septet, $J=5.8$ Hz), 7.06(1H, d, $J=8.8$ Hz), 7.77(1H, t, $J=8.3$ Hz), 8.25-8.29(2H, m), 8.47-8.50(1H, m), 8.77-8.82(2H, m).

Example 6-5

15 Preparation of

N-[2-bromo-4-(2,2,2-trifluoro-1-trifluoromethylethoxy)-pyridin-3-yl] 3-aminobenzamide

Using

N-[2-bromo-4-(2,2,2-trifluoro-1-trifluoromethylethoxy)-pyridin-3-yl] 3-nitrobenzamide, the desired title product was prepared
20 according to the conditions as described in Example 1-3 (Yield: 81%).

^1H NMR(CDCl_3) δ 3.90(2H, brs), 6.29(1H, septet, $J=5.9$ Hz), 6.88-6.91(1H, m), 7.00(1H, d, $J=8.8$ Hz), 7.21-7.32(3H, m), 8.23(1H, brs), 8.85(1H, d, $J=8.8$ Hz).

25 Example 6-6

Preparation of

N-[2-bromo-6-(2,2,2-trifluoro-1-trifluoromethylethoxy)-pyridin-3

-yl] 3-(benzoylamino)benzamide (Compound No. 1-387)

Using

N-[2-bromo-4-(2,2,2-trifluoro-1-trifluoromethylethoxy)-pyridin-3-yl] 3-aminobenzamide and benzoyl chloride, the desired title product
 5 was prepared according to the conditions as described in Example 1-4 (Yield: 76%).

¹H NMR(CDCl₃) δ 6.30(1H, septet, J=6.8 Hz), 7.01(1H, d, J=8.8 Hz), 7.49-7.61(4H, m), 7.68 (1H, dd, J=1.0, 7.8 Hz), 7.88-7.91(2H, m), 7.96-8.01(2H, m), 8.26(1H, t, J=1.9 Hz), 8.33 (1H, s), 8.81(1H,
 10 d, J=8.8 Hz).

Example 7-1

Preparation of N-(2-bromo-6-methyl-4-pivaloyloxyphenyl)
 3-nitrobenzamide

Using 2-methyl-4-(pivaloyloxy)aniline which was synthesized
 15 according to a method as described in Tetrahedron p. 12263 to 12276 (1995), 2-bromo-6-methyl-4-(pivaloyloxy)aniline was prepared according to the conditions as described in Examples 1-1. Then, the desired title product was prepared according to the conditions as described in Examples 1-2 (Yield: 52%).

¹H NMR(CDCl₃, ppm) σ 1.36(9H, s), 2.36(3H, s), 7.00(1H, d, J=2.0 Hz), 7.27(1H, d, J=2.0 Hz), 7.65(1H, br.), 7.74(1H, t, J=8.3 Hz), 8.31(1H, dd, J=1.5, 6.3 Hz), 8.44-8.47(1H, m), 8.79(1H, t, J=2.0 Hz).

Example 7-2

Preparation of N-(2-bromo-6-methyl-4-hydroxyphenyl)
 25 3-aminobenzamide

N-(2-bromo-6-methyl-4-pivaloyloxyphenyl) 3-nitrobenzamide and an aqueous solution of sodium hydroxide were added to methanol, and

the resulting mixture was stirred at 70°C for 3 hours. The solvent was removed under a reduced pressure to obtain a residue. The resulting residue was dissolved in ethyl acetate, washed with aqueous 2N hydrochloric acid solution, and then dried over anhydrous magnesium sulfate. The solvent was removed under a reduced pressure. The resulting residue was purified by silica gel column chromatography (n-hexane : EtOAc = 1:1) to obtain N-(2-bromo-6-methyl-4-hydroxyphenyl) 3-nitrobenzamide. Then, the desired title product was prepared according to the conditions as described in Example 1-3 (Yield: 97%).

Example 7-3

Preparation of N-(2-bromo-6-methyl-4-hydroxyphenyl) 3-(benzoylamino)benzamide (Compound No. 1-484)

Using N-(2-bromo-6-methyl-4-hydroxyphenyl) 3-aminobenzamide, the desired title product was prepared according to the conditions as described in Example 1-4 (Yield: 95%).

¹H NMR(DMSO, ppm) δ 2.16(3H, s), 6.72(1H, d, J=2.4 Hz), 6.94(1H, d, J=2.4 Hz), 7.50-7.63(4H, m), 7.74(1H, d, J=8.3 Hz), 7.98-8.05(3H, m), 8.32(1H, s), 9.79(1H, s), 9.81(1H, s), 10.4(1H, s).

Example 7-4

Preparation of N-(2-bromo-6-methyl-4-trifluoromethanesulfonyloxyphenyl) 3-(benzoylamino)benzamide (Compound No. 1-369)

0.2g of N-(2-bromo-6-methyl-4-hydroxyphenyl) 3-(benzoylamino)benzamide and 0.14g of trifluoromethanesulfonyl anhydride were added to pyridine, and the resulting mixture was stirred at 80°C for 7 hours. The solvent was removed under a reduced pressure

to obtain a residue. The resulting residue was purified by silica gel column chromatography (n-hexane : EtOAc = 1:1) to obtain 0.08 g of the desired product (Yield: 31%).

1H NMR(DMSO, ppm) δ 2.32(3H, s), 7.52-7.63(5H, m), 7.76(1H, d, J=7.8 Hz), 7.87(1H, d, J=2.7 Hz), 8.00(2H, dd, J=1.5, 7.8 Hz), 8.06(1H, d, J=7.8 Hz), 8.37(1H, s), 10.18(1H, s), 10.47(1H, s).

Example 7-5

Preparation of N-[2-bromo-6-methyl-4-(p-toluenesulfonyloxy)phenyl] 3-(benzoylamino)benzamide (Compound No. 1-485)

0.30 g of N-(2-bromo-6-methyl-4-hydroxyphenyl) 3-(benzoylamino)benzamide, 0.23 g of 1,1,1,3,3,3-hexafluoroisopropyl p-toluenesulfonate, 0.19 g of potassium carbonate and 0.03 g of 18-crown-6 ether were added to 5 ml of N,N-dimethylformamide, and the resulting mixture was stirred at 70°C for 6 hours. 100 ml of ethyl acetate was added thereto and washed with water (50 ml x 2). The organic phase was dried over anhydrous magnesium sulfate and the solvent was removed under a reduced pressure to obtain a residue. The resulting residue was purified by silica gel column chromatography (n-hexane : EtOAc = 3:1) to obtain 0.05 g of the desired product (Yield: 13%).

1H NMR(CDCl₃, ppm) δ 2.29(3H, s), 2.48(3H, s), 6.94(1H, d, J=2.9 Hz), 7.14(1H, d, J=2.9 Hz), 7.36(2H, d, J=8.3 Hz), 7.51-7.61(5H, m), 7.71-7.77(3H, m), 7.88-7.92(3H, m), 7.99(1H, br.s), 8.28(1H, s).

Example 8-1

Preparation of N-(2,6-dimethyl-4-heptafluoroisopropyl)phenyl 3-nitrobenzamide

To a solution of 20.0 g of 2,6-dimethyl-4-heptafluoroisopropylaniline and 11.0 g of pyridine

added to 100 ml of tetrahydrofuran and stirred at room temperature was introduced dropwise 13.0 g of 3-nitrobenzoyl chloride dissolved in 20 ml of tetrahydrofuran little by little. The reaction solution was stirred at room temperature for 10 hours, and then ethyl acetate and water were added thereto. Solution separation was performed for taking out the organic phase. The organic phase was dried over anhydrous magnesium sulfate. The solution was filtered off, the filtrate was collected, and the solvent was removed under a reduced pressure to obtain a residue. The resulting residue was washed with a mixed solvent of hexane and diisopropyl ether to obtain 26.0 g of the desired product (Yield: 85%) as a white solid.

¹H-NMR(CDCl₃, ppm) δ 2.33(6H, s), 7.37(2H, s), 7.68(1H, s), 7.72(1H, t, J=8.1 Hz), 8.28(1H, d, J=8.1 Hz), 8.44(1H, dd, J=1.2, 8.1 Hz), 8.75(1H, t, J=1.2 Hz).

Example 8-2

Preparation of N-(2,6-dimethyl-4-heptafluoroisopropyl)phenyl 3-aminobenzamide

To a solution of 0.90 g of N-(2,6-dimethyl-4-heptafluoroisopropyl)phenyl 3-nitrobenzamide and 1.56 g of anhydrous tin(II)chloride added to 25 ml of ethanol and stirred at room temperature was added 2 ml of concentrated hydrochloric acid, and the resulting mixture was stirred at 60°C for 1 hour. The reaction solution was returned to room temperature, poured into water, and then neutralized with potassium carbonate. Ethyl acetate was added thereto, the insoluble substance was filtered off, and then the organic phase was separated and dried over anhydrous magnesium sulfate. The solution was filtered off, the filtrate was

collected, and the solvent was removed under a reduced pressure to obtain a residue. The resulting residue was washed with hexane to obtain 0.44 g of the desired product (Yield: 53%) as a white solid.

1H-NMR(CDCl₃,ppm) δ 2.34(6H, s), 3.87(2H, broad), 6.86-6.89(1H, m), 7.20-7.35(6H, m).

Example 8-3

Preparation of N-[2,6-dimethyl-4-(heptafluoroisopropyl)phenyl]-3-(4-nitrophenylamino)-benzamide (Compound No. 5-9)

0.3 g of N-(2,6-dimethyl-4-heptafluoroisopropyl)phenyl
 3-aminobenzamide, 0.18 g of 4-bromo-nitrobenzene, 21 mg of
 9,9-dimethyl-4,5-bis(diphenylphosphino)xanthene and 0.29 g of cesium carbonate were introduced into a reaction vessel, and the resultant was stirred under nitrogen flow for 15 minutes at room temperature. 6 mg of palladium acetate was introduced thereinto, and then reacted
 at 90°C for 6 hours in a nitrogen atmosphere. The reaction solution was cooled to room temperature, and then ethyl acetate was introduced thereinto and washed with water. The resultant was dried over anhydrous magnesium sulfate and then the solvent was removed under a reduced pressure to obtain a residue. The resulting residue was
 purified by silica gel column chromatography (n-hexane: AcOEt = 10:1 → 8:2 → 2:1) to obtain 0.16 g of the desired product (Yield: 74%) as a yellow crystal.

1H NMR(CDCl₃) δ 2.36(6H, s), 6.50(1H, brs), 7.02(2H, d, J=8.7 Hz), 7.38(2H, s), 7.42(1H, s), 7.46(1H, d, J=7.8 Hz), 7.53(1H, t, J=7.8 Hz), 7.60(1H, d, J=7.8 Hz), 7.91(1H, brs), 8.19 (2H, d, J=8.7 Hz).

Example 9-1

Preparation of

N-[3-[(2,6-dimethyl-4-heptafluoroisopropyl)phenyl]aminocarbonyl]phenyl] 4-chlorobenzenesulfonamide (Compound No. 4-6)

To a solution of 0.30 g of N-(2,6-dimethyl-4-heptafluoroisopropyl)phenyl 3-aminobenzamide prepared in Example 8-2 added to 5 ml of pyridine was introduced to 0.16 g of 4-chlorobenzenesulfonyl chloride, and the resulting mixture was stirred at room temperature for 2 hours. Subsequently, ethyl acetate was added thereto, and then poured into ice water. The aqueous layer became acid using concentrated hydrochloric acid for separating the organic phase. The organic phase was washed with an aqueous solution of saturated sodium hydrogen carbonate two times, and then dried over anhydrous magnesium sulfate. The solvent was removed under a reduced pressure to obtain a residue. The resulting residue was purified by silica gel column chromatography (n-hexane : EtOAc = 2:1) to obtain 0.30 g of the desired product (Yield: 70%) as a white amorphous substance.

$^1\text{H-NMR}(\text{CDCl}_3)$ δ 2.29(6H, s), 7.32-7.39(6H, m), 7.58-7.66(6H, m).

Example 10-1

Preparation of 4-(1,1,2,3,3,3-hexafluoropropoxy)-nitrobenzene

To a solution of 4.63 g of p-nitrophenol and 0.56 g of potassium hydrate added to 100 ml of N,N-dimethylformamide blowed hexafluoropropene at room temperature, and then the solution was stirred at 50°C for 1 hour. Next, ethyl acetate and water were introduced in the reaction solution for separating the organic phase. The organic phase was dried over anhydrous sodium sulfate and the solvent was removed under a reduced pressure. The resulting residue

was purified by silica gel column chromatography (n-hexane : EtOAc = 20:1) to obtain 3.81 g of the desired product (Yield: 42%) as a yellow oil.

¹H NMR (CDCl₃) δ 5.06(1H, ddt, J=44.0, 11.2, 5.2Hz), 7.39(2H, d, J=8.8 Hz), 8.30(2H, d, J=8.8 Hz).

Example 10-2

Preparation of 4-(1,1,2,3,3,3-hexafluoropropoxy)-aniline

Using 4-(1,1,2,3,3,3-hexafluoropropoxy)-nitrobenzene, the desired title product was prepared according to the conditions as described in Example 1-3 as oil.

¹H NMR (CDCl₃) δ 3.69(2H, brs), 4.96(1H, dddd, J=44.0, 11.2, 11.2, 5.6Hz), 6.64(2H, d, J=8.8 Hz), 6.98(2H, d, J=8.8 Hz).

Example 10-3

Preparation of

2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)-aniline

Using two equivalent of N-bromosuccinimide, the desired title product was prepared according to the conditions as described in Example 1-1 as an oil.

¹H NMR (CDCl₃) δ 4.51(2H, brs), 4.96(1H, dddd, J=44.0, 11.2, 11.2, 6.0Hz), 7.30(2H, s).

Example 10-4

Preparation of

N-(2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl)
3-nitrobenzamide

The desired title product was prepared according to the conditions as described in Example 1-2 as a solid.

¹H NMR (CDCl₃) δ 5.01(1H, brd, J=44.0Hz), 7.52(1H, s),

7.57-7.78 (2H, m), 8.13 (1H, d, J=7.6Hz), 8.32-8.38 (2H, m), 8.65 (1H, s).

Example 10-5

Preparation of

N-(2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl)

5 3-aminobenzamide

The desired title product was prepared according to the conditions as described in Example 1-3 as a solid.

1H NMR (DMSO-d₆) δ 5.18 (2H, brs), 6.26 (1H, brd, J=44.0Hz),
6.80 (1H, d, J=6.4Hz), 7.14 (2H, t, J=7.6Hz), 7.20 (1H, s), 7.63 (2H, s),
10 10.14 (1H, s).

Example 10-6

Preparation of

N-(2,6-dibromo-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl)

3-[(2-fluorobenzoyl)amino] benzamide (Compound No. 2-8)

15 The desired title product was prepared according to the conditions as described in Example 1-4 as an amorphous substance.

1H NMR (CDCl₃) δ 5.01 (1H, brd, J=44.0Hz), 7.23 (2H, d, J=8.0Hz),
7.42 (4H, t, J=7.2Hz), 7.52-7.55 (6H, m), 7.65 (2H, d, J=7.6Hz), 7.82 (4H,
d, J=8.0Hz), 8.02 (2H, s), 8.25 (2H, s).

20 Next, formulation examples including the compound represented by the general formula (1) or (5) of the present invention as an active ingredient will be illustrated. However, the present invention is not restricted to these formulation examples. Incidentally, in the formulation examples, the term "part(s)" means "part(s) by weight"

25 Formulation Example 1

20 parts of the compound represented by the general formula (1) or (5) of the present invention, 10 parts of Sorpol 355S (a surface

active agent, a product of Toho Chemical Industry, Co., Ltd.) and 70 parts of xylene were uniformly stirred and mixed to obtain emulsifiable formulation.

Formulation Example 2

5 10 parts of the compound represented by the general formula (1) or (5) of the present invention, 2 parts of sodium alkylnaphthalene sulfonate, 1 part of sodium lignin sulfonate, 5 parts of white carbon and 82 parts of diatomaceous earth were uniformly stirred and mixed to obtain a wettable powder.

10 Formulation Example 3

0.3 part of the compound represented by the general formula (1) or (5) of the present invention and 0.3 part of white carbon were uniformly mixed, and 99.2 parts of clay and 0.2 part of Driless A (a product of Sankyo Co., Ltd.) were added thereto. The resultant was
15 uniformly pulverized and mixed to obtain a dust formulation.

Formulation Example 4

2 parts of the compound represented by the general formula (1) or (5) of the present invention, 2 parts of white carbon, 2 parts of sodium lignin sulfonate and 94 parts of bentonite were uniformly
20 pulverized and mixed, and then water was added thereto. The resulting mixture was kneaded, granulated and dried to obtain a granule.

Formulation Example 5

20 parts of the compound represented by the general formula (1) or (5) of the present invention and 5 parts of 20% aqueous polyvinyl
25 alcohol solution were fully stirred and mixed, and then 75 parts of 0.8% aqueous Xanthan gum solution was added thereto. The resulting mixture was stirred and mixed again to obtain a flowable formulation.

Furthermore, to make sure that the compound represented by the general formula (1) or (5) of the present invention has an excellent insecticidal activity, the following test examples are illustrated. However, the present invention is not restricted to these test
 5 examples.

Test Example 1

Insecticidal Test on Common Cutworm (*Spodoptera litura*)

A piece of cabbage leaf was immersed for 30 seconds in a liquid chemical prepared by diluting a test compound to a prescribed
 10 concentration. After air-drying, the piece was put into a 7-cm polyethylene cup and second-instar larvae of common cutworms were released thereinto. The polyethylene cups were set in an isothermal chamber thermostated at 25°C. From the release 6 days later, the dead and alive were counted. The test was carried out with two replications
 15 of 5 insects per a plot.

As a result of the above test, at 100 ppm, the following compounds showed 70% mortality or more: compound Nos. 1-1, 1-96, 1-159, 1-163, 1-264, 1-265, 1-266, 1-303, 1-304, 1-305, 1-306, 1-307, 1-308, 1-309, 1-311, 1-312, 1-315, 1-316, 1-331, 1-332, 1-333, 1-337, 1-339,
 20 1-345, 1-346, 1-367, 1-368, 1-369, 1-371, 1-373, 1-374, 1-376, 1-377, 1-384, 1-385, 1-386, 1-387, 1-391, 1-406, 1-409, 1-412, 1-414, 1-418, 1-421, 1-426, 1-492, 1-517, 1-518, 1-539, 1-553, 1-567, 1-568, 1-569, 1-572, 1-573, 1-574, 1-575, 1-576, 1-577, 1-578, 1-579, 1-581, 1-582, 1-584, 1-585, 1-586, 1-587, 1-589, 1-591, 1-592, 1-593, 1-595, 1-596,
 25 1-597, 1-598, 1-599, 1-600, 1-605, 2-1, 2-8, 2-159, 2-160, 2-163, 2-166, 2-167, 2-170, 2-173, 2-174, 2-175, 2-178, 2-183, 2-184, 2-185, 2-186, 2-187, 2-189, 2-190, 2-192, 2-194, 2-195, 2-196, 2-198, 2-199, 2-200,

2-201, 2-202, 2-203, 2-204, 2-210, 2-211, 2-212, 2-213, 2-214, 2-215, 2-216, 2-217, 2-218, 2-219, 2-220, 4-1, 4-6, 4-10, 4-23, 4-24, 4-25, 4-26, 4-31, 4-32, 4-33, 4-34, 5-5, 5-9, 5-12, 5-13, 5-21, 5-23, 5-24, 5-27, 5-28, 5-29 and 5-33.

5 Test Example 2

Insecticidal Test on Diamondback Moth (*Plutella xylostella*)

A piece of cabbage leaf was immersed for 30 seconds in a liquid chemical prepared by diluting a test compound to a prescribed concentration. After air-drying, the piece was put into a 7-cm
10 polyethylene cup and second-instar larvae of diamondback moths were released thereinto. The polyethylene cups were set in an isothermal chamber thermostated at 25°C. From the release 6 days later, the dead and alive were counted. The test was carried out with two replications of 5 insects per a plot.

15 As a result of the above test, at 100 ppm, the following compounds showed 70% mortality or more: compound Nos. 1-159, 1-303, 1-304, 1-305, 1-306, 1-307, 1-308, 1-309, 1-310, 1-315, 1-316, 1-339, 1-340, 1-366, 1-367, 1-368, 1-369, 1-371, 1-372, 1-373, 1-374, 1-376, 1-380, 1-384, 1-386, 1-387, 1-409, 1-414, 1-415, 1-416, 1-417, 1-421,
20 1-423, 1-425, 1-426, 1-428, 1-429, 1-430, 1-433, 1-434, 1-435, 1-436, 1-437, 1-439, 1-441, 1-456, 1-462, 1-487, 1-489, 1-490, 1-517, 1-539, 1-550, 1-562, 1-566, 1-567, 1-568, 1-569, 1-571, 1-572, 1-573, 1-596, 1-597, 1-598, 1-599, 2-1, 2-8, 2-159, 2-160, 2-163, 2-166, 2-167, 2-170, 2-174, 2-175, 2-178, 2-183, 2-184, 2-185, 2-186, 2-187, 2-188, 2-189,
25 2-197, 2-198, 2-199, 2-200, 2-204, 2-207, 2-210, 2-211, 2-212, 2-213, 2-214, 2-215, 2-216, 2-217, 2-218, 2-220, 4-1, 4-2, 4-6, 4-10, 4-23, 4-24, 4-25, 4-26, 4-27, 4-28, 4-29, 4-32, 4-34, 5-9, 5-12, 5-21, 5-23,

5-24, 5-25, 5-26 and 5-27.

Test Example 3

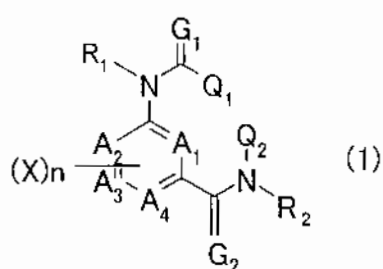
Insecticidal Test on Small Brown Planthopper (*Laodelphax striatellus*)

5 An acetone solution prepared by diluting a test compound to a prescribed concentration was dispersed on rice seedlings. After air-drying, 10 insects of small brown planthoppers were provided thereto. All Chemicals used were ingredients. The seedlings were set in an isothermal chamber thermostated at 25°C. From the treatment 6
10 days later, the dead and alive were counted. The test was carried out with one plot of 10 insects per a plot.

As a result of the above test, at 1000 ppm, the following compounds showed 70% mortality or more: compound Nos. 1-367, 1-572, 2-183, 2-200, 1-304, 1-303, 1-305, 1-496, 1-499, 1-558, 1-559, 1-592, 2-194, 4-32
15 and 5-29.

CLAIMS

1. A compound represented by the general formula (1),



5 wherein, in the formula, A₁, A₂, A₃ and A₄ each represent a carbon atom, a nitrogen atom or an oxidized nitrogen atom;

 R₁ and R₂ mutually independently represent a hydrogen atom, a C1-C4 alkyl group or a C1-C4 alkylcarbonyl group;

 G₁ and G₂ mutually independently represent an oxygen atom or a
10 sulfur atom;

 Xs may be the same or different and represent a hydrogen atom, a halogen atom, a C1-C3 alkyl group or a trifluoromethyl group;

 n represents an integer of 0 to 4;

 Q₁ represents a phenyl group,

15 a substituted phenyl group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group,
20 a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4

alkylamino group, a di C1-C4 alkylamino group, an amino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxycarbonyl group, a C1-C4 haloalkoxycarbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group, a phenylalkynyl group and a phenyl group,

a carbocyclic group (The carbocyclic group herein represents a naphthyl group, a tetrahydronaphthyl group, an indanyl group, a fluorenyl group, a 9-oxofluorenyl group, an adamantanyl group, an anthracenyl group or a norbornyl group.),

a substituted carbocyclic group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, an amino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxycarbonyl group, a C1-C4 haloalkoxycarbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group,

a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group, a phenylalkynyl group and a phenyl group (The carbocyclic group herein represents a naphthyl group, a tetrahydronaphthyl group, an indanyl group, a fluorenyl group, a 9-oxofluorenyl group, an adamantanyl group, an anthracenyl group or a norbornyl group.),

a heterocyclic group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a benzothiazolyl group, a benzoxazolyl group, a benzofuranyl group, a benzothiophenyl group, a quinolyl group, an isoquinolyl group, an indolyl group, an isoindolyl group, an 1H-isoindolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group, an acridinyl group or a dihydropyranyl group.), or

a substituted heterocyclic group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3

haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, an amino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxycarbonyl group, a C1-C4 haloalkoxycarbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group, a phenylalkynyl group and a phenyl group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a benzothiazolyl group, a benzoxazolyl group, a benzofuranyl group, a benzothiophenyl group, a quinolyl group, an isoquinolyl group, an indolyl group, an isoindolyl group, an 1H-isoindolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group, an acridinyl group or a dihydropyranyl group.); and

Q₂ represents a carbocyclic group (The carbocyclic group herein represents a naphthyl group, a tetrahydronaphthyl group, a C3-C8 cycloalkyl group, an indanyl group, a fluorenyl group, a 9-oxofluorenyl group, an adamantanyl group or a norbornyl group.),

a substituted carbocyclic group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl

group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group (The carbocyclic group herein represents a naphthyl group, a tetrahydronaphthyl group, a C3-C8 cycloalkyl group, an indanyl group, a fluorenyl group, a 9-oxofluorenyl group, an adamantanyl group or a norbornyl group),

a heterocyclic group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a benzothiazolyl group, a benzoxazolyl group, a benzofuranyl group, a benzothiophenyl group, a quinolyl group, an isoquinolyl group, an indolyl group, an isoindolyl group, an 1H-isoindolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a

benzo[1,3]dioxolyl group, a tetrahydropyranyl group, a benzimidazolyl group or a dihydropyranyl group.),

a substituted heterocyclic group having one or more substituents which may be the same or different and are selected from

5 a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3

10 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4

15 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group

20 (The heterocyclic group herein represents a pyrazinyl, a pyridin-2-yl group, a pyridin-4-yl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an

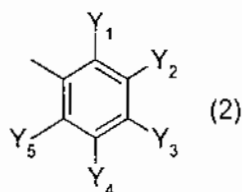
25 imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a benzothiazolyl group, a benzoxazolyl group, a benzofuranyl group, a benzothiophenyl group, a quinolyl group, an isoquinolyl group,

an indolyl group, an isoindolyl group, an 1H-isoindolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group, a benzimidazolyl group or a dihydropyranyl group.),

5 a C1-C6 alkyl group, or

a substituted C1-C6 alkyl group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 haloalkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8
10 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4
15 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a
20 C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group,

a group represented by general formula (2)



wherein, in the formula, Y₁, Y₂, Y₃, Y₄ and Y₅ may be the same or

different and represent a hydrogen atom, a halogen atom, a C1-C6 alkyl group,

a substituted C1-C6 alkyl group having one or more substituents which may be the same or different and are selected from a halogen atom,
 5 a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4
 10 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxycarbonyl group, a C1-C4 haloalkoxycarbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an
 15 arylsulfonyloxy group, a pentafluorosulfanyl group and a alkylsilyl group,

a C1-C6 haloalkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C6 alkoxy
 20 group, a C1-C6 haloalkoxy group,

a substituted C1-C6 haloalkoxy group having one or more substituents which may be the same or different and are selected from a hydrogen atom, a hydroxy group, a chlorine atom, a bromine atom, an iodine atom, a C1-C6 alkoxy group and a C1-C6 haloalkoxy group,

25 a C1-C6 haloalkyl group which may be substituted with one or more hydroxyl groups,

a C1-C6 haloalkyl group which may be substituted with one or more

haloalkyl groups,

a C1-C6 haloalkyl group which may be substituted with one or more alkoxy groups,

5 haloalkoxy groups,

a C1-C6 alkylthio group,

a C1-C6 haloalkylthio group,

a substituted C1-C6 haloalkylthio group having one or more substituents which may be the same or different and are selected from
10 a hydrogen atom, a hydroxy group, a chlorine atom, a bromine atom, an iodine atom, a C1-C6 alkoxy group and a C1-C6 haloalkoxy group,

a C1-C6 alkylsulfinyl group,

a C1-C6 haloalkylsulfinyl group,

a substituted C1-C6 haloalkylsulfinyl group having one or more
15 substituents which may be the same or different and are selected from a hydrogen atom, a hydroxy group, a chlorine atom, a bromine atom, an iodine atom, a C1-C6 alkoxy group and a C1-C6 haloalkoxy group,

a C1-C6 alkylsulfonyl group,

a C1-C6 haloalkylsulfonyl group,

20 a substituted C1-C6 haloalkylsulfonyl group having one or more substituents which may be the same or different and are selected from a hydrogen atom, a hydroxy group, a chlorine atom, a bromine atom, an iodine atom, a C1-C6 alkoxy group and a C1-C6 haloalkoxy group,

a C1-C4 alkoxycarbonyl group, a C1-C4 haloalkoxycarbonyl group,

25 a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group,

a C1-C6 alkylsulfonyloxy group, a C1-C6 haloalkylsulfonyloxy

group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group,
 a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group,
 a cyano group, a nitro group, a hydroxy group, a pentafluorosulfanyl
 group, a carboxyl group, a carbamoyl group, a C1-C3 alkylaminocarbonyl
 5 group, a phenylazo group, a pyridyloxy group,

a substituted pyridyloxy group having one or more substituents
 which may be the same or different and are selected from a halogen atom,
 a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl
 group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4
 10 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group,
 a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy
 group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3
 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3
 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4
 15 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro
 group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4
 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4
 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4
 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4
 20 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4
 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a
 pentafluorosulfanyl group and a phenyl group,

a phenyl group,

a substituted phenyl group having one or more substituents which
 25 may be the same or different and are selected from a halogen atom, a
 C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl
 group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4

alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group,

a heterocyclic group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a benzothiazolyl group, a benzoxazolyl group, a benzofuranyl group, a benzothiophenyl group, a quinolyl group, an isoquinolyl group, an indolyl group, an isoindolyl group, an 1H-isoindolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a dihydropyranyl group.), or

a substituted heterocyclic group having one or more substituents which may be the same or different and are selected from

a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxycarbonyl group, a C1-C4 haloalkoxycarbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a benzothiazolyl group, a benzoxazolyl group, a benzofuranyl group, a benzothiophenyl group, a quinolyl group, an isoquinolyl group, an indolyl group, an isoindolyl group, an 1H-isoindolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a dihydropyranyl group.),

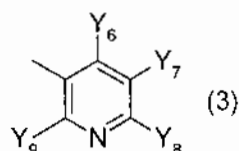
whereas Y₁ and Y₅ may be the same or different and when Y₁ and

Y₅ represent a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group or a cyano group,

5 Y₃ does not have a C2-C6 perfluoroalkyl group, a C1-C6 perfluoroalkylthio group, a C1-C6 perfluoroalkylsulfinyl group or a C1-C6 perfluoroalkylsulfonyl group, or

a group represented by general formula (3)

wherein, in the formula, , Y₆, Y₇, Y₈ and Y₉ may be the same or



10 different and represent a hydrogen atom, a halogen atom, a C1-C6 alkyl group, a C1-C6 haloalkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C4 alkoxy group, a C1-C4 haloalkoxy group, a C1-C6 haloalkyl group which may be substituted with one or more hydroxyl groups, a C1-C6 haloalkyl group which may be substituted with one or more alkoxy groups, a C1-C6 haloalkyl group which may be substituted with one or more haloalkoxy groups, a C1-C6 alkylthio group, a C1-C6 haloalkylthio group, a C1-C6 alkylsulfinyl group, a C1-C6 haloalkylsulfinyl group, a C1-C6 alkylsulfonyl group, a C1-C6 haloalkylsulfonyl group, a C1-C6 alkylsulfonyloxy group, a C1-C6 haloalkylsulfonyloxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a cyano group, a nitro group, a hydroxy group, a pentafluorosulfanyl group,

15

20

a phenyl group,

a substituted phenyl group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl
 5 group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3
 10 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4
 15 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group,

a heterocyclic group (The heterocyclic group herein represents
 20 a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a
 25 tetrazolyl group, a benzothiazolyl group, a benzoxazolyl group, a benzofuranyl group, a benzothiophenyl group, a quinolyl group, an isoquinolyl group, an indolyl group, an isoindolyl group, an

1H-isoindolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a dihydropyranyl group.), or

a substituted heterocyclic group having one or more

5 substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy

10 group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4

15 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an

20 arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a

25 thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a benzothiazolyl group, a benzoxazolyl group, a benzofuranyl group, a benzothiophenyl group,

a quinolyl group, an isoquinolyl group, an indolyl group, an isoindolyl group, an 1H-isoindolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a dihydropyranyl group.),

5 whereas Y_6 and Y_9 may be the same or different and when Y_6 and Y_9 represent a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group or a cyano group,
 10 Y_8 does not have a C1-C4 haloalkoxy group, a C2-C6 perfluoroalkyl group, a C1-C6 perfluoroalkylthio group, a C1-C6 perfluoroalkylsulfinyl group or a C1-C6 perfluoroalkylsulfonyl group.

2. The compound according to claim 1, wherein, in the general
 15 formula (1), A_1 represents a carbon atom, a nitrogen atom or an oxidized nitrogen atom;

A_2 , A_3 and A_4 represent a carbon atom;

R_1 and R_2 mutually independently represent a hydrogen atom or a C1-C4 alkyl group;

20 G_1 and G_2 mutually independently represent an oxygen atom or a sulfur atom;

X_s may be the same or different and are a hydrogen atom, a halogen atom or a trifluoromethyl group;

n represents an integer of 0 to 4;

25 Q_1 represents a phenyl group,

a substituted phenyl group having one or more substituents which may be the same or different and are selected from a halogen atom, a

C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl
 group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4
 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group,
 a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy
 5 group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3
 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3
 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4
 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro
 group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4
 10 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4
 haloalkylcarbonyloxy group, a C1-C4 alkoxycarbonyl group, a C1-C4
 haloalkoxycarbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4
 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4
 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a
 15 pentafluorosulfanyl group and a phenyl group,

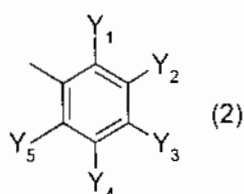
a heterocyclic group (The heterocyclic group herein represents
 a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a
 pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group,
 an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a
 20 thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole
 group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a
 tetrazolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a
 benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a
 dihydropyranyl group.), or

25 a substituted heterocyclic group having one or more
 substituents which may be the same or different and are selected from
 a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a

substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group

(The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a dihydropyranyl group.); and

Q₂ is represented by the general formula (2),



wherein, in the formula, Y_1 and Y_5 may be the same or different and represent a halogen atom, a C1-C6 alkyl group, a C1-C6 haloalkyl group, a C1-C6 haloalkoxy group, a C1-C6 haloalkoxy group, a C1-C6 alkylthio group, a C1-C6 haloalkylthio group, a C1-C6 alkylsulfinyl group, a C1-C6 haloalkylsulfinyl group, a C1-C6 alkylsulfonyl group, a C1-C6 haloalkylsulfonyl group, a cyano group or a nitro group;

Y_2 and Y_4 may be the same or different and represent a hydrogen atom, a halogen atom or a C1-C6 alkyl group; and

Y_3 represents a trifluoromethyl group, a C1-C6 perfluoroalkoxy group, a pentafluorosulfanyl group,

a substituted C1-C6 haloalkoxy group having one or more substituents which may be the same or different and are selected from a hydrogen atom, a hydroxy group, a chlorine atom, a bromine atom, an iodine atom, a C1-C6 alkoxy group or a C1-C6 haloalkoxy group,

a substituted C1-C6 haloalkylthio group having one or more substituents which may be the same or different and are selected from a hydrogen atom, a hydroxy group, a chlorine atom, a bromine atom, an iodine atom, a C1-C6 alkoxy group or a C1-C6 haloalkoxy group,

a substituted C1-C6 haloalkylsulfinyl group having one or more substituents which may be the same or different and are selected from a hydrogen atom, a hydroxy group, a chlorine atom, a bromine atom, an iodine atom, a C1-C6 alkoxy group or a C1-C6 haloalkoxy group, or

a substituted C1-C6 haloalkylsulfonyl group having one or more substituents which may be the same or different and are selected from a hydrogen atom, a hydroxy group, a chlorine atom, a bromine atom, an iodine atom, a C1-C6 alkoxy group or a C1-C6 haloalkoxy group.

3. The compound according to claim 1, wherein, in the general formula (1), A₁ represents a carbon atom, a nitrogen atom or an oxidized nitrogen atom;

A₂, A₃ and A₄ represent a carbon atom;

5 R₁ and R₂ mutually independently represent a hydrogen atom or a C1-C4 alkyl group;

G₁ and G₂ mutually independently represent an oxygen atom or a sulfur atom;

10 Xs may be the same or different and are a hydrogen atom, a halogen atom or a trifluoromethyl group;

n represents an integer of 0 to 4;

Q₁ represents a phenyl group,

a substituted phenyl group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4

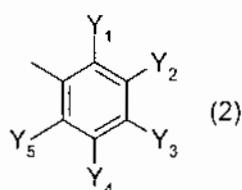
haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group,

a heterocyclic group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a dihydropyranyl group.), or

a substituted heterocyclic group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an

arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group
 (The heterocyclic group herein represents a pyrazinyl group, a pyridyl
 group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group,
 a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group,
 5 an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a
 thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl
 group, a pyrazolyl group, a tetrazolyl group, a
 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a
 tetrahydropyranyl group or a dihydropyranyl group.); and

10 Q_2 is represented by the general formula (2),



wherein, in the formula, Y_1 represents a C1-C4 alkylcarbonyl
 group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group,
 a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a
 15 C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a
 C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group,
 a C1-C4 haloalkylsulfonyloxy group, or

a C1-C4 alkyl group having one or more substituents which may
 be the same or different and are selected from a halogen atom, a C1-C3
 20 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a
 C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3
 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3
 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4
 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4

alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group or an alkylsilyl group;

Y₅ represents a halogen atom, a C1-C6 alkyl group, a C1-C6 haloalkyl group, a C1-C6 alkoxy group, a C1-C6 haloalkoxy group, a C1-C6 alkylthio group, a C1-C6 haloalkylthio group, a C1-C6 alkylsulfinyl group, a C1-C6 haloalkylsulfinyl group, a C1-C6 alkylsulfonyl group, a C1-C6 haloalkylsulfonyl group, a cyano group or a nitro group;

Y₂ and Y₄ may be the same or different and represent a hydrogen atom, a halogen atom or a C1-C6 alkyl group; and

Y₃ represents a C1-C4 haloalkoxy group, a C2-C6 perfluoroalkyl group, a C1-C6 perfluoroalkylthio group, a C1-C6 perfluoroalkylsulfinyl group, a C1-C6 perfluoroalkylsulfonyl group, a trifluoromethyl group, a C1-C6 perfluoroalkoxy group, a pentafluorosulfanyl group,

a substituted C1-C6 haloalkoxy group having at least one or more substituents which may be the same or different and are selected from a hydrogen atom, a hydroxy group, a chlorine atom, a bromine atom, an iodine atom, a C1-C6 alkoxy group or a C1-C6 haloalkoxy group,

a substituted C1-C6 haloalkylthio group having at least one or more substituents which may be the same or different and are selected from a hydrogen atom, a hydroxy group, a chlorine atom, a bromine atom,

an iodine atom, a C1-C6 alkoxy group or a C1-C6 haloalkoxy group,

a substituted C1-C6 haloalkylsulfinyl group having at least one or more substituents which may be the same or different and are selected from a hydrogen atom, a hydroxy group, a chlorine atom, a bromine atom,

5 an iodine atom, a C1-C6 alkoxy group or a C1-C6 haloalkoxy group, or

a substituted C1-C6 haloalkylsulfonyl group having at least one or more substituents which may be the same or different and are selected from a hydrogen atom, a hydroxy group, a chlorine atom, a bromine atom, an iodine atom, a C1-C6 alkoxy group or a C1-C6 haloalkoxy group.

10

4. The compound according to claim 1, wherein, in the general formula (1), A₁ represents a carbon atom, a nitrogen atom or an oxidized nitrogen atom;

A₂, A₃ and A₄ represent a carbon atom;

15

R₁ and R₂ mutually independently represent a hydrogen atom or a C1-C4 alkyl group;

G₁ and G₂ mutually independently represent an oxygen atom or a sulfur atom;

20

Xs may be the same or different and are a hydrogen atom, a halogen atom or a trifluoromethyl group;

n represents an integer of 0 to 4;

Q₁ represents a phenyl group,

25

a substituted phenyl group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group,

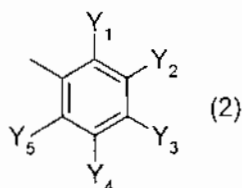
a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4
 5 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a
 10 pentafluorosulfanyl group and a phenyl group,

a heterocyclic group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a
 15 pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a
 20 benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a dihydropyranyl group), or

a substituted heterocyclic group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a
 25 substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy

group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a dihydropyranyl group.); and

Q₂ is represented by the general formula (2),



wherein, in the formula, Y₁ represents a C1-C6 alkoxy group, a C1-C6 haloalkoxy group, a C1-C6 alkylthio group, a C1-C6 haloalkylthio group, a C1-C6 alkylsulfinyl group, a C1-C6 haloalkylsulfinyl group,

a C1-C6 alkylsulfonyl group or a C1-C6 haloalkylsulfonyl group;

Y₅ represents a halogen atom, a C1-C6 alkyl group, a C1-C6 haloalkyl group, a C1-C6 alkoxy group, a C1-C6 haloalkoxy group, a C1-C6 alkylthio group, a C1-C6 haloalkylthio group, a C1-C6 alkylsulfinyl group, a C1-C6 haloalkylsulfinyl group, a C1-C6 alkylsulfonyl group, a C1-C6 haloalkylsulfonyl group, a cyano group or a nitro group;

Y₂ and Y₄ may be the same or different and represent a hydrogen atom, a halogen atom or a C1-C6 alkyl group; and

Y₃ represents a halogen atom.

5. The compound according to claim 1, wherein, in the general formula (1), A₁ represents a carbon atom, a nitrogen atom or an oxidized nitrogen atom;

A₂, A₃ and A₄ represent a carbon atom;

R₁ and R₂ mutually independently represent a hydrogen atom or a C1-C4 alkyl group;

G₁ and G₂ mutually independently represent an oxygen atom or a sulfur atom;

Xs may be the same or different and are a hydrogen atom, a halogen atom or a trifluoromethyl group;

n represents an integer of 0 to 4;

Q₁ represents a phenyl group,

a substituted phenyl group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4

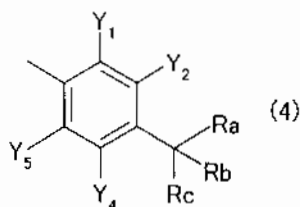
alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group,

a heterocyclic group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a dihydropyranyl group.), or

a substituted heterocyclic group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group,

a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a dihydropyranyl group.); and

Q₂ is represented by the general formula (4),



wherein, in the formula, Y₁ and Y₅ may be the same or different and represent a halogen atom, a C1-C6 alkyl group, a C1-C6 haloalkyl

group, a C1-C6 alkoxy group, a C1-C6 haloalkoxy group, a C1-C6 alkylthio group, a C1-C6 haloalkylthio group, a C1-C6 alkylsulfinyl group, a C1-C6 haloalkylsulfinyl group, a C1-C6 alkylsulfonyl group, a C1-C6 haloalkylsulfonyl group, a cyano group or a nitro group;

5 Y₂ and Y₄ may be the same or different and represent a hydrogen atom, a halogen atom or a C1-C6 alkyl group;

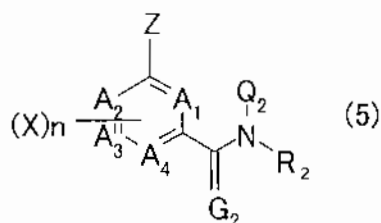
R_a represents a halogen atom or a hydroxy group; and

R_b and R_c may each independently represent a halogen atom or a C1-C6 haloalkyl group, and at least either R_b or R_c has one or more a
10 hydrogen atom, a hydroxy group, a chlorine atom, a bromine atom or an iodine atom included thereto.

6. The compound according to any one of claims 1 to 5, wherein, in the general formula (1), at least one of R₁ and R₂ is a C1-C4 alkyl group.

15

7. A compound represented by the general formula (5),



wherein, in the formula, A₁, A₂, A₃ and A₄ each represents a carbon atom, a nitrogen atom or an oxidized nitrogen atom;

20 Z represents -N(R₁)SO₂Q₁ or -N(R₁)Q₁;

R₁ and R₂ mutually independently represent a hydrogen atom, a C1-C4 alkyl group or a C1-C4 alkylcarbonyl group;

G₁ represents an oxygen atom or a sulfur atom;

Xs may be the same or different and represent a hydrogen atom,

a halogen atom, a C1-C3 alkyl group or a trifluoromethyl group;

n represents an integer of 0 to 4;

Q₁ represents a phenyl group,

a substituted phenyl group having one or more substituents which
 5 may be the same or different and are selected from a halogen atom, a
 C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl
 group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4
 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group,
 a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy
 10 group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3
 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3
 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4
 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro
 group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4
 15 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4
 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4
 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4
 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4
 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a
 20 pentafluorosulfanyl group, an amino group and a phenyl group,

a carbocyclic group (The carbocyclic group herein represents a
 naphthyl group, a tetrahydronaphthyl group, a C3-C8 cycloalkyl group,
 an indanyl group, a fluorenyl group, a 9-oxofluorenyl group, an
 adamantanyl group or a norbornyl group.),

25 a substituted carbocyclic group having one or more substituents
 which may be the same or different and are selected from a halogen atom,
 a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl

group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxycarbonyl group, a C1-C4 haloalkoxycarbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group (The carbocyclic group herein represents a naphthyl group, a tetrahydronaphthyl group, a C3-C8 cycloalkyl group, an indanyl group, a fluorenyl group, a 9-oxofluorenyl group, an adamantanyl group or a norbornyl group.),

a heterocyclic group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a benzothiazolyl group, a benzoxazolyl group, a benzofuranyl group, a benzothiophenyl group, a quinolyl group, an isoquinolyl group, an indolyl group, an isoindolyl group, an 1H-isoindolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a

benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a dihydropyranyl group.), or

a substituted heterocyclic group having one or more substituents which may be the same or different and are selected from

5 a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3

10 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4

15 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group, an amino group and

20 a phenyl group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an

25 imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a benzothiazolyl group, a benzoxazolyl group, a benzofuranyl group, a benzothiophenyl group, a quinolyl group, an isoquinolyl group,

an indolyl group, an isoindolyl group, an 1H-isoindolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a dihydropyranyl group.); and

Q₂ represents a phenyl group,

5 a substituted phenyl group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group,

10 15 20

a carbocyclic group (The carbocyclic group herein represents a naphthyl group, a tetrahydronaphthyl group, a C3-C8 cycloalkyl group, an indanyl group, a fluorenyl group, a 9-oxofluorenyl group, an adamantanyl group or a norbornyl group.),

25

a substituted carbocyclic group having one or more substituents which may be the same or different and are selected from a halogen atom,

a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group (The carbocyclic group herein represents a naphthyl group, a tetrahydronaphthyl group, a C3-C8 cycloalkyl group, an indanyl group, a fluorenyl group, a 9-oxofluorenyl group, an adamantanyl group or a norbornyl group.),

a heterocyclic group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a benzothiazolyl group, a benzoxazolyl group, a benzofuranyl group, a benzothiophenyl group, a quinolyl group, an isoquinolyl group, an indolyl group, an isoindolyl group, an

1H-isoindolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a dihydropyranyl group.),

a substituted heterocyclic group having one or more

5 substituents which may be the same or different and are selected from a halogen atom, a C1-C4 alkyl group, a C1-C4 haloalkyl group, a substituted C1-C4 alkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy

10 group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4

15 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an

20 arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group (The heterocyclic group herein represents a pyrazinyl group, a pyridyl group, a pyridine N-oxide group, a pyrimidinyl group, a pyridazyl group, a furyl group, a thienyl group, an oxazolyl group, an isoxazolyl group, an oxadiazolyl group, a thiazolyl group, an isothiazolyl group, a

25 thiadiazolyl group, a pyrrole group, an imidazolyl group, a triazolyl group, a pyrazolyl group, a tetrazolyl group, a benzothiazolyl group, a benzoxazolyl group, a benzofuranyl group, a benzothiophenyl group,

a quinolyl group, an isoquinolyl group, an indolyl group, an isoindolyl group, an 1H-isoindolyl group, a 2,3-dihydro-benzo[1,4]dioxinyl group, a benzo[1,3]dioxolyl group, a tetrahydropyranyl group or a dihydropyranyl group.),

5 a C1-C6 alkyl group, or

a substituted C1-C6 alkyl group having one or more substituents which may be the same or different and are selected from a halogen atom, a C1-C4 haloalkyl group, a C2-C4 alkenyl group, a C2-C4 haloalkenyl group, a C2-C4 alkynyl group, a C2-C4 haloalkynyl group, a C3-C8
 10 cycloalkyl group, a C3-C8 halocycloalkyl group, a C1-C3 alkoxy group, a C1-C3 haloalkoxy group, a C1-C3 alkylthio group, a C1-C3 haloalkylthio group, a C1-C3 alkylsulfinyl group, a C1-C3 haloalkylsulfinyl group, a C1-C3 alkylsulfonyl group, a C1-C3 haloalkylsulfonyl group, a C1-C4 alkylamino group, a di C1-C4
 15 alkylamino group, a cyano group, a nitro group, a hydroxy group, a C1-C4 alkylcarbonyl group, a C1-C4 haloalkylcarbonyl group, a C1-C4 alkylcarbonyloxy group, a C1-C4 haloalkylcarbonyloxy group, a C1-C4 alkoxy carbonyl group, a C1-C4 haloalkoxy carbonyl group, a C1-C4 alkylcarbonylamino group, a C1-C4 haloalkylcarbonylamino group, a
 20 C1-C4 alkylsulfonyloxy group, a C1-C4 haloalkylsulfonyloxy group, an arylsulfonyloxy group, a pentafluorosulfanyl group and a phenyl group.

8. An insecticide comprising the compound as described in any one of claims 1 or 7 and an active ingredient.