CLAIMS

[Claim 1]

Use of a selective δ opioid receptor agonist for manufacturing a pharmaceutical composition for treating or preventing anhedonia.

[Claim 2]

The use according to claim 1, wherein the selective δ opioid receptor agonist further has κ opioid receptor antagonist action.

[Claim 3]

The use according to claim 1 or 2, wherein the selective δ opioid receptor agonist further has μ opioid receptor antagonist action and κ opioid receptor antagonist action.

[Claim 4]

The use according to claim 1 or 2, wherein the anhedonia is anhedonia associated with depression, Parkinson's disease, obsessive-compulsive disorder, schizophrenia, substance use disorder, alcohol dependence, nicotine dependence, eating disorder, neurotic disorder, autism spectrum disorder, or Alzheimer-type dementia.

[Claim 5]

The use according to claim 1 or 2, wherein the anhedonia is anhedonia caused by psychological stress or

physical stress.

[Claim 6]

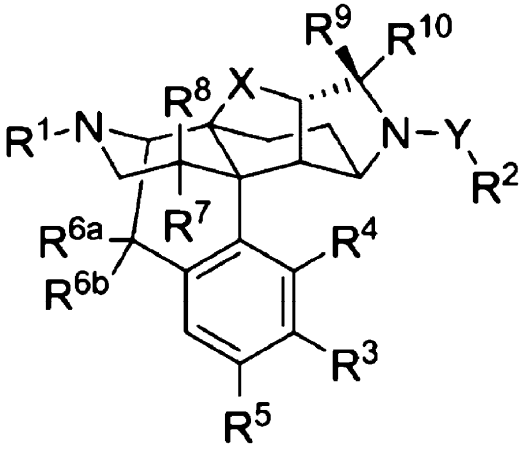
The use according to claim 1 or 2, wherein the pharmaceutical composition suppresses suicidal ideation.

[Claim 7]

The use according to claim 1 or 2, wherein the anhedonia is reduced responsiveness to pleasant experiences relating to at least one selected from money, food and drink, hobbies, entertainment, travel and recreation, and desire for control, desire for approval, desire for achievement, desire for affiliation and sexual desire.

[Claim 8]

The use according to claim 1, wherein the selective δ opioid receptor agonist is a compound represented by a following general formula (I):



(I)

wherein R^1 represents hydrogen; C_{1-10} alkyl; C_{6-10} aryl; C_{2-6} alkenyl; cycloalkylalkyl in which a number of carbon atoms in a cycloalkyl moiety is three to six and a

number of carbon atoms in an alkylene moiety is one to five; aralkyl in which a number of carbon atoms in an aryl moiety is six to ten and a number of carbon atoms in an alkylene moiety is one to five; C_{3-6} cycloalkyl; or heteroarylalkyl in which a heteroaryl moiety comprises one to four heteroatoms selected from N, O and S as ring-constituting atoms and a number of carbon atoms in an alkylene moiety is one to five,

R^2 represents a heterocycle comprising one to four heteroatoms selected from N, O and S and at least one carbon atom as ring-constituting atoms, wherein at least one pair of the adjacent ring-constituting atoms has a double bond, and the heterocycle is further substituted with at least one oxo group, or pyridine 1-oxide,

wherein R^2 is bonded to Y via a carbon atom that is a ring-constituting atom of R^2,

R^3, R^4 and R^5 are the same or different, and represent hydrogen; hydroxy; halogen; cyano; carbamoyl; C_{1-6} alkoxy; C_{6-10} aryloxy; C_{1-6} alkanoyloxy; nitro; amino; C_{1-8} alkylamino; C_{6-10} arylamino; or acylamino in which a number of carbon atoms in an acyl moiety is two to six,

R^{6a} and R^{6b} are the same or different, and represent hydrogen; fluorine; or hydroxy, or R^{6a} and R^{6b} together represent =O,

R^7 and R^8 are the same or different, and represent

hydrogen; fluorine; or hydroxy,

R^9 and R^{10} are the same or different, and represent hydrogen; C_{1-6} alkyl; C_{6-10} aryl; heteroaryl comprising one to four heteroatoms selected from N, O and S as ring-constituting atoms; aralkyl in which a number of carbon atoms in an aryl moiety is six to ten and a number of carbon atoms in an alkylene moiety is one to five; heteroarylalkyl in which a heteroaryl moiety comprises one to four heteroatoms selected from N, O and S as ring-constituting atoms and a number of carbon atoms in an alkylene moiety is one to five; cycloalkylalkyl in which a number of carbon atoms in a cycloalkyl moiety is three to six and a number of carbon atoms in an alkylene moiety is one to five; or C_{2-6} alkenyl,

X represents O or CH_2,

and Y represents C(=O),

provided that the C_{1-10} alkyl; an alkylene moiety and a cycloalkyl moiety of the cycloalkylalkyl in which a number of carbon atoms in the cycloalkyl moiety is three to six and a number of carbon atoms in the alkylene moiety is one to five; an alkylene moiety of the aralkyl in which a number of carbon atoms in an aryl moiety is six to ten and a number of carbon atoms in the alkylene moiety is one to five; and an alkylene moiety of the heteroarylalkyl in which a heteroaryl moiety comprises one to four heteroatoms

selected from N, O and S as ring-constituting atoms and a number of carbon atoms in the alkylene moiety is one to five of R^1 may be substituted with at least one substituent selected from one to six halogens; hydroxy; C_{1-6} alkoxy; C_{6-10} aryloxy; C_{1-6} alkanoyl; C_{1-6} alkanoyloxy; carboxyl; alkoxycarbonyl in which a number of carbon atoms in an alkoxy moiety is one to six; carbamoyl; alkylcarbamoyl in which a number of carbon atoms in an alkyl moiety is one to six; dialkylcarbamoyl in which a number of carbon atoms in an alkyl moiety is one to six; alkylsulfonyl in which a number of carbon atoms in an alkyl moiety is one to six; aminosulfonyl; alkylsulfinyl in which a number of carbon atoms in an alkyl moiety is one to six; alkylthio in which a number of carbon atoms in an alkyl moiety is one to six; C_{1-6} alkoxy substituted with one to six halogens; and arylcarbonyl in which a number of carbon atoms in an aryl moiety is six to ten,

and the C_{6-10} aryl; an aryl moiety of the aralkyl in which a number of carbon atoms in the aryl moiety is six to ten and a number of carbon atoms in an alkylene moiety is one to five of R^1; an aryl moiety of the C_{6-10} aryloxy, and an aryl moiety of the C_{6-10} arylamino of R^3, R^4 and R^5; and the C_{6-10} aryl; the heteroaryl comprising one to four heteroatoms selected from N, O and S as ring-constituting atoms; an aryl moiety of the aralkyl in which a number of

carbon atoms in the aryl moiety is six to ten and a number of carbon atoms in an alkylene moiety is one to five; and a heteroaryl moiety of the heteroarylalkyl in which the heteroaryl moiety comprises one to four heteroatoms selected from N, O and S as ring-constituting atoms and a number of carbon atoms in an alkylene moiety is one to five of R^9 and R^{10}

may be substituted with at least one substituent selected from C_{1-6} alkyl; C_{1-6} alkoxy; C_{1-6} alkanoyloxy; hydroxy; alkoxycarbonyl in which a number of carbon atoms in an alkoxy moiety is one to six; carbamoyl; alkylcarbamoyl in which a number of carbon atoms in an alkyl moiety is one to six; dialkylcarbamoyl in which a number of carbon atoms in an alkyl moiety is one to six; halogen; nitro; cyano; C_{1-6} alkyl substituted with one to three halogens; C_{1-6} alkoxy substituted with one to three halogens; phenyl; heteroaryl comprising one to four heteroatoms selected from N, O and S as ring-constituting atoms; phenoxy; phenylalkyl in which a number of carbon atoms in an alkyl is one to three; and methylenedioxy,

the heterocycle of R^2 may have, in addition to the oxo group, a substituent that the C_{6-10} aryl of R^1 may have, and the pyridine 1-oxide of R^2 may have a substituent that the C_{6-10} aryl of R^1 may have,

further, when R^1 is C_{1-10} alkyl, R^1 may be substituted

with $NR^{11}R^{12}$, wherein R^{11} and R^{12} are the same or different, and are hydrogen; C_{1-10} alkyl; or aralkyl in which a number of carbon atoms in an aryl moiety is six to ten and a number of carbon atoms in an alkylene moiety is one to five, or R^{11} and R^{12}, a nitrogen atom to which R^{11} and R^{12} are bonded, and further, optionally, one to two heteroatoms may together form a five- to seven-membered ring, and also an alkylene moiety of the aralkyl in which a number of carbon atoms in an aryl moiety is six to ten and a number of carbon atoms in the alkylene moiety is one to five of R^1 may be substituted with at least one substituent selected from phenyl or C_{1-6} alkyl substituted with one to three halogens,

or a pharmaceutically acceptable salt thereof.

[Claim 9]

The use according to claim 8, wherein the compound represented by the general formula (I) is a compound in which R^5, R^{6a}, R^{6b}, R^7, R^8, R^9 and R^{10} are hydrogen,

R^1 is hydrogen; C_{1-6} alkyl; C_{2-6} alkenyl; cycloalkylalkyl in which a number of carbon atoms in a cycloalkyl moiety is three to six and a number of carbon atoms in an alkylene moiety is one to five; or aralkyl in which a number of carbon atoms in an aryl moiety is six to ten and a number of carbon atoms in an alkylene moiety is one to five,

R^2 represents a five- to seven-membered heterocycle comprising one to four heteroatoms selected from N, O and S and at least one carbon atom as ring-constituting atoms, wherein at least one pair of the adjacent ring-constituting atoms has a double bond, and the heterocycle is further substituted with at least one oxo group, or a heterocycle in which a benzene ring is fused to the heterocycle, or pyridine 1-oxide,

wherein R^2 is bonded to Y via a carbon atom that is a ring-constituting atom of R^2,

R^3 and R^4 are the same or different, and are hydrogen; hydroxy; halogen; cyano; carbamoyl; C_{1-6} alkoxy; C_{6-10} aryloxy; C_{1-6} alkanoyloxy; amino; or acylamino in which a number of carbon atoms in an acyl moiety is two to six,

X is CH_2,

and Y is C(=O),

provided that the C_{1-6} alkyl; an alkylene moiety and the cycloalkyl moiety of the cycloalkylalkyl in which a number of carbon atoms in the cycloalkyl moiety is three to six and a number of carbon atoms in the alkylene moiety is one to five; or an alkylene moiety of the aralkyl in which a number of carbon atoms in an aryl moiety is six to ten and a number of carbon atoms in the alkylene moiety is one to five of R^1 may be substituted with at least one substituent selected from one to six halogens; hydroxy; C_{1-6}

alkoxy; C_{6-10} aryloxy; C_{1-6} alkanoyl; C_{1-6} alkanoyloxy; carboxyl; alkoxycarbonyl in which a number of carbon atoms in an alkoxy moiety is one to six; carbamoyl; alkylcarbamoyl in which a number of carbon atoms in an alkyl moiety is one to six; dialkylcarbamoyl in which a number of carbon atoms in an alkyl moiety is one to six; alkylsulfonyl in which a number of carbon atoms in an alkyl moiety is one to six; aminosulfonyl; alkylsulfinyl in which a number of carbon atoms in an alkyl moiety is one to six; alkylthio in which a number of carbon atoms in an alkyl moiety is one to six; C_{1-6} alkoxy substituted with one to six halogens; and arylcarbonyl in which a number of carbon atoms in an aryl moiety is six to ten,

and an aryl moiety of the aralkyl in which a number of carbon atoms in the aryl moiety is six to ten and a number of carbon atoms in an alkylene moiety is one to five of R^1; and an aryl moiety of the C_{6-10} aryloxy of R^3 and R^4

may be substituted with at least one substituent selected from C_{1-6} alkyl; C_{1-6} alkoxy; C_{1-6} alkanoyloxy; hydroxy; alkoxycarbonyl in which a number of carbon atoms in an alkoxy moiety is one to six; carbamoyl; alkylcarbamoyl in which a number of carbon atoms in an alkyl moiety is one to six; dialkylcarbamoyl in which a number of carbon atoms in an alkyl moiety is one to six; halogen; nitro; cyano; C_{1-6} alkyl substituted with one to

three halogens; C_{1-6} alkoxy substituted with one to three halogens; phenyl; heteroaryl comprising one to four heteroatoms selected from N, O and S as ring-constituting atoms; phenoxy; phenylalkyl in which a number of carbon atoms in an alkyl is one to three; and methylenedioxy,

the heterocycle of R^2 may have, in addition to the oxo group, a substituent that the aryl moiety of the aralkyl in which a number of carbon atoms in the aryl moiety is six to ten and a number of carbon atoms in an alkylene moiety is one to five of R^1 may have, and the pyridine 1-oxide of R^2 may have a substituent that the aryl moiety of the aralkyl in which a number of carbon atoms in the aryl moiety is six to ten and a number of carbon atoms in an alkylene moiety is one to five of R^1 may have,

further, an alkylene moiety of the aralkyl in which a number of carbon atoms in an aryl moiety is six to ten and a number of carbon atoms in the alkylene moiety is one to five of R^1 may be substituted with at least one substituent selected from phenyl or C_{1-6} alkyl substituted with one to three halogens.

[Claim 10]

The use according to claim 8 or 9, wherein the compound represented by the general formula (I) is a compound in which R^1 is C_{1-6} alkyl; cycloalkylalkyl in which a number of carbon atoms in a cycloalkyl moiety is three to

six and a number of carbon atoms in an alkylene moiety is one to five; or aralkyl in which a number of carbon atoms in an aryl moiety is six to ten and a number of carbon atoms in an alkylene moiety is one to five.

[Claim 11]

The use according to claim 8 or 9, wherein the compound represented by the general formula (I) is a compound in which R^1 is cycloalkylalkyl in which a number of carbon atoms in a cycloalkyl moiety is three to six and a number of carbon atoms in an alkylene moiety is one to five.

[Claim 12]

The use according to claim 8 or 9, wherein the compound represented by the general formula (I) is a compound in which R^1 is C_{2-6} alkyl substituted with hydroxy; C_{1-6} alkyl substituted with one to six halogens; or C_{2-6} alkyl substituted with C_{1-6} alkoxy.

[Claim 13]

The use according to claim 8 or 9, wherein the compound represented by the general formula (I) is a compound in which R^1 is allyl, fluoropropyl, 2-(pyridin-3-yl)ethyl, 2-(methylsulfonyl)ethyl or 2-(aminosulfonyl)ethyl.

[Claim 14]

The use according to claim 8 or 9, wherein the

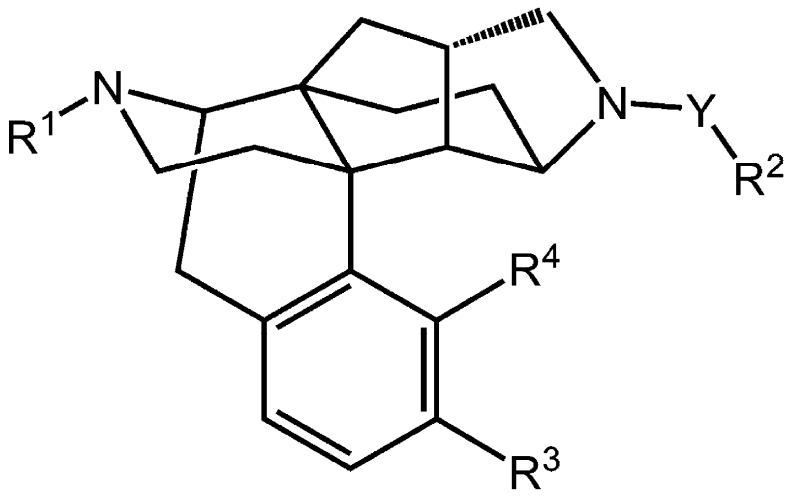
compound represented by the general formula (I) is a compound in which R^2 is a five- to seven-membered heterocycle including one to four heteroatoms selected from N, O and S and at least one carbon atom as ring-constituting atoms, wherein at least one pair of the adjacent ring-constituting atoms has a double bond, and the heterocycle is further substituted with at least one oxo group, or a heterocycle in which a benzene ring is fused to the heterocycle, or pyridine 1-oxide.

[Claim 15]

The use according to claim 8 or 9, wherein the compound represented by the general formula (I) is a compound in which R^2 is pyridine 1-oxide; or the heterocycle of R^2 is pyridin-2(1H)-one, pyridin-4(1H)-one, pyridazin-3(2H)-one, pyrazin-2(1H)-one, 4H-pyran-4-one, 2H-pyran-2-one, quinolin-2(1H)-one, pyrimidin-4(3H)-one or pyrimidine-2,4(1H,3H)-dione.

[Claim 16]

The use according to claim 8, wherein the compound represented by the general formula (I) is a compound represented by a following general formula (II):



(II)

wherein R^1 is hydrogen; C_{1-6} alkyl; or cycloalkylalkyl in which a number of carbon atoms in a cycloalkyl moiety is three to six and a number of carbon atoms in an alkylene moiety is one to five,

R^2 represents a five- to seven-membered heterocycle comprising one or two nitrogen atoms and at least one carbon atom as ring-constituting atoms, wherein at least one pair of the adjacent ring-constituting atoms has a double bond, and the heterocycle is further substituted with at least one oxo group, or pyridine 1-oxide,

wherein R^2 is bonded to Y via a carbon atom that is a ring-constituting atom of R^2,

R^3 and R^4 are the same or different, and are hydrogen; hydroxy; or C_{1-6} alkoxy,

Y is C(=O),

provided that the C_{1-6} alkyl; and an alkylene moiety and a cycloalkyl moiety of the cycloalkylalkyl in which a

number of carbon atoms in the cycloalkyl moiety is three to six and a number of carbon atoms in the alkylene moiety is one to five of R^1 may be substituted with at least one substituent selected from one to six halogens; hydroxy; and C_{1-6} alkoxy,

and the heterocycle of R^2 may have, in addition to the oxo group,

at least one substituent selected from C_{1-6} alkyl; C_{1-6} alkoxy; C_{1-6} alkanoyloxy; hydroxy; alkoxycarbonyl in which a number of carbon atoms in an alkoxy moiety is one to six; carbamoyl; alkylcarbamoyl in which a number of carbon atoms in an alkyl moiety is one to six; dialkylcarbamoyl in which a number of carbon atoms in an alkyl moiety is one to six; halogen; nitro; cyano; C_{1-6} alkyl substituted with one to three halogens; C_{1-6} alkoxy substituted with one to three halogens; phenyl; heteroaryl comprising one to four heteroatoms selected from N, O and S as ring-constituting atoms; phenoxy; phenylalkyl in which a number of carbon atoms in an alkyl is one to three; and methylenedioxy,

and the pyridine 1-oxide of R^2 may have

at least one substituent selected from C_{1-6} alkyl; C_{1-6} alkoxy; C_{1-6} alkanoyloxy; hydroxy; alkoxycarbonyl in which a number of carbon atoms in an alkoxy moiety is one to six; carbamoyl; alkylcarbamoyl in which a number of carbon atoms in an alkyl moiety is one to six; dialkylcarbamoyl in which

a number of carbon atoms in an alkyl moiety is one to six; halogen; nitro; cyano; C_{1-6} alkyl substituted with one to three halogens; C_{1-6} alkoxy substituted with one to three halogens; phenyl; heteroaryl comprising one to four heteroatoms selected from N, O and S as ring-constituting atoms; phenoxy; phenylalkyl in which a number of carbon atoms in an alkyl is one to three; and methylenedioxy.

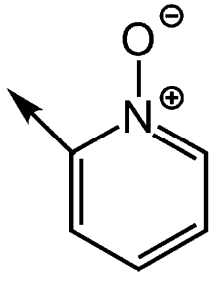
[Claim 17]

The use according to claim 16, wherein the compound represented by the general formula (II) is a compound in which R^1 is cycloalkylalkyl and is cycloalkylalkyl in which a number of carbon atoms in a cycloalkyl moiety is three to six and a number of carbon atoms in an alkylene moiety is one to five.

[Claim 18]

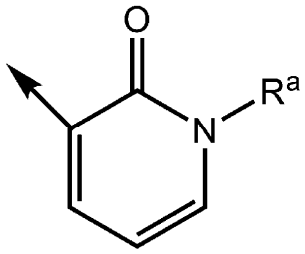
The use according to claim 16 or 17, wherein the compound represented by the general formula (II) is a compound in which R^2 is

formula (III):



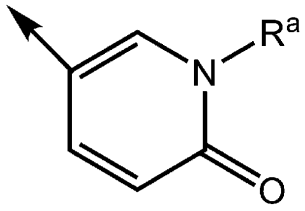
(III)

; formula (IV):



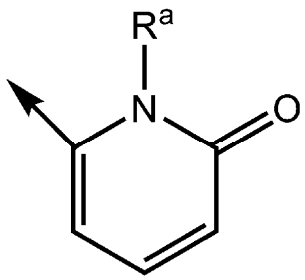
(IV)

; formula (V):



(V)

; or formula (VI):



(VI)

in formulas III to VI, R^a is hydrogen or C_{1-6} alkyl, and is bonded to Y at a position of an arrow.

[Claim 19]

The use according to Claim 8, wherein the compound represented by the general formula (I) is at least one compound selected from:

2-((1S,3aR,5aS,6R,11bR,11cS)-14-(cyclopropylmethyl)-10-hydroxy-2,3,3a,4,5,6,7,11c-octahydro-1H-6,11b-(epiminoethano)-1,5a-methanonaphtho[1,2-e]indole-3-carbonyl)pyridine 1-oxide;

4-((1S,3aR,5aS,6R,11bR,11cS)-14-(cyclopropylmethyl)-10-hydroxy-2,3,3a,4,5,6,7,11c-octahydro-1H-6,11b-(epiminoethano)-1,5a-methanonaphtho[1,2-e]indole-3-carbonyl)pyridine 1-oxide;

3-((1S,3aR,5aS,6R,11bR,11cS)-14-(cyclopropylmethyl)-10-hydroxy-2,3,3a,4,5,6,7,11c-octahydro-1H-6,11b-(epiminoethano)-1,5a-methanonaphtho[1,2-e]indole-3-carbonyl)pyridin-2(1H)-one;

3-((1S,3aR,5aS,6R,11bR,11cS)-14-(cyclopropylmethyl)-10-hydroxy-2,3,3a,4,5,6,7,11c-octahydro-1H-6,11b-(epiminoethano)-1,5a-methanonaphtho[1,2-e]indole-3-carbonyl)pyridine 1-oxide;

5-((1S,3aR,5aS,6R,11bR,11cS)-14-(cyclopropylmethyl)-10-hydroxy-2,3,3a,4,5,6,7,11c-octahydro-1H-6,11b-(epiminoethano)-1,5a-methanonaphtho[1,2-e]indole-3-carbonyl)pyridin-2(1H)-one;

3-((1S,3aR,5aS,6R,11bR,11cS)-14-(cyclopropylmethyl)-10-hydroxy-2,3,3a,4,5,6,7,11c-octahydro-1H-6,11b-(epiminoethano)-1,5a-methanonaphtho[1,2-e]indole-3-carbonyl)-1-methylpyridin-2(1H)-one;

6-((1S,3aR,5aS,6R,11bR,11cS)-14-(cyclopropylmethyl)-10-hydroxy-2,3,3a,4,5,6,7,11c-octahydro-1H-6,11b-(epiminoethano)-1,5a-methanonaphtho[1,2-e]indole-3-carbonyl)pyridin-2(1H)-one;

3-((1S,3aR,5aS,6R,11bR,11cS)-14-(cyclopropylmethyl)-

10-hydroxy-2,3,3a,4,5,6,7,11c-octahydro-1H-6,11b-(epiminoethano)-1,5a-methanonaphtho[1,2-e]indole-3-carbonyl)-6-methylpyridin-2(1H)-one;

5-((1S,3aR,5aS,6R,11bR,11cS)-14-(cyclopropylmethyl)-10-hydroxy-2,3,3a,4,5,6,7,11c-octahydro-1H-6,11b-(epiminoethano)-1,5a-methanonaphtho[1,2-e]indole-3-carbonyl)-1-methylpyridin-2(1H)-one;

6-((1S,3aR,5aS,6R,11bR,11cS)-14-(cyclopropylmethyl)-10-hydroxy-2,3,3a,4,5,6,7,11c-octahydro-1H-6,11b-(epiminoethano)-1,5a-methanonaphtho[1,2-e]indole-3-carbonyl)-1-methylpyridin-2(1H)-one;

4-((1S,3aR,5aS,6R,11bR,11cS)-14-(cyclopropylmethyl)-10-hydroxy-2,3,3a,4,5,6,7,11c-octahydro-1H-6,11b-(epiminoethano)-1,5a-methanonaphtho[1,2-e]indole-3-carbonyl)pyridin-2(1H)-one;

5-((1S,3aR,5aS,6R,11bR,11cS)-14-(cyclopropylmethyl)-10-hydroxy-2,3,3a,4,5,6,7,11c-octahydro-1H-6,11b-(epiminoethano)-1,5a-methanonaphtho[1,2-e]indole-3-carbonyl)pyrimidine-2,4(1H,3H)-dione;

3-((1S,3aR,5aS,6R,11bR,11cS)-14-(cyclopropylmethyl)-10-hydroxy-2,3,3a,4,5,6,7,11c-octahydro-1H-6,11b-(epiminoethano)-1,5a-methanonaphtho[1,2-e]indole-3-carbonyl)pyridin-4(1H)-one;

2-((1S,3aR,5aS,6R,11bR,11cS)-14-(cyclopropylmethyl)-10-hydroxy-2,3,3a,4,5,6,7,11c-octahydro-1H-6,11b-

(epiminoethano)-1,5a-methanonaphtho[1,2-e]indole-3-carbonyl)pyridin-4(1H)-one;

4-((1S,3aR,5aS,6R,11bR,11cS)-14-(cyclopropylmethyl)-10-hydroxy-2,3,3a,4,5,6,7,11c-octahydro-1H-6,11b-(epiminoethano)-1,5a-methanonaphtho[1,2-e]indole-3-carbonyl)-1-methylpyridin-2(1H)-one;

6-((1S,3aR,5aS,6R,11bR,11cS)-14-(cyclopropylmethyl)-10-hydroxy-2,3,3a,4,5,6,7,11c-octahydro-1H-6,11b-(epiminoethano)-1,5a-methanonaphtho[1,2-e]indole-3-carbonyl)pyridazin-3(2H)-one;

4-((1S,3aR,5aS,6R,11bR,11cS)-14-(cyclopropylmethyl)-10-hydroxy-2,3,3a,4,5,6,7,11c-octahydro-1H-6,11b-(epiminoethano)-1,5a-methanonaphtho[1,2-e]indole-3-carbonyl)quinolin-2(1H)-one;

5-((1S,3aR,5aS,6R,11bR,11cS)-14-(cyclopropylmethyl)-10-hydroxy-2,3,3a,4,5,6,7,11c-octahydro-1H-6,11b-(epiminoethano)-1,5a-methanonaphtho[1,2-e]indole-3-carbonyl)-2H-pyran-2-one;

2-((1S,3aR,5aS,6R,11bR,11cS)-14-(cyclopropylmethyl)-10-hydroxy-2,3,3a,4,5,6,7,11c-octahydro-1H-6,11b-(epiminoethano)-1,5a-methanonaphtho[1,2-e]indole-3-carbonyl)-4H-pyran-4-one;

2-((1S,3aR,5aS,6R,11bR,11cS)-14-(cyclopropylmethyl)-10-hydroxy-2,3,3a,4,5,6,7,11c-octahydro-1H-6,11b-(epiminoethano)-1,5a-methanonaphtho[1,2-e]indole-3-

carbonyl)-1-methylpyridin-4(1H)-one;

5-((1S,3aR,5aS,6R,11bR,11cS)-14-(cyclopropylmethyl)-10-hydroxy-2,3,3a,4,5,6,7,11c-octahydro-1H-6,11b-(epiminoethano)-1,5a-methanonaphtho[1,2-e]indole-3-carbonyl)pyrazin-2(1H)-one;

2-((1S,3aR,5aS,6R,11bR,11cS)-10-acetoxy-14-(cyclopropylmethyl)-2,3,3a,4,5,6,7,11c-octahydro-1H-6,11b-(epiminoethano)-1,5a-methanonaphtho[1,2-e]indole-3-carbonyl)pyridine 1-oxide;

6-((1S,3aR,5aS,6R,11bR,11cS)-14-(cyclopropylmethyl)-2,3,3a,4,5,6,7,11c-octahydro-1H-6,11b-(epiminoethano)-1,5a-methanonaphtho[1,2-e]indole-3-carbonyl)pyridin-2(1H)-one;

3-((1S,3aR,5aS,6R,11bR,11cS)-14-(cyclopropylmethyl)-10-hydroxy-2,3,3a,4,5,6,7,11c-octahydro-1H-6,11b-(epiminoethano)-1,5a-methanonaphtho[1,2-e]indole-3-carbonyl)pyrazin-2(1H)-one;

6-((1S,3aR,5aS,6R,11bR,11cS)-14-(cyclopropylmethyl)-10-hydroxy-2,3,3a,4,5,6,7,11c-octahydro-1H-6,11b-(epiminoethano)-1,5a-methanonaphtho[1,2-e]indole-3-carbonyl)pyrimidine-2,4(1H,3H)-dione;

6-((1S,3aR,5aS,6R,11bR,11cS)-14-(cyclopropylmethyl)-10-hydroxy-2,3,3a,4,5,6,7,11c-octahydro-1H-6,11b-(epiminoethano)-1,5a-methanonaphtho[1,2-e]indole-3-carbonyl)-1-ethylpyridin-2(1H)-one;

6-((1S,3aR,5aS,6R,11bR,11cS)-14-(cyclopropylmethyl)-

10-hydroxy-2,3,3a,4,5,6,7,11c-octahydro-1H-6,11b-(epiminoethano)-1,5a-methanonaphtho[1,2-e]indole-3-carbonyl)pyrimidin-4(3H)-one; and

5-((1S,3aR,5aS,6R,11bR,11cS)-14-(cyclopropylmethyl)-10-hydroxy-2,3,3a,4,5,6,7,11c-octahydro-1H-6,11b-(epiminoethano)-1,5a-methanonaphtho[1,2-e]indole-3-carbonyl)-1-ethylpyridin-2(1H)-one.

[Claim 20]

The use according to any one of Claims 8, 16 and 17, wherein the compound represented by the general formula (I) is at least one compound selected from:

2-((1S,3aR,5aS,6R,11bR,11cS)-14-(cyclopropylmethyl)-10-hydroxy-2,3,3a,4,5,6,7,11c-octahydro-1H-6,11b-(epiminoethano)-1,5a-methanonaphtho[1,2-e]indole-3-carbonyl)pyridine 1-oxide;

3-((1S,3aR,5aS,6R,11bR,11cS)-14-(cyclopropylmethyl)-10-hydroxy-2,3,3a,4,5,6,7,11c-octahydro-1H-6,11b-(epiminoethano)-1,5a-methanonaphtho[1,2-e]indole-3-carbonyl)pyridin-2(1H)-one;

6-((1S,3aR,5aS,6R,11bR,11cS)-14-(cyclopropylmethyl)-10-hydroxy-2,3,3a,4,5,6,7,11c-octahydro-1H-6,11b-(epiminoethano)-1,5a-methanonaphtho[1,2-e]indole-3-carbonyl)pyridin-2(1H)-one;

5-((1S,3aR,5aS,6R,11bR,11cS)-14-(cyclopropylmethyl)-10-hydroxy-2,3,3a,4,5,6,7,11c-octahydro-1H-6,11b-

(epiminoethano)-1,5a-methanonaphtho[1,2-e]indole-3-carbonyl)-1-methylpyridin-2(1H)-one;

6-((1S,3aR,5aS,6R,11bR,11cS)-14-(cyclopropylmethyl)-10-hydroxy-2,3,3a,4,5,6,7,11c-octahydro-1H-6,11b-(epiminoethano)-1,5a-methanonaphtho[1,2-e]indole-3-carbonyl)-1-methylpyridin-2(1H)-one; and

5-((1S,3aR,5aS,6R,11bR,11cS)-14-(cyclopropylmethyl)-10-hydroxy-2,3,3a,4,5,6,7,11c-octahydro-1H-6,11b-(epiminoethano)-1,5a-methanonaphtho[1,2-e]indole-3-carbonyl)-1-ethylpyridin-2(1H)-one.