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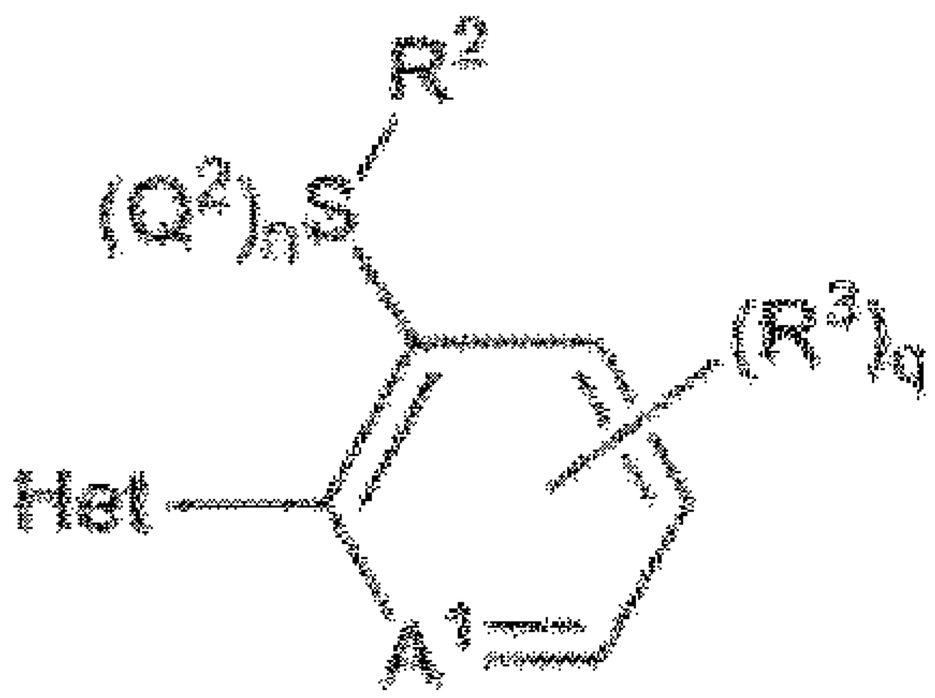
(54) Titre : COMPOSE HETEROCYCLIQUE ET COMPOSITION LE CONTENANT
(54) Title: HETEROCYCLIC COMPOUND AND COMPOSITION CONTAINING SAME



(57) Abrégé/Abstract:
The present invention provides: a heterocyclic compound and an intermediate thereof, the compound having an excellent controlling effect against harmful arthropods and being represented by formula (I) (in the formula, R^2 represents a C1-C6 alkyl group which may be substituted with at least one halogen atom, n represents 0, R^3 represents a C1-C6 chain hydrocarbon group which may have at least one substituent selected from group B, q represents 0, Het represents groups represented by formulas Het 1 and Het 2, A^1 represents a nitrogen atom or CR^6, and Q^2 represents an oxygen atom); and a composition containing the compound and at least one selected from the group consisting of group (a), group (b), group (c), group (d), and group (e) specified in the description.

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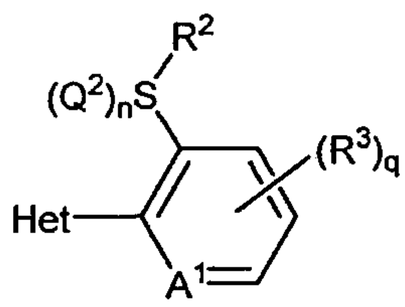
ABSTRACT

The present invention provides a heterocyclic compound represented by formula (I):



(I)

wherein, R^2 represents a C1-C6 alkyl group optionally having one or more halogen atoms etc., n is 0 etc., R^3 represents a C1-C6 chain hydrocarbon group optionally having one or more substituents selected from Group B etc., q is 0 etc., Het represents a group represented by the formulae Het 1 or Het 2, A^1 represents a nitrogen atom etc., Q^2 represents an oxygen atom etc., which has an excellent efficacy for controlling harmful arthropods; an intermediate compound; and a composition comprising the same compound and one or more kinds of ingredients selected from the group consisting of Group (a), Group (b), Group (c), Group (d) and Group (e), each which is described in the Description.

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DESCRIPTION

HETEROCYCLIC COMPOUND AND COMPOSITION CONTAINING SAME

TECHNICAL FIELD

[0001]

This application claims priority to and the benefit of Japanese Patent Application Nos. 2017-108998 filed June 1, 2017, 2017-245956 filed December 22, 2017, and 2018-70879 filed April 2, 2018, the entire contents of which are incorporated herein by reference.

The present invention is related to a certain class of heterocyclic compound, an intermediate compound thereof, and an agent for controlling harmful arthropods comprising the same.

BACKGROUND ART

[0002]

To date, in order to control harmful arthropods, some compounds have been studied and come into practical use.

Also, a certain class of compound has been known to have an effect on controlling pests (see Patent Document 1).

CITATION LIST

PATENT DOCUMENT

[0003]

Patent Document 1: WO 2013/018928 pamphlet

SUMMARY OF THE INVENTION

(PROBLEMS TO BE SOLVED BY INVENTION)

[0004]

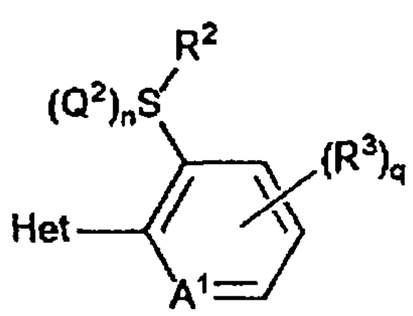
An object of the present invention is to provide a compound having an excellent efficacy for controlling harmful arthropods.

(MEANS TO SOLVE PROBLEMS)

[0005]

The present invention includes the followings.

[1] A compound represented by formula (I):



(I)

wherein,

R^2 represents a C1-C6 alkyl group optionally having one or more halogen atoms, a cyclopropyl group or a cyclopropylmethyl group,

n is 0, 1 or 2,

R^3 represents a C1-C6 chain hydrocarbon group optionally having one or more substituents selected from Group B, a C3-

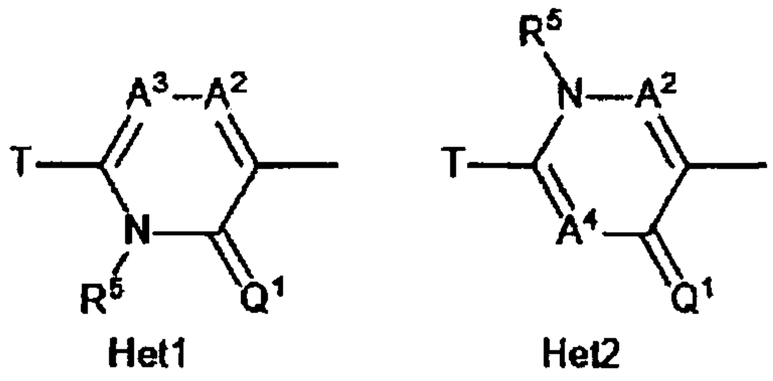
C7 cycloalkyl group optionally having one or more substituents selected from group E, a C3-C7 cycloalkenyl group optionally having one or more substituents selected from Group J, a phenyl group optionally having one or more substituents selected from Group H, a five or six membered aromatic heterocyclic group optionally having one or more substituents selected from Group H, OR^{12}, $NR^{11}R^{12}$, $NR^{11a}R^{12a}$, $NR^{24}NR^{11}R^{12}$, $NR^{24}OR^{11}$, $NR^{11}C(O)R^{13}$, $NR^{24}NR^{11}C(O)R^{13}$, $NR^{11}C(O)OR^{14}$, $NR^{24}NR^{11}C(O)OR^{14}$, $NR^{11}C(O)NR^{15}R^{16}$, $NR^{24}NR^{11}C(O)NR^{15}R^{16}$, $N=CHNR^{15}R^{16}$, $N=S(O)_xR^{15}R^{16}$, $C(O)R^{17}$, $C(O)OR^{17}$, $C(O)NR^{15}R^{16}$, $CR^{24}=NOR^{17}$, $NR^{11}CR^{24}=NOR^{17}$, a cyano group, a nitro group, or a halogen atom,

q is 0, 1, 2 or 3, and when q is 2 or 3, a plurality of R^3 may be identical to or different from each other,

When two R^3 are adjacent to each other, said two R^3 may combined together with a carbon atom to which they are attached to form benzene ring, pyrrole ring, furan ring, thiophene ring, pyrazole ring, imidazole ring, triazole ring, oxazole ring, isoxazole ring, thiazole ring, oxadiazole ring, thiadiazole ring, pyridine ring, pyridazine ring, pyrimidine ring, or pyrazine ring {the benzene ring, the pyrrole ring, the furan ring, the thiophene ring, the pyrazole ring, the imidazole ring, the triazole ring, the oxazole ring, the isoxazole ring, the thiazole ring, the pyridine ring, the pyridazine ring, the pyrimidine ring, and the pyrazine ring

each independently may optionally have one or more substituents selected from Group H},

Het represents a group represented by the following formula Het 1 or a group represented by the following formula Het 2:



Het1 Het2

,

A^1 represents a nitrogen atom or CR^6,

A^2 represents a nitrogen atom or CR^{4a},

A^3 represents a nitrogen atom or CR^{4b},

A^4 represents a nitrogen atom or CR^{4c},

Q^1 represents an oxygen atom or a sulfur atom,

Q^2 represents an oxygen atom, N-CN, $N-NO_2$, NR^{20}, $N-C(O)R^{20}$, or $N-C(O)OR^{15}$, and when n is 2, two Q^2 may be identical to or different from each other,

R^{20} represents a C1-C6 alkyl group optionally having one or more halogen atoms, or a hydrogen atom,

R^5 represents a C1-C6 chain hydrocarbon group optionally having one or more substituents selected from group F, a C3-C6 cycloalkyl group optionally having one or more substituents selected from Group J, a phenyl group optionally having one or more substituents selected from Group H, or a

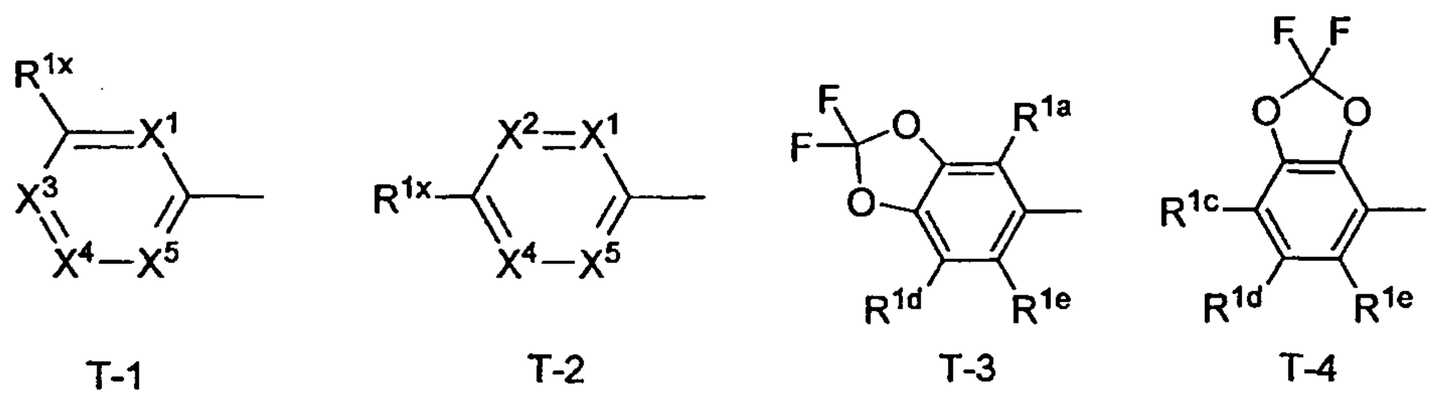
five or six membered aromatic heterocyclic group optionally having one or more substituents selected from Group H,

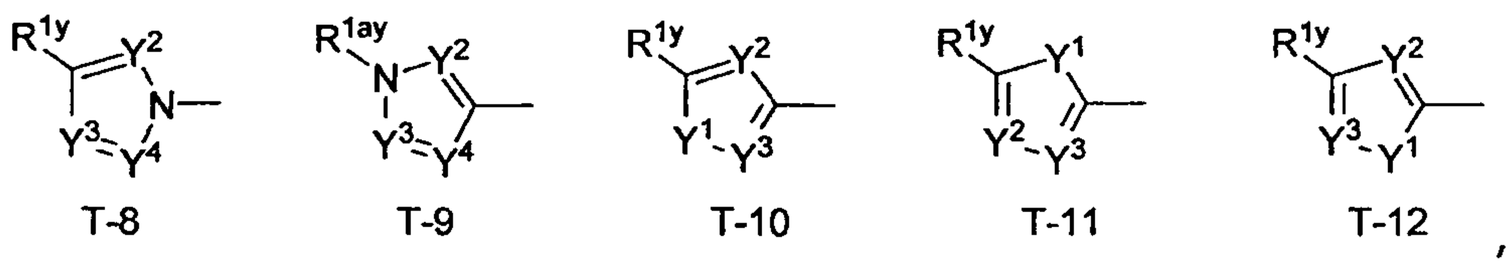
R^{4a}, R^{4b} and R^{4c} are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a nitro group, OR^{18}, $NR^{18}R^{19}$, a cyano group, an amino group, a halogen atom, or a hydrogen atom,

R^{6} represents a hydrogen atom or a halogen atom,

T represents a C1-C10 chain hydrocarbon group, a (C1-C5 alkoxy)C2-C5 alkyl group, a (C1-C5 alkylsulfanyl)C2-C5 alkyl group, a (C1-C5 alkylsulfinyl)C2-C5 alkyl group, a (C1-C5 alkylsulfonyl)C2-C5 alkyl group {the C1-C10 chain hydrocarbon group, the (C1-C5 alkoxy)C2-C5 alkyl group, the (C1-C5 alkylsulfanyl)C2-C5 alkyl group, the (C1-C5 alkylsulfinyl)C2-C5 alkyl group, and the (C1-C5 alkylsulfonyl)C2-C5 alkyl group each independently have one or more substituents selected from the group consisting of a cyano group and a halogen atom}, a (C3-C7 cycloalkyl)C1-C3 alkyl group, a C3-C7 cycloalkyl group {the (C3-C7 cycloalkyl)C1-C3 alkyl group and the C3-C7 cycloalkyl group each independently have one or more substituents selected from the group consisting of a cyano group, a halogen atom and a C1-C6 haloalkyl group}, OR^{1}, $S(O)_vR^{1}$, $OS(O)_2R^{1}$, CH_2OR^{1}, $NR^{1}R^{29}$, $C(O)R^{1}$, $C(O)NR^{1}R^{29}$, $NR^{29}C(O)R^{1}$, $N{=}CR^{1}R^{30}$, a group represented by formula T-1, a group represented by formula

T-2, a group represented by formula T-3, a group represented by formula T-4, a group represented by formula T-5, a group represented by formula T-6, a group represented by formula T-7, a group represented by formula T-8, a group represented by formula T-9, a group represented by formula T-10, a group represented by formula T-11, or a group represented by formula T-12:





X^1 represents a nitrogen atom or CR^{1a},

X^2 represents a nitrogen atom or CR^{1b},

X^3 represents a nitrogen atom or CR^{1c},

X^4 represents a nitrogen atom or CR^{1d},

X^5 represents a nitrogen atom or CR^{1e},

R^{1x} represents a C1-C5 chain hydrocarbon group having one or more halogen atoms, OR^7, $OS(O)_2R^7$, $S(O)_mR^7$, $NR^8S(O)_2R^7$, or a halogen atom,

R^{1a}, R^{1b}, R^{1c}, R^{1d}, and R^{1e} are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a C3-C6 cycloalkyl group optionally having one or more halogen atoms, a halogen atom, or a hydrogen atom,

Y^1 represents NR^{25}, an oxygen atom or a sulfur atom,

Y^2 represents a nitrogen atom or CR^{26},

Y^3 represents a nitrogen atom or CR^{27},

Y^4 represents a nitrogen atom or CR^{28},

R^{25}, R^{26}, R^{27} and R^{28} are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a C3-C6 cycloalkyl group optionally having one or more halogen atoms, a halogen atom or a hydrogen atom,

R^{1Y} represents a C1-C5 chain hydrocarbon group having one or more halogen atoms, OR^7, $OS(O)_2R^7$, $S(O)_mR^7$, $NR^8S(O)_2R^7$, a cyano group, or a halogen atom,

R^{1aY} and R^7 are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group having one or more halogen atoms,

m and v are identical to or different from each other

and each is 0, 1 or 2,

R^1 represents a C1-C10 chain hydrocarbon group, a (C1-C5 alkoxy)C2-C5 alkyl group, a (C1-C5 alkylsulfanyl)C2-C5 alkyl group, a (C1-C5 alkylsulfinyl)C2-C5 alkyl group, a (C1-C5 alkylsulfonyl)C2-C5 alkyl group {the C1-C10 chain hydrocarbon group, the (C1-C5 alkoxy)C2-C5 alkyl group, the (C1-C5 alkylsulfanyl)C2-C5 alkyl group, the (C1-C5 alkylsulfinyl)C2-C5 alkyl group, and the (C1-C5 alkylsulfonyl)C2-C5 alkyl group each independently have one or more substituents selected from the group consisting of a cyano group and a halogen atom}, a (C3-C7 cycloalkyl)C1-C3 alkyl group, or a C3-C7 cycloalkyl group {the (C3-C7 cycloalkyl)C1-C3 alkyl group and the C3-C7 cycloalkyl group each independently have one or more substituents selected from the group consisting of a cyano group, a halogen atom and a C1-C6 haloalkyl group},

R^{30} represents a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a halogen atom, OR^{35}, $NR^{36}R^{37}$, or a hydrogen atom,

R^{18} and R^{35} are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms,

R^{17} represents a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a phenyl group optionally having one or more substituents selected from

Group D, or a hydrogen atom,

R^8, R^{11}, R^{19}, R^{24}, R^{29}, R^{36}, and R^{37} are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, or a hydrogen atom,

R^{12} represents a C1-C6 chain hydrocarbon group optionally having one or more substituents selected from Group F, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group J, a C3-C7 cycloalkenyl group optionally having one or more substituents selected from Group J, a phenyl group, a six membered heterocyclic group {the phenyl group, and the six membered heterocyclic group each independently may optionally have one or more substituents selected from Group D}, a hydrogen atom, or a $S(O)_2R^{23}$,

R^{23} represents a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, or a phenyl group optionally having one or more substituents selected from Group D,

R^{11a} and R^{12a} combine together with the nitrogen atom to which they are attached to form a three to seven membered nonaromatic heterocyclic group optionally having one or more substituents selected from group E,

R^{13} represents a hydrogen atom, a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms,

a C3-C7 cycloalkyl group optionally having one or more halogen atoms, a (C3-C6 cycloalkyl)C1-C3 alkyl group optionally having one or more halogen atoms, a phenyl group optionally having one or more substituents selected from Group D, or a five or six membered aromatic heterocyclic group optionally having one or more substituents selected from Group D,

R^{14} represents a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a C3-C7 cycloalkyl group optionally having one or more halogen atoms, a (C3-C6 cycloalkyl)C1-C3 alkyl group optionally having one or more halogen atoms, or a phenyl C1-C3 alkyl group {the phenyl moiety in the phenyl C1-C3 alkyl group may optionally have one or more substituents selected from Group D},

R^{15} represents a C1-C6 alkyl group optionally having one or more halogen atoms, or a hydrogen atom,

R^{16} represents a C1-C6 chain hydrocarbon group optionally having one or more substituents selected from Group F, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group J, $S(O)_2R^{23}$ or a hydrogen atom,

x is 0 or 1,

Group B: a group consisting of a C1-C6 alkoxy group optionally having one or more halogen atoms, a C3-C6 alkenyloxy group optionally having one or more halogen atoms,

a C3-C6 alkynyloxy group optionally having one or more halogen atoms, a C1-C6 alkylsulfanyl group optionally having one or more halogen atoms, a C1-C6 alkylsulfinyl group optionally having one or more halogen atoms, a C1-C6 alkylsulfonyl group optionally having one or more halogen atoms, a C3-C6 cycloalkyl group optionally having one or more halogen atoms, a cyano group, a hydroxy group, and a halogen atom,

Group D: a group consisting of a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a hydroxy group, a C1-C6 alkoxy group optionally having one or more halogen atoms, a C3-C6 alkenyloxy group optionally having one or more halogen atoms, a C3-C6 alkynyloxy group optionally having one or more halogen atoms, a sulfanyl group, a C1-C6 alkylsulfanyl group optionally having one or more halogen atoms, a C1-C6 alkylsulfinyl group optionally having one or more halogen atoms, a C1-C6 alkylsulfonyl group optionally having one or more halogen atoms, an amino group, NR^9R^{10}, $C(O)R^{10}$, $OC(O)R^9$, $C(O)OR^9$, a cyano group, a nitro group, and a halogen atom,

R^9 represents a C1-C6 alkyl group optionally having one or more halogen atoms, or a C3-C6 cycloalkyl group optionally having one or more halogen atoms,

R^{10} represents a C1-C6 alkyl group optionally having one or more halogen atoms, a C3-C6 cycloalkyl group optionally

having one or more halogen atoms, or a hydrogen atom,

Group E: a group consisting of a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a C1-C6 alkoxy group optionally having one or more halogen atoms, a C3-C6 alkenyloxy group optionally having one or more halogen atoms, a C3-C6 alkynyloxy group optionally having one or more halogen atoms, a halogen atom, an oxo group, a hydroxy group, a cyano group, and a nitro group;

Group F: a group consisting of a C3-C6 cycloalkyl group optionally having one or more halogen atoms, a phenyl group or a six membered aromatic heterocyclic group {the phenyl group and the six membered aromatic heterocyclic group each independently may optionally have one or more substituents selected from Group D}, OR^{10}, an amino group, $NR^{9}R^{10}$, a halogen atom, a nitro group, and a cyano group;

Group H: a group consisting of a five or six membered aromatic heterocyclic group, a C1-C6 alkyl group optionally having one or more halogen atoms, a C3-C6 cycloalkyl group optionally having one or more halogen atoms, OR^{10}, an amino group, $NR^{9}R^{10}$, $C(O)R^{10}$, $C(O)NR^{9}R^{10}$, $OC(O)R^{9}$, $OC(O)OR^{9}$, $NR^{10}C(O)R^{9}$, $NR^{10}C(O)OR^{9}$, $C(O)OR^{10}$, a halogen atom, a nitro group, and a cyano group;

Group J: a group consisting of a C1-C6 alkyl group optionally having one or more halogen atoms, a halogen atom, a cyano group, a triazolyl group, and $NR^{10}C(O)R^{9}$.

(hereinafter, referred to as "Present compound Z" or "Compound Z of the present invention").

[2] The compound according to [1] wherein

T represents a C1-C10 chain hydrocarbon group having one or more halogen atoms, a (C1-C5 alkoxy)C2-C5 alkyl group having one or more halogen atoms, a (C1-C5 alkylsulfanyl)C2-C5 alkyl group having one or more halogen atoms, a (C1-C5 alkylsulfinyl)C2-C5 alkyl group having one or more halogen atoms, a (C1-C5 alkylsulfonyl)C2-C5 alkyl group having one or more halogen atoms, a (C3-C7 cycloalkyl)C1-C3 alkyl group having one or more substituents selected from Group G, a C3-C7 cycloalkyl group having one or more substituents selected from Group G, OR^1, $S(O)_vR^1$, $OS(O)_2R^1$, CH_2OR^1, NR^1R^{29}, $C(O)R^1$, $C(O)NR^1R^{29}$, $NR^{29}C(O)R^1$, $N=CR^1R^{30}$, a group represented by formula T-1, a group represented by formula T-2, a group represented by formula T-3, a group represented by formula T-4, a group represented by formula T-5, a group represented by formula T-6, a group represented by formula T-7, a group represented by formula T-8, a group represented by formula T-9, a group represented by formula T-10, a group represented by formula T-11, or a group represented by formula T-12, and

R^1 represents a C1-C10 chain hydrocarbon group having one or more halogen atoms, a (C1-C5 alkoxy)C2-C5 alkyl group having one or more halogen atoms, a (C1-C5 alkylsulfanyl)C2-C5 alkyl group having one or more halogen atoms, a (C1-C5

alkylsulfinyl)C2-C5 alkyl group having one or more halogen atoms, a (C1-C5 alkylsulfonyl)C2-C5 alkyl group having one or more halogen atoms, a (C3-C7 cycloalkyl)C1-C3 alkyl group having one or more substituents selected from Group G, or a C3-C7 cycloalkyl group having one or more substituents selected from Group G.

(hereinafter, referred to as "Present compound" or "Compound of the present invention").

[3] The compound according to [1] or [2] wherein A^1 represents CH.

[4] The compound according to [1] or [2] wherein A^1 represents a nitrogen atom.

[5] The compound according to any one of [1] to [4] wherein Het represents Het 1.

[6] The compound according to any one of [1] to [4] wherein Het represents Het 2.

[7] The compound according to any one of [1] to [4] wherein Het represents Het 1, A^2 represents CR^{4a}, and A^3 represents CR^{4b}.

[8] The compound according to any one of [1] to [4] wherein Het represents Het 2, A^2 represents CR^{4a}, and A^4 represents CR^{4c}.

[9] The compound according to any one of [1] to [8] wherein Q^1 represents an oxygen atom, T represents a C1-C10 chain hydrocarbon group having one or more halogen atoms, OR^1,

$S(O)_vR^1$, $OS(O)_2R^1$, NR^1R^{29}, a group represented by formula T-1, a group represented by formula T-2, a group represented by formula T-3, a group represented by formula T-4, or a group represented by formula T-8.

[10] The compound according to any one of [1] to [8] wherein Q^1 represents an oxygen atom, T represents a C1-C5 chain hydrocarbon group having one or more halogen atoms, OR^1, $S(O)_vR^1$, $OS(O)_2R^1$, NR^1R^{29}, a group represented by formula T-1, a group represented by formula T-2, a group represented by formula T-3, a group represented by formula T-4, or a group represented by formula T-8, R^1, R^{1x} and R^{1y} are identical to or different from each other and each represents independently a C1-C5 chain hydrocarbon group having one or more halogen atoms, and q is 0 or 1.

[11] The compound according to any one of [1] to [8] wherein Q^1 represents an oxygen atom, T represents a C1-C5 chain hydrocarbon group having one or more halogen atoms, or OR^1, R^1 represents a C1-C5 chain hydrocarbon group having one or more halogen atoms, and q is 0 or 1.

[12] The compound according to any one of [1] to [11] wherein R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a five aromatic heterocyclic group containing one to four nitrogen atoms, a six aromatic

heterocyclic group {the phenyl group, the five aromatic heterocyclic group containing one to four nitrogen atoms, and the six aromatic heterocyclic group each independently may optionally have one or more substituents selected from Group J}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, OR^{12}, or a halogen atom.

[13] The compound according to any one of [1] to [12] wherein R^2 represents an ethyl group.

[14] The compound according to any one of [1] to [13] wherein Q^2 represents an oxygen atom.

[15] A composition for controlling harmful arthropod comprising the compound according to any one of [1] to [14] and an inert carrier.

[16] A method for controlling harmful arthropod which comprises applying an effective amount of the compound according to any one of [1] to [14] to a harmful arthropod or a habitat where a harmful arthropod lives.

[17] A method for controlling harmful arthropod which comprises applying an effective amount of the compound according to any one of [1] to [14] to a plant or a soil where a plant grows.

[18] A method for controlling harmful arthropod which comprises applying an effective amount of the compound according to any one of [1] to [14] to a seed or a bulb.

[19] A composition comprising one or more ingredients selected from the group consisting of the following Group

(a), Group (b), Group (c), Group (d) and Group (e), and the compound according to any one of [1] to [14] (hereinafter, referred to as "Present composition" or "Composition of the present invention"),

Group (a): one or more ingredients selected from the group consisting of insecticidal ingredients, miticidal ingredients, and nematicidal ingredients;

Group (b): fungicidal ingredients;

Group (c): plant growth modulating ingredients;

Group (d): phytotoxicity-reducing ingredients; and

Group (e): synergist ingredients.

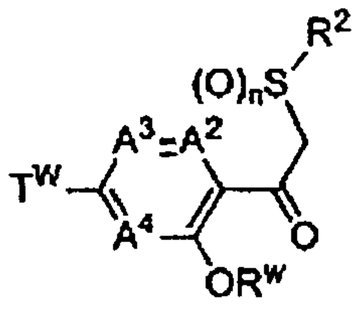
[20] A composition for controlling pest comprising the composition according to [19] and an inert carrier.

[21] A method for controlling pest which comprises applying an effective amount of the composition according to [19] to a pest or a habitat where a pest lives.

[22] A method for controlling pest which comprises applying an effective amount of the composition according to [19] to a plant or a soil where a plant grows. [23] A method for controlling pest which comprises applying an effective amount of the compound according to [19] to a seed or a bulb.

[24] A seed or bulb carrying an effective amount of the compound according to any one of [1] to [14] or an effective amount of the composition according to [19].

[25] A compound represented by formula (II):



(II)

[wherein,

R^2 represents a C1-C6 alkyl group optionally having one or more halogen atoms, a cyclopropyl group or a cyclopropylmethyl group,

n is 0, 1 or 2,

A^2 represents a nitrogen atom or CR^{4a},

a combination of A^3 and A^4 represents a combination where A^3 represents a nitrogen atom, A^4 represents a nitrogen atom or CR^{4c}, or a combination where A^3 represents CR^{4b}, and A^4 represents a nitrogen atom,

R^{4a}, R^{4b} and R^{4c} are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a nitro group, OR^{18}, $NR^{18}R^{19}$, a cyano group, an amino group, a halogen atom, or a hydrogen atom,

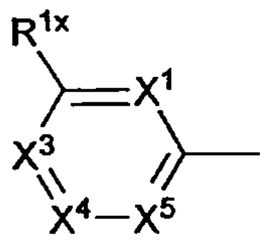
R^{19} represents a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, or a hydrogen atom,

R^w represents a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a benzyl group optionally having one or more substituents selected from Group A, a C2-

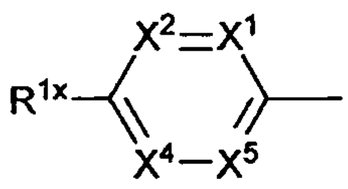
C7 alkylcarbonyl group, a (C1-C3 alkoxy)methyl group, or a hydrogen atom,

T^w represents a C1-C10 chain hydrocarbon group, a (C1-C5 alkoxy)C2-C5 alkyl group, a (C1-C5 alkylsulfanyl)C2-C5 alkyl group, a (C1-C5 alkylsulfinyl)C2-C5 alkyl group, a (C1-C5 alkylsulfonyl)C2-C5 alkyl group {the C1-C10 chain hydrocarbon group, the (C1-C5 alkoxy)C2-C5 alkyl group, the (C1-C5 alkylsulfanyl)C2-C5 alkyl group, the (C1-C5 alkylsulfinyl)C2-C5 alkyl group, and the (C1-C5 alkylsulfonyl)C2-C5 alkyl group each independently have one or more substituents selected from the group consisting of a cyano group and a halogen atom}, a (C3-C7 cycloalkyl)C1-C3 alkyl group or a C3-C7 cycloalkyl group {the (C3-C7 cycloalkyl)C1-C3 alkyl group and the C3-C7 cycloalkyl group each independently have one or more substituents selected from the group consisting of a cyano group, a halogen atom and a C1-C6 haloalkyl group}, OR^1, $S(O)_vR^1$, $OS(O)_2R^1$, CH_2OR^1, NR^1R^{29}, $C(O)R^1$, $C(O)NR^1R^{29}$, $NR^{29}C(O)R^1$, $N{=}CR^1R^{30}$, a group represented by formula T-1, a group represented by formula T-2, a group represented by formula T-3, a group represented by formula T-4, a group represented by formula T-5, a group represented by formula T-6, a group represented by formula T-7, a group represented by formula T-8, a group represented by formula T-9, a group represented by formula T-10, a group represented by formula T-11, or a group represented by

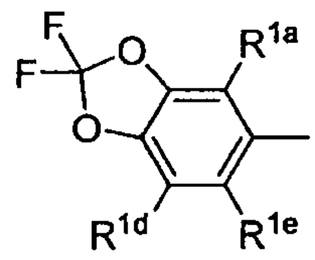
formula T-12, a halogen atom, a C1-C6 alkylsulfanyl group, a C1-C6 alkylsulfinyl group, a C1-C6 alkylsulfonyl group {the C1-C6 alkylsulfanyl group, the C1-C6 alkylsulfinyl group, and the C1-C6 alkylsulfonyl group each may optionally have a C3-C6 cycloalkyl group}, a C3-C6 cycloalkylsulfanyl group, a C3-C6 cycloalkylsulfinyl group, a C3-C6 cycloalkylsulfonyl group, a benzyloxy group optionally having one or more substituents selected from Group A, a C2-C7 alkylcarbonyloxy group optionally having one or more halogen atoms, a (C1-C3 alkoxy)methoxy group, or a hydroxy group,



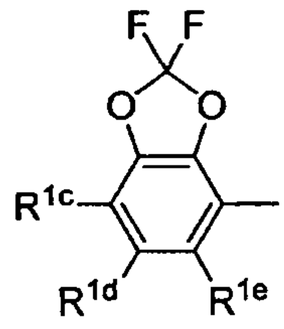
T-1



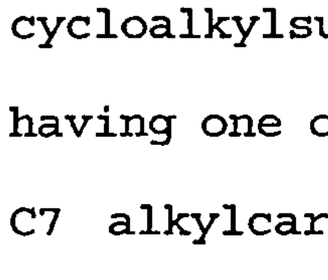
T-2



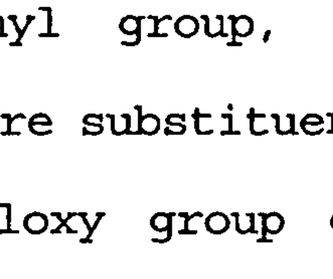
T-3



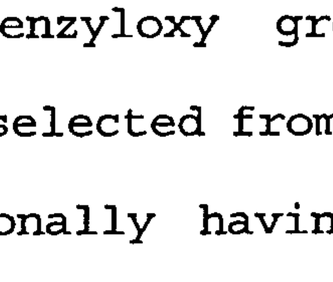
T-4



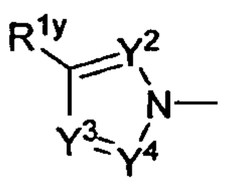
T-5



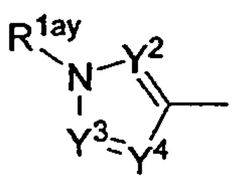
T-6



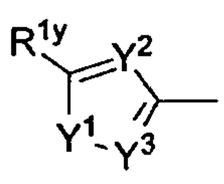
T-7



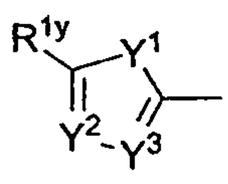
T-8



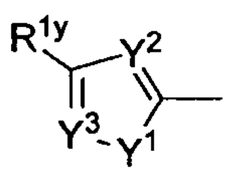
T-9



T-10



T-11



T-12

X^1 represents a nitrogen atom or CR^{1a},

X^2 represents a nitrogen atom or CR^{1b},

X^3 represents a nitrogen atom or CR^{1c},

X^4 represents a nitrogen atom or CR^{1d},

X^5 represents a nitrogen atom or CR^{1e},

R^{1x} represents a C1-C5 chain hydrocarbon group having one or more halogen atoms, OR^7, $OS(O)_2R^7$, $S(O)_mR^7$, $NR^8S(O)_2R^7$, or a halogen atom,

R^{1a}, R^{1b}, R^{1c}, R^{1d}, and R^{1e} are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a C3-C6 cycloalkyl group optionally having one or more halogen atoms, a halogen atom, or a hydrogen atom,

Y^1 represents NR^{25}, an oxygen atom or a sulfur atom,

Y^2 represents a nitrogen atom or CR^{26},

Y^3 represents a nitrogen atom or CR^{27},

Y^4 represents a nitrogen atom or CR^{28},

R^{25}, R^{26}, R^{27} and R^{28} are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a C3-C6 cycloalkyl group optionally having one or more halogen atoms, a halogen atom or a hydrogen atom,

R^{1y} represents a C1-C5 chain hydrocarbon group having one or more halogen atoms, OR^7, $OS(O)_2R^7$, $S(O)_mR^7$, $NR^8S(O)_2R^7$, a cyano group, or a halogen atoms,

R^{1ay} and R^7 are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group having one or more halogen atoms,

m and v are identical to or different from each other and each is 0, 1 or 2,

R^1 represents a C1-C10 chain hydrocarbon group, a (C1-C5 alkoxy)C2-C5 alkyl group, a (C1-C5 alkylsulfanyl)C2-C5 alkyl group, a (C1-C5 alkylsulfinyl)C2-C5 alkyl group, a (C1-C5 alkylsulfonyl)C2-C5 alkyl group {the C1-C10 chain hydrocarbon group, the (C1-C5 alkoxy)C2-C5 alkyl group, the (C1-C5 alkylsulfanyl)C2-C5 alkyl group, the (C1-C5 alkylsulfinyl)C2-C5 alkyl group, and the (C1-C5 alkylsulfonyl)C2-C5 alkyl group each independently have one or more substituents selected from the group consisting of a cyano group and a halogen atom}, a (C3-C7 cycloalkyl)C1-C3 alkyl group, or a C3-C7 cycloalkyl group {the (C3-C7 cycloalkyl)C1-C3 alkyl group and the C3-C7 cycloalkyl group each independently have one or more substituents selected from the group consisting of a cyano group, a halogen atom and a C1-C6 haloalkyl group},

R^{30} represents a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a halogen atom, OR^{35}, $NR^{36}R^{37}$, or a hydrogen atom,

R^{18} and R^{35} are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon

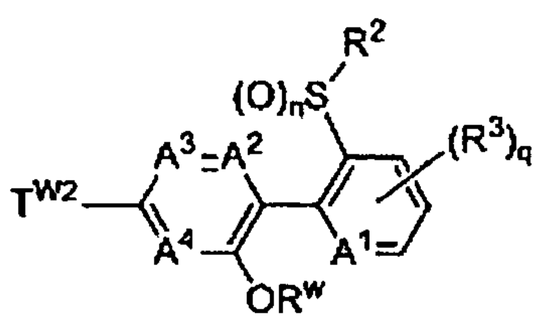
group optionally having one or more halogen atoms,

R^8, R^{29}, R^{36}, and R^{37} are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, or a hydrogen atom,

Group A: a group consisting of a C1-C6 alkyl group optionally having one or more halogen atoms, a C1-C6 alkoxy group optionally having one or more halogen atoms, a halogen atom, a cyano group and a nitro group.]

(hereinafter, referred to as "Intermediate compound D").

[26] A compound represented by formula (III):



(III)

[wherein,

R^2 represents a C1-C6 alkyl group optionally having one or more halogen atoms, a cyclopropyl group or a cyclopropylmethyl group,

n is 0, 1 or 2,

A^1 represents a nitrogen atom or CR^6,

A^2 represents a nitrogen atom or CR^{4a},

a combination of A^3 and A^4 represents a combination where A^3 represents a nitrogen atom, A^4 represents a nitrogen atom or CR^{4c}, or a combination where A^3 represents CR^{4b}, and

A^4 represents a nitrogen atom,

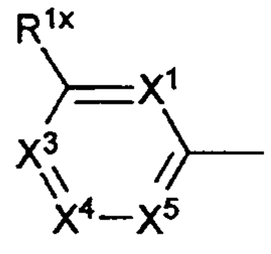
R^{4a}, R^{4b} and R^{4c} are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a nitro group, OR^{18}, $NR^{18}R^{19}$, a cyano group, an amino group, a halogen atom, or a hydrogen atom,

R^6 represents a hydrogen atom or a halogen atom,

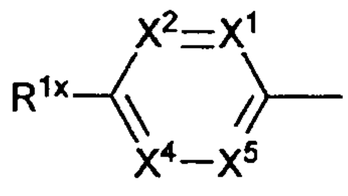
R^w represents a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a benzyl group optionally having one or more substituents selected from Group A, a C2-C7 alkylcarbonyl group, a (C1-C3 alkoxy)methyl group, or a hydrogen atom,

T^{W2} represents a C1-C10 chain hydrocarbon group, a (C1-C5 alkoxy)C2-C5 alkyl group, a (C1-C5 alkylsulfanyl)C2-C5 alkyl group, a (C1-C5 alkylsulfinyl)C2-C5 alkyl group, a (C1-C5 alkylsulfonyl)C2-C5 alkyl group {the C1-C10 chain hydrocarbon group, the (C1-C5 alkoxy)C2-C5 alkyl group, the (C1-C5 alkylsulfanyl)C2-C5 alkyl group, the (C1-C5 alkylsulfinyl)C2-C5 alkyl group, and the (C1-C5 alkylsulfonyl)C2-C5 alkyl group each independently have one or more substituents selected from the group consisting of a cyano group and a halogen atom}, a (C3-C7 cycloalkyl)C1-C3 alkyl group or a C3-C7 cycloalkyl group {the (C3-C7 cycloalkyl)C1-C3 alkyl group and the C3-C7 cycloalkyl group each independently have one or more substituents selected

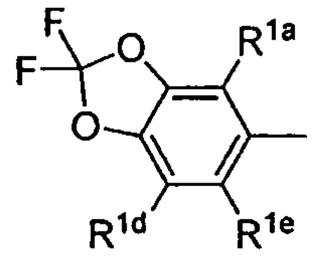
from the group consisting of a cyano group, a halogen atom and a C1-C6 haloalkyl group}, OR^1, $S(O)_vR^1$, $OS(O)_2R^1$, CH_2OR^1, NR^1R^{29}, $C(O)R^1$, $C(O)NR^1R^{29}$, $NR^{29}C(O)R^1$, $N=CR^1R^{30}$, a group represented by formula T-1, a group represented by formula T-2, a group represented by formula T-3, a group represented by formula T-4, a group represented by formula T-5, a group represented by formula T-6, a group represented by formula T-7, a group represented by formula T-8, a group represented by formula T-9, a group represented by formula T-10, a group represented by formula T-11, or a group represented by formula T-12, a halogen atom, a C1-C6 alkoxy group, a C1-C6 alkylsulfanyl group, a C1-C6 alkylsulfinyl group, a C1-C6 alkylsulfonyl group {the C1-C6 alkylsulfanyl group, the C1-C6 alkylsulfinyl group, and the C1-C6 alkylsulfonyl group each independently may optionally have a C3-C6 cycloalkyl group}, a C3-C6 cycloalkylsulfanyl group, a C3-C6 cycloalkylsulfinyl group, a C3-C6 cycloalkylsulfonyl group, a benzyloxy group optionally having one or more substituents selected from Group A, a C2-C7 alkylcarbonyloxy group optionally having one or more halogen atoms, a (C1-C3 alkoxy)methoxy group, or a hydroxy group,



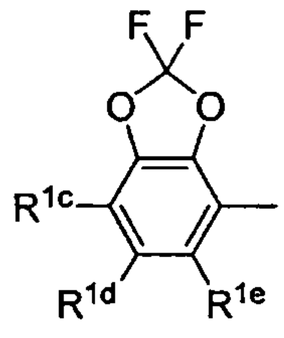
T-1



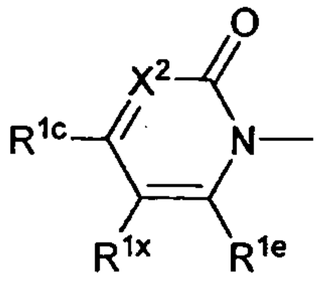
T-2



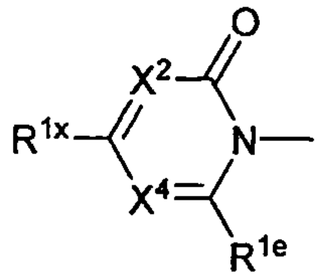
T-3



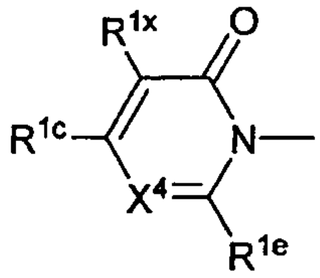
T-4



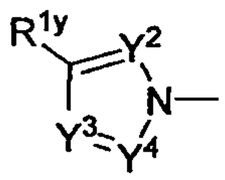
T-5



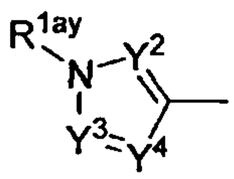
T-6



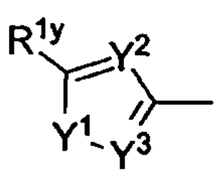
T-7



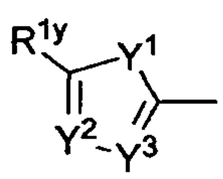
T-8



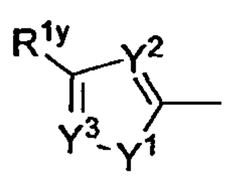
T-9



T-10



T-11



T-12

X^1 represents a nitrogen atom or CR^{1a},

X^2 represents a nitrogen atom or CR^{1b},

X^3 represents a nitrogen atom or CR^{1c},

X^4 represents a nitrogen atom or CR^{1d},

X^5 represents a nitrogen atom or CR^{1e},

R^{1x} represents a C1-C5 chain hydrocarbon group having one or more halogen atoms, OR^7, $OS(O)_2R^7$, $S(O)_mR^7$, $NR^8S(O)_2R^7$, or a halogen atom,

R^{1a}, R^{1b}, R^{1c}, R^{1d}, and R^{1e} are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group optionally having one or more halogen

atoms, a C3-C6 cycloalkyl group optionally having one or more halogen atoms, a halogen atom, or a hydrogen atom,

Y^1 represents NR^{25}, an oxygen atom or a sulfur atom,

Y^2 represents a nitrogen atom or CR^{26},

Y^3 represents a nitrogen atom or CR^{27},

Y^4 represents a nitrogen atom or CR^{28},

R^{25}, R^{26}, R^{27} and R^{28} are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a C3-C6 cycloalkyl group optionally having one or more halogen atoms, a halogen atom or a hydrogen atom,

R^{1Y} represents a C1-C5 chain hydrocarbon group having one or more halogen atoms, OR^7, $OS(O)_2R^7$, $S(O)_mR^7$, $NR^8S(O)_2R^7$, a cyano group, or a halogen atom,

R^{1aY} and R^7 are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group having one or more halogen atoms,

m and v are identical to or different from each other and each is 0, 1 or 2,

R^1 represents a C1-C10 chain hydrocarbon group, a (C1-C5 alkoxy)C2-C5 alkyl group, a (C1-C5 alkylsulfanyl)C2-C5 alkyl group, a (C1-C5 alkylsulfinyl)C2-C5 alkyl group, a (C1-C5 alkylsulfonyl)C2-C5 alkyl group {the C1-C10 chain hydrocarbon group, the (C1-C5 alkoxy)C2-C5 alkyl group, the (C1-C5 alkylsulfanyl)C2-C5 alkyl group, the (C1-C5

alkylsulfinyl)C2-C5 alkyl group, and the (C1-C5 alkylsulfonyl)C2-C5 alkyl group each independently have one or more substituents selected from the group consisting of a cyano group and a halogen atom}, a (C3-C7 cycloalkyl)C1-C3 alkyl group, or a C3-C7 cycloalkyl group {the (C3-C7 cycloalkyl)C1-C3 alkyl group and the C3-C7 cycloalkyl group each independently have one or more substituents selected from the group consisting of a cyano group, a halogen atom and a C1-C6 haloalkyl group},

R^{30} represents a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a halogen atom, OR^{35}, $NR^{36}R^{37}$, or a hydrogen atom,

R^{18} and R^{35} are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms,

R^{3} represents a C1-C6 chain hydrocarbon group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from group E, a C3-C7 cycloalkenyl group optionally having one or more substituents selected from Group J, a phenyl group optionally having one or more substituents selected from Group H, a five or six membered aromatic heterocyclic group optionally having one or more substituents selected from Group H, OR^{12}, $NR^{11}R^{12}$, $NR^{11a}R^{12a}$, $NR^{24}NR^{11}R^{12}$, $NR^{24}OR^{11}$, $NR^{11}C(O)R^{13}$, $NR^{24}NR^{11}C(O)R^{13}$, $NR^{11}C(O)OR^{14}$,

$NR^{24}NR^{11}C(O)OR^{14}$, $NR^{11}C(O)NR^{15}R^{16}$, $NR^{24}NR^{11}C(O)NR^{15}R^{16}$, $N=CHNR^{15}R^{16}$, $N=S(O)_xR^{15}R^{16}$, $C(O)R^{17}$, $C(O)OR^{17}$, $C(O)NR^{15}R^{16}$, $CR^{24}=NOR^{17}$, $NR^{11}CR^{24}=NOR^{17}$, a cyano group, a nitro group, or a halogen atom,

q is 0, 1, 2 or 3, and when q is 2 or 3, a plurality of R^3 may be identical to or different from each other,

When two R^3 are adjacent to each other, said two R^3 may combined together with a carbon atom to which they are attached to form benzene ring, pyrrole ring, furan ring, thiophene ring, pyrazole ring, imidazole ring, triazole ring, oxazole ring, isoxazole ring, thiazole ring, oxadiazole ring, thiadiazole ring, pyridine ring, pyridazine ring, pyrimidine ring, or pyrazine ring {the benzene ring, the pyrrole ring, the furan ring, the thiophene ring, the pyrazole ring, the imidazole ring, the triazole ring, the oxazole ring, the isoxazole ring, the thiazole ring, the pyridine ring, the pyridazine ring, the pyrimidine ring, and the pyrazine ring each independently may optionally have one or more substituents selected from Group H},

R^{17} represents a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a phenyl group optionally having one or more substituents selected from Group D, or a hydrogen atom,

R^8, R^{11}, R^{19}, R^{24}, R^{29}, R^{36}, and R^{37} are identical to or different from each other and each represents independently

a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, or a hydrogen atom,

R^{12} represents a C1-C6 chain hydrocarbon group optionally having one or more substituents selected from Group F, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group J, a C3-C7 cycloalkenyl group optionally having one or more substituents selected from Group J, a phenyl group, a six membered heterocyclic group {the phenyl group, and the six membered heterocyclic group each independently may optionally have one or more substituents selected from Group D}, a hydrogen atom, or a $S(O)_2R^{23}$,

R^{23} represents a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, or a phenyl group optionally having one or more substituents selected from Group D,

R^{11a} and R^{12a} combine together with the nitrogen atom to which they are attached to form a three to seven membered nonaromatic heterocyclic group optionally having one or more substituents selected from group E,

R^{13} represents a hydrogen atom, a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a C3-C7 cycloalkyl group optionally having one or more halogen atoms, a (C3-C6 cycloalkyl)C1-C3 alkyl group optionally having one or more halogen atoms, a phenyl group

optionally having one or more substituents selected from Group D, or a five or six membered aromatic heterocyclic group optionally having one or more substituents selected from Group D,

R^{14} represents a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a C3-C7 cycloalkyl group optionally having one or more halogen atoms, a (C3-C6 cycloalkyl)C1-C3 alkyl group optionally having one or more halogen atoms, or a phenyl C1-C3 alkyl group {the phenyl moiety in the phenyl C1-C3 alkyl group may optionally have one or more substituents selected from Group D},

R^{15} represents a C1-C6 alkyl group optionally having one or more halogen atoms, or a hydrogen atom,

R^{16} represents a C1-C6 chain hydrocarbon group optionally having one or more substituents selected from Group F, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group J, $S(O)_2R^{23}$ or a hydrogen atom,

x is 0 or 1,

Group A: a group consisting of a C1-C6 alkyl group optionally having one or more halogen atoms, a C1-C6 alkoxy group optionally having one or more halogen atoms, a halogen atom, a cyano group and a nitro group,

Group B: a group consisting of a C1-C6 alkoxy group optionally having one or more halogen atoms, a C3-C6

alkenyloxy group optionally having one or more halogen atoms, a C3-C6 alkynyloxy group optionally having one or more halogen atoms, a C1-C6 alkylsulfanyl group optionally having one or more halogen atoms, a C1-C6 alkylsulfinyl group optionally having one or more halogen atoms, a C1-C6 alkylsulfonyl group optionally having one or more halogen atoms, a C3-C6 cycloalkyl group optionally having one or more halogen atoms, a cyano group, a hydroxy group, and a halogen atom,

Group D: a group consisting of a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a hydroxy group, a C1-C6 alkoxy group optionally having one or more halogen atoms, a C3-C6 alkenyloxy group optionally having one or more halogen atoms, a C3-C6 alkynyloxy group optionally having one or more halogen atoms, a sulfanyl group, a C1-C6 alkylsulfanyl group optionally having one or more halogen atoms, a C1-C6 alkylsulfinyl group optionally having one or more halogen atoms, a C1-C6 alkylsulfonyl group optionally having one or more halogen atoms, an amino group, NR^9R^{10}, $C(O)R^{10}$, $OC(O)R^9$, $C(O)OR^9$, a cyano group, a nitro group, and a halogen atom,

R^9 represents a C1-C6 alkyl group optionally having one or more halogen atoms, or a C3-C6 cycloalkyl group optionally having one or more halogen atoms,

R^{10} represents a C1-C6 alkyl group optionally having one

or more halogen atoms, a C3-C6 cycloalkyl group optionally having one or more halogen atoms, or a hydrogen atom,

Group E: a group consisting of a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a C1-C6 alkoxy group optionally having one or more halogen atoms, a C3-C6 alkenyloxy group optionally having one or more halogen atoms, a C3-C6 alkynyloxy group optionally having one or more halogen atoms, a halogen atom, an oxo group, a hydroxy group, a cyano group, and a nitro group;

Group F: a group consisting of a C3-C6 cycloalkyl group optionally having one or more halogen atoms, a phenyl group or a six membered aromatic heterocyclic group {the phenyl group and the six membered aromatic heterocyclic group each independently may optionally have one or more substituents selected from Group D}, OR^{10}, an amino group, $NR^{9}R^{10}$, a halogen atom, a nitro group, and a cyano group;

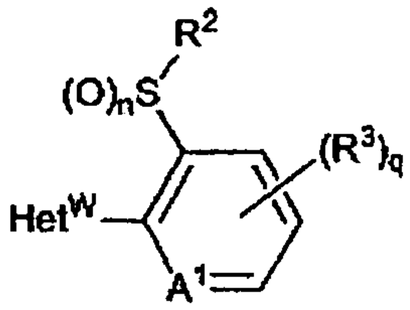
Group H: a group consisting of a five or six membered aromatic heterocyclic group, a C1-C6 alkyl group optionally having one or more halogen atoms, a C3-C6 cycloalkyl group optionally having one or more halogen atoms, OR^{10}, an amino group, $NR^{9}R^{10}$, $C(O)R^{10}$, $C(O)NR^{9}R^{10}$, $OC(O)R^{9}$, $OC(O)OR^{9}$, $NR^{10}C(O)R^{9}$, $NR^{10}C(O)OR^{9}$, $C(O)OR^{10}$, a halogen atom, a nitro group, and a cyano group.

Group J: a group consisting of a C1-C6 alkyl group optionally having one or more halogen atoms, a halogen atom,

a cyano group, a triazolyl group, and $NR^{10}C(O)R^{9}$.

(hereinafter, referred to as "Intermediate compound E").

[27] A compound represented by formula (IV):



(IV)

[wherein,

R^2 represents a C1-C6 alkyl group optionally having one or more halogen atoms, a cyclopropyl group or a cyclopropylmethyl group,

n is 0, 1 or 2,

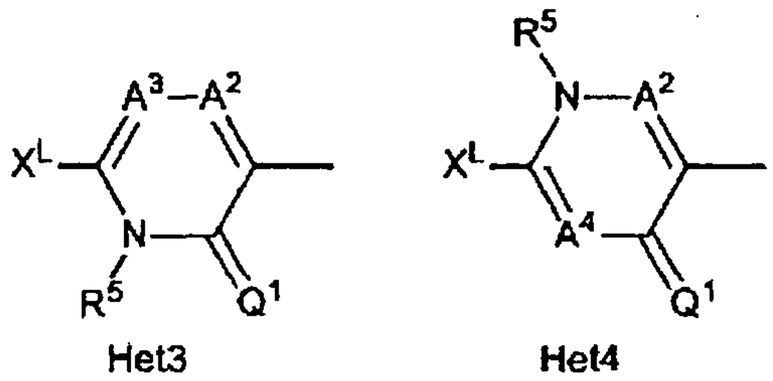
R^3 represents a C1-C6 chain hydrocarbon group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from group E, a C3-C7 cycloalkenyl group optionally having one or more substituents selected from Group J, a phenyl group optionally having one or more substituents selected from Group H, a five or six membered aromatic heterocyclic group optionally having one or more substituents selected from Group H, OR^{12}, $NR^{11}R^{12}$, $NR^{11a}R^{12a}$, $NR^{24}NR^{11}R^{12}$, $NR^{24}OR^{11}$, $NR^{11}C(O)R^{13}$, $NR^{24}NR^{11}C(O)R^{13}$, $NR^{11}C(O)OR^{14}$, $NR^{24}NR^{11}C(O)OR^{14}$, $NR^{11}C(O)NR^{15}R^{16}$, $NR^{24}NR^{11}C(O)NR^{15}R^{16}$, $N=CHNR^{15}R^{16}$, $N=S(O)_xR^{15}R^{16}$, $C(O)R^{17}$, $C(O)OR^{17}$, $C(O)NR^{15}R^{16}$, $CR^{24}=NOR^{17}$, $NR^{11}CR^{24}=NOR^{17}$, a cyano group, a nitro group, or a halogen

atom,

q is 0, 1, 2 or 3, and when q is 2 or 3, a plurality of R^3 may be identical to or different from each other,

When two R^3 are adjacent to each other, said two R^3 may combined together with a carbon atom to which they are attached to form benzene ring, pyrrole ring, furan ring, thiophene ring, pyrazole ring, imidazole ring, triazole ring, oxazole ring, isoxazole ring, thiazole ring, oxadiazole ring, thiadiazole ring, pyridine ring, pyridazine ring, pyrimidine ring, or pyrazine ring {the benzene ring, the pyrrole ring, the furan ring, the thiophene ring, the pyrazole ring, the imidazole ring, the triazole ring, the oxazole ring, the isoxazole ring, the thiazole ring, the pyridine ring, the pyridazine ring, the pyrimidine ring, and the pyrazine ring each independently may optionally have one or more substituents selected from Group H},

Het^W represents a group represented by the following formula Het 3 or a group represented by the following formula Het 4:



,

A^1 represents a nitrogen atom or CR^6,

A^2 represents a nitrogen atom or CR^{4a},

A^3 represents a nitrogen atom or CR^{4b},

A^4 represents a nitrogen atom or CR^{4c},

Q^1 represents an oxygen atom or a sulfur atom,

R^{20} represents a C1-C6 alkyl group optionally having one or more halogen atoms, or a hydrogen atom,

R^5 represents a C1-C6 chain hydrocarbon group optionally having one or more substituents selected from group F, a C3-C6 cycloalkyl group optionally having one or more substituents selected from Group J, a phenyl group optionally having one or more substituents selected from Group H, or a five or six membered aromatic heterocyclic group optionally having one or more substituents selected from Group H,

R^{4a}, R^{4b} and R^{4c} are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group optionally one or more halogen atoms, a nitro group, OR^{18}, $NR^{18}R^{19}$, a cyano group, an amino group, a halogen atom, or a hydrogen atom,

R^6 represents a hydrogen atom or a halogen atom,

X^L represents a halogen atom, a C1-C6 alkoxy group, a C1-C6 alkylsulfanyl group, a C1-C6 alkylsulfinyl group, a C1-C6 alkylsulfonyl group {the C1-C6 alkylsulfanyl group, the C1-C6 alkylsulfinyl group, and the C1-C6 alkylsulfonyl group each independently may optionally have a C3-C6 cyaloalkyl group}, a C3-C6 cycloalkylsulfanyl group, a C3-

C6 cycloalkylsulfinyl group, a C3-C6 cycloalkylsulfonyl group, a benzyloxy group optionally having one or more substituents selected from Group A, a C2-C7 alkylcarbonyloxy group optionally having one or more halogen atoms, a (C1-C3 alkoxy)methoxy group, or a hydroxy group,

R^{18} represents a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms,

R^{17} represents a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a phenyl group optionally having one or more substituents selected from Group D, or a hydrogen atom,

R^{11}, R^{19} and R^{24} are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group optionally one or more halogen atoms, or a hydrogen atom,

R^{12} represents a C1-C6 chain hydrocarbon group optionally having one or more substituents selected from Group F, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group J, a C3-C7 cycloalkenyl group optionally having one or more substituents selected from Group J, a phenyl group, or six membered heterocyclic group {the phenyl group, and the six membered heterocyclic group each independently may have optionally one or more substituents selected from Group D}, a hydrogen atom, or $S(O)_2R^{23}$,

R^{23} represents a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, or a phenyl group optionally having one or more substituents selected from Group D,

R^{11a} and R^{12a} combine together with the nitrogen atom to which they are attached to form a three to seven membered nonaromatic heterocyclic group optionally having one or more substituents selected from group E,

R^{13} represents a hydrogen atom, a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a C3-C7 cycloalkyl group optionally having one or more halogen atoms, a (C3-C6 cycloalkyl)C1-C3 alkyl group optionally having one or more halogen atoms, a phenyl group optionally having one or more substituents selected from Group D, or a five or six membered aromatic heterocyclic group optionally having one or more substituents selected from Group D,

R^{14} represents a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a C3-C7 cycloalkyl group optionally having one or more halogen atoms, a (C3-C6 cycloalkyl)C1-C3 alkyl group optionally having one or more halogen atoms, or a phenyl C1-C3 alkyl group {the phenyl moiety in the phenyl C1-C3 alkyl group may optionally have one or more substituents selected from Group D},

R^{15} represents a C1-C6 alkyl group optionally having one

or more halogen atoms, or a hydrogen atom,

R^{16} represents a C1-C6 chain hydrocarbon group optionally having one or more substituents selected from Group F, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group J, $S(O)_2R^{23}$ or a hydrogen atom,

x is 0 or 1,

Group A: a group consisting of a C1-C6 alkyl group optionally having one or more halogen atoms, a C1-C6 alkoxy group optionally having one or more halogen atoms, a halogen atom, a cyano group and a nitro group,

Group B: a group consisting of a C1-C6 alkoxy group optionally having one or more halogen atoms, a C3-C6 alkenyloxy group optionally having one or more halogen atoms, a C3-C6 alkynyloxy group optionally having one or more halogen atoms, a C1-C6 alkylsulfanyl group optionally having one or more halogen atoms, a C1-C6 alkylsulfinyl group optionally having one or more halogen atoms, a C1-C6 alkylsulfonyl group optionally having one or more halogen atoms, a C3-C6 cycloalkyl group optionally having one or more halogen atoms, a cyano group, a hydroxy group, and a halogen atom,

Group D: a group consisting of a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a hydroxy group, a C1-C6 alkoxy group optionally having one or more

halogen atoms, a C3-C6 alkenyloxy group optionally having one or more halogen atoms, a C3-C6 alkynyloxy group optionally having one or more halogen atoms, a sulfanyl group, a C1-C6 alkylsulfanyl group optionally having one or more halogen atoms, a C1-C6 alkylsulfinyl group optionally having one or more halogen atoms, a C1-C6 alkylsulfonyl group optionally having one or more halogen atoms, an amino group, NR^9R^{10}, $C(O)R^{10}$, $OC(O)R^9$, $C(O)OR^9$, a cyano group, a nitro group, and a halogen atom,

R^9 represents a C1-C6 alkyl group optionally having one or more halogen atoms, or a C3-C6 cycloalkyl group optionally having one or more halogen atoms,

R^{10} represents a C1-C6 alkyl group optionally having one or more halogen atoms, a C3-C6 cycloalkyl group optionally having one or more halogen atoms, or a hydrogen atom,

Group E: a group consisting of a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a C1-C6 alkoxy group optionally having one or more halogen atoms, a C3-C6 alkenyloxy group optionally having one or more halogen atoms, a C3-C6 alkynyloxy group optionally having one or more halogen atoms, a halogen atom, an oxo group, a hydroxy group, a cyano group, and a nitro group;

Group F: a group consisting of a C3-C6 cycloalkyl group optionally having one or more halogen atoms, a phenyl group or a six membered aromatic heterocyclic group {the phenyl

group and the six membered aromatic heterocyclic group each independently may optionally have one or more substituents selected from Group D}, OR^{10}, an amino group, NR^9R^{10}, a halogen atom, a nitro group, and a cyano group;

Group H: a group consisting of a five or six membered aromatic heterocyclic group, a C1-C6 alkyl group optionally having one or more halogen atoms, a C3-C6 cycloalkyl group optionally having one or more halogen atoms, OR^{10}, an amino group, NR^9R^{10}, $C(O)R^{10}$, $C(O)NR^9R^{10}$, $OC(O)R^9$, $OC(O)OR^9$, $NR^{10}C(O)R^9$, $NR^{10}C(O)OR^9$, $C(O)OR^{10}$, a halogen atom, a nitro group, and a cyano group.

Group J: a group consisting of a C1-C6 alkyl group optionally having one or more halogen atoms, a halogen atom, a cyano group, a triazolyl group, and $NR^{10}C(O)R^9$].

(hereinafter, referred to as "Intermediate compound F").

[EFFECT OF INVENTION]

[0006]

The present invention can control harmful arthropods.

MODE FOR CARRYING OUT THE INVENTION

[0007]

The substituent(s) as described herein is/are explained.

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

When the substituents have two or more halogen atoms, these halogen atoms may be identical to or different from each other.

The expression of "CX-CY" as used herein represents that the number of carbon atom is from X to Y. For example, the expression of "C1-C6" represents that the number of carbon atom is from 1 to 6.

The term of "chain hydrocarbon group" represents an alkyl group, an alkenyl group, or an alkynyl group.

Example of the term of "alkyl group" include methyl group, ethyl group, propyl group, isopropyl group, 1,1-dimethylpropyl group, 1,2-dimethylpropyl group, 1-ethylpropyl group, butyl group, sec-butyl group, tert-butyl group, pentyl group, hexyl group, octyl group, nonyl group, and decyl group.

Example of the term of "alkenyl group" include vinyl group, 1-propenyl group, 2-propenyl group, 1-methyl-1-propenyl group, 1-methyl-2-propenyl group, 1,2-dimethyl-1-propenyl group, 1-ethyl-2-propenyl group, 3-butenyl group, 4-pentenyl group, 5-hexenyl group, 7-octenyl group, 8-nonenyl group, and 9-decenyl group.

Example of the term of "alkynyl group" includes ethynyl group, 1-propynyl group, 2-propynyl group, 1-methyl-2-propynyl group, 1,1-dimethyl-2-propynyl group, 1-ethyl-2-propynyl group, 2-butynyl group, 4-pentynyl group, 5-hexynyl

group, 7-octynyl group, 8-nonynyl group, and 9-decynyl group.

Example of the term of "C1-C6 alkyl group optionally having one or more halogen atoms" or "C1-C6 haloalkyl group" include trifluoromethyl group, 2,2,2-trifluoroethyl group, 2-bromo-1,1,2,2-tetrafluoroethyl group, 2,2,3,3-tetrafluoropropyl group, 1-methyl-2,2,3,3-tetrafluoropropyl group, and perfluorohexyl group.

[0008]

Example of the term of "cycloalkyl group" includes cyclopropyl group, cyclobutyl group, cyclopentyl group, cyclohexyl group and cycloheptyl group.

Example of the term of "cycloalkenyl group" includes cyclopropenyl group, cyclobutenyl group, cyclopentenyl group, cyclohexenyl group, and cycloheptenyl group. Examples of the term of "C3-C6 cycloalkyl group optionally having one or more halogen atoms" includes 2,2-difluorocyclopropyl group, 1-(2,2,2-trifluoroethyl)cyclopropyl group, and 4-(trifluoromethyl)cyclohexyl group.

Examples of the term of "alkoxy group" includes methoxy group, ethoxy group, propoxy group, butoxy group, pentoxy group, and hexyloxy group.

The term of "C1-C6 alkoxy group optionally having one or more halogen atoms" represents a C1-C6 alkoxy group wherein one or more halogen atoms are replaced by a halogen atom, and includes, for example, trifluoromethoxy group,

difluoromethoxy group, 2,2,2-trichloroethoxy group, and 2,2,2-trifluoroethoxy group.

The terms of "alkylsulfanyl", "alkylsulfinyl", and "alkylsulfonyl" represent an alkyl group containing a $S(O)_z$ moiety, respectively.

For example, examples of the "alkylsulfanyl" when z is 0 include methylsulfanyl group, ethylsulfanyl group, propylsulfanyl group, and isopropylsulfanyl group.

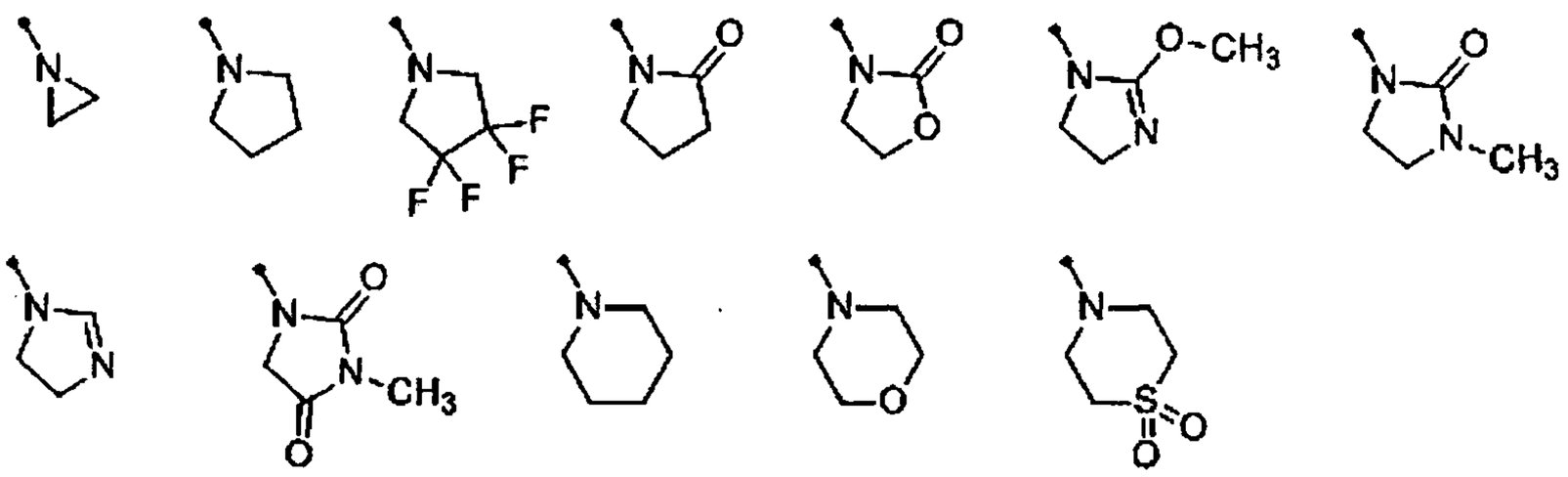
For example, examples of the "alkylsulfinyl" when z is 1 include methylsulfinyl group, ethylsulfinyl group, propylsulfinyl group, and isopropylsulfinyl group.

For example, examples of the "alkylsulfonyl" when z is 2 include methylsulfonyl group, ethylsulfonyl group, propylsulfonyl group, and isopropylsulfonyl group.

[0009]

Examples of the term of "three(3) to seven(7) membered nonaromatic heterocyclic group" include aziridine ring, azetidine ring, pyrrolidine ring, imidazoline ring, imidazolidine ring, piperidine ring, tetrahydropyrimidine ring, hexahydropyrimidine ring, piperazine ring, azepane ring, oxazolidine ring, isoxazolidine ring, 1,3-oxazinane ring, morpholine ring, 1,4-oxazepane ring, thiazolidine ring, isothiazolidine ring, 1,3-thiazinane ring, thiomorpholine ring, and 1,4-thiazepane ring. Examples of the three to seven membered nonaromatic heterocyclic group optionally

having one or more substituents selected from Group E include the followings:



[0010]

The term of "(C1-C5 alkoxy)C2-C5 alkyl group having one or more halogen atoms" represents a group wherein the (C1-C5 alkoxy) and/or the (C2-C5 alkyl) has/have one or more halogen atoms, and includes, for example, 2-(trifluoromethoxy)ethyl group, 2,2-difluoro-3-methoxypropyl group, 2,2-difluoro-3-(2,2,2-trifluoroethoxy)propyl group, and 3-(2-chloroethoxy)propyl group.

The term of "(C1-C5 alkylsulfanyl)C2-C5 alkyl group having one or more halogen atoms" represents a group wherein the (C1-C5 alkylsulfanyl) and/or the (C2-C5 alkyl) has/have one or more halogen atoms, and includes, for example, 2,2-difluoro-2-(trifluoromethylthio)ethyl group.

The term of "(C1-C5 alkylsulfinyl)C2-C5 alkyl group having one or more halogen atoms" represents a group wherein the (C1-C5 alkylsulfinyl) and/or the (C2-C5 alkyl) has/have one or more halogen atoms, and includes, for example, 2,2-

difluoro-2-(trifluoromethansulfinyl)ethyl group.

The term of "(C1-C5 alkylsulfonyl)C2-C5 alkyl group having one or more halogen atoms" represents a group wherein the (C1-C5 alkylsulfonyl) and/or the (C2-C5 alkyl) has/have one or more halogen atoms, and includes, for example, 2,2-difluoro-2-(trifluoromethansulfonyl)ethyl group.

The term of "(C3-C7 cycloalkyl)C1-C3 alkyl group optionally having one or more halogen atoms" represents a group wherein the (C3-C7 cycloalkyl) and/or the (C1-C3 alkyl) has/have one or more halogen atoms, and includes, for example, (2,2-difluorocyclopropyl)methyl group, 2-cyclopropyl-1,1,2,2-tetrafluoroethyl group, and 2-(2,2-difluorocyclopropyl)-1,1,2,2-tetrafluoroethyl group.

The term of "(C3-C7 cycloalkyl)C1-C3 alkyl group having one or more substituents selected from Group G" represents a group wherein the (C3-C7 cycloalkyl) and/or the (C1-C3 alkyl) has/have one or more substituents selected from Group G, and includes, for example, (2,2-difluorocyclopropyl)methyl group, [1-(trifluoromethyl)cyclopropyl]methyl group, [2-(trifluoromethyl)cyclopropyl]methyl group, 2-cyclopropyl-1,1,2,2-tetrafluoroethyl group, 2-cyclopropyl-3,3,3-trifluoropropyl group, and 1,1,2,2-tetrafluoro-2-[2-(trifluoromethyl)cyclopropyl]ethyl group.

Examples of the term of "phenyl C1-C3 alkyl group {the

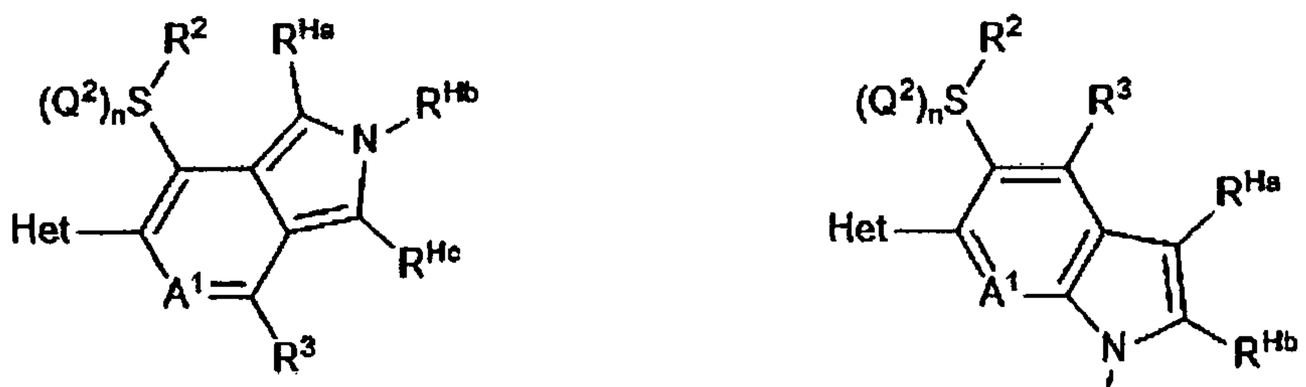
phenyl moiety in the phenyl C1-C3 alkyl group may optionally have one or more substituents selected from Group D}" include benzyl group, 2-fluorobenzyl group, 4-chlorobenzyl group, 4-(trifluoromethyl)benzyl group, and 2-[4-(trifluoromethyl)phenyl]ethyl group.

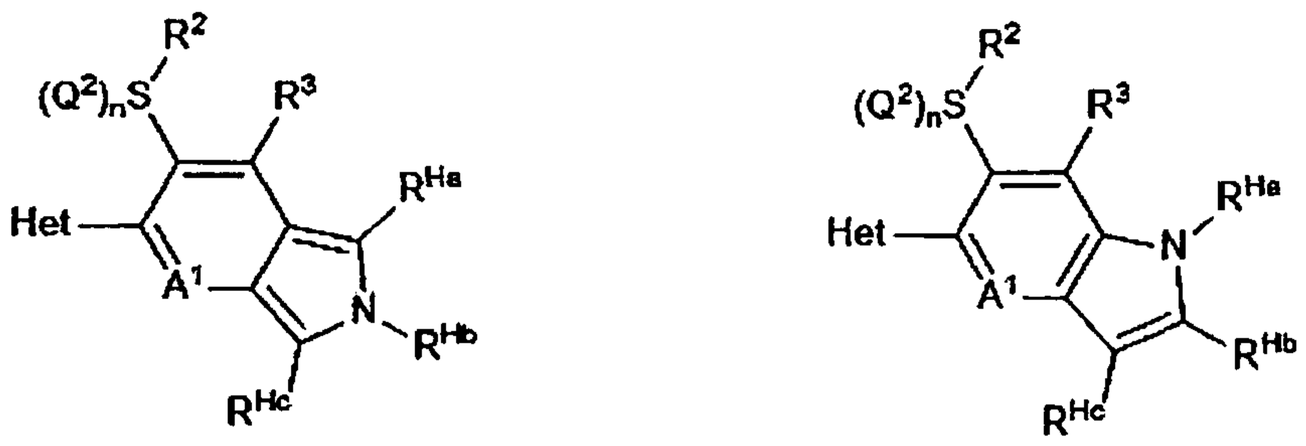
The term of "five(5) or six(6) membered aromatic heterocyclic group" represents a five membered aromatic heterocyclic group or a six membered aromatic heterocyclic group, and examples of the five membered aromatic heterocyclic group include pyrrolyl group, furyl group, thienyl group, pyrazolyl group, imidazolyl group, triazolyl group, tetrazolyl group, oxazolyl group, isoxazolyl group, thiazolyl group, isothiazolyl group, oxadiazolyl group, and thiadiazolyl group. As the five membered aromatic heterocyclic group, a five membered aromatic heterocyclic group containing 1 to 4 nitrogen atoms, that is, pyrrolyl group, pyrazolyl group, imidazolyl group, 1,2,4-triazolyl group, 1,2,3-triazolyl group, or tetrazolyl group is preferably included. Examples of the six membered aromatic heterocyclic group include pyridyl group, pyridazinyl group, pyrimidinyl group, pyrazinyl group, and triazinyl group.

[0011]

The term of "when two R^3 are adjacent to each other, said two R^3 combine together with a carbon atom to which they are attached to form benzene ring, pyrrole ring, furan ring,

thiophene ring, pyrazole ring, imidazole ring, triazole ring, oxazole ring, isoxazole ring, thiazole ring, oxadiazole ring, thiadiazole ring, pyridine ring, pyridazine ring, pyrimidine ring, or pyrazine ring" represents, for example, the following compounds when pyrrole ring is formed.





[wherein, R^{Ha}, R^{Hb}, and R^{Hc} are identical to or different from each other and each represents independently a five or six membered aromatic heterocyclic group, a C1-C6 alkyl group optionally having one or more halogen atoms, a C3-C6 cycloalkyl group optionally having one or more halogen atoms, OR^{10}, an amino group, NR^9R^{10}, $C(O)R^{10}$, $C(O)NR^9R^{10}$, $OC(O)R^9$,

$OC(O)OR^9$, $NR^{10}C(O)R^9$, $NR^{10}C(O)OR^9$, $C(O)OR^{10}$, a halogen atom, a nitro group, or a cyano group, and the other symbols are the same as defined above.]

[0012]

Examples of the embodiment of the compound of the present invention include the following compounds.

When "Present compound Z of the present invention" is described herein, it encompasses "Present compound of the present invention" unless specified otherwise.

[0013]

[Embodiment 1] A compound of the present invention wherein A^1 represents a nitrogen atom or CH.

[Embodiment 2] The compound described in Embodiment 1 wherein R^2 represents an ethyl group, R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom, R^{4a}, R^{4b} and R^{4c} represent a hydrogen atom, R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms, q is 0 or 1,

and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 3] A compound of the present invention wherein A^1 represents a nitrogen atom.

[Embodiment 4] The compound described in Embodiment 3 wherein R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom.

[Embodiment 5] The compound described in Embodiment 3 wherein R^2 represents a C1-C6 alkyl group, R^{4a}, R^{4b} and R^{4c} represent a hydrogen atom or a halogen atom, q is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 6] The compound described in Embodiment 5 wherein R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently

may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$ or a halogen atom, and R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms.

[Embodiment 7] The compound described in Embodiment 3 wherein R^2 represents a C1-C6 alkyl group, R^3 represents a C1-C6 alkyl group, C3-C7 cycloalkyl group {the C1-C6 alkyl group and the C3-C7 cycloalkyl group each independently may optionally have one or more substituents selected from the group consisting of a halogen atom and a cyano group}, a phenyl group, a pyridyl group {the phenyl group and the pyridyl group each independently may optionally have one or more substituents selected from Group G}, or a halogen atom, R^{4a}, R^{4b} and R^{4c} represent a hydrogen atom, R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms, q is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 8] A compound of the present invention wherein A^1 represents CH.

[Embodiment 9] The compound described in Embodiment 8 wherein R^2 represents an ethyl group, R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the

pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom, R^{4a}, R^{4b} and R^{4c} represent a hydrogen atom, R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms, q is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 10] A compound of the present invention wherein Het represents Het 1.

[Embodiment 11] The compound described in Embodiment 10 wherein A^1 represents a nitrogen atom or CH.

[Embodiment 12] The compound described in Embodiment 11 wherein R^2 represents an ethyl group, R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom, R^{4a} and R^{4b} represent a hydrogen atom, R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms, q is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 13] The compound described in Embodiment 10 wherein A^1 represents a nitrogen atom.

[Embodiment 14] The compound described in Embodiment 13 wherein R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom.

[Embodiment 15] The compound described in Embodiment 13 wherein R^2 represents a C1-C6 alkyl group, R^{4a} and R^{4b} represent a hydrogen atom or a halogen atom, q is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 16] The compound described in Embodiment 15 wherein R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from

Group J},

OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom, and R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms.

[Embodiment 17] The compound described in Embodiment 13 wherein R^2 represents a C1-C6 alkyl group, R^3 represents a C1-C6 alkyl group, a C3-C7 cycloalkyl group {the C1-C6 alkyl group and the C3-C7 cycloalkyl group each independently may optionally have one or more substituents selected from the group consisting of a halogen atom and a cyano group}, a phenyl group, a pyridyl group {the phenyl group, and the pyridyl group each independently may optionally have one or more substituents selected from Group G}, or a halogen atom, R^{4a} and R^{4b} represent a hydrogen atom, R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms, q is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 18] The compound described in Embodiment 10 wherein A^1 represents CH.

[Embodiment 19] The compound described in Embodiment 18 wherein R^2 represents an ethyl group, R^3 represents a C1-C6 alkyl optionally having one or more substituents selected from group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the

pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom, R^{4a} and R^{4b} represent a hydrogen atom, R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms, q is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 20] The compound described in Embodiment 10 wherein A^2 represents CR^{4a}, and A^3 represents CR^{4b}.

[Embodiment 21] The compound described in Embodiment 11 wherein A^2 represents CR^{4a} and A^3 represents CR^{4b}.

[Embodiment 22] The compound described in Embodiment 12 wherein A^2 represents CR^{4a} and A^3 represents CR^{4b}.

[Embodiment 23] The compound described in Embodiment 13 wherein A^2 represents CR^{4a} and A^3 represents CR^{4b}.

[Embodiment 24] The compound described in Embodiment 14 wherein A^2 represents CR^{4a} and A^3 represents CR^{4b}.

[Embodiment 25] The compound described in Embodiment 15 wherein A^2 represents CR^{4a} and A^3 represents CR^{4b}.

[Embodiment 26] The compound described in Embodiment 16 wherein A^2 represents CR^{4a} and A^3 represents CR^{4b}.

[Embodiment 27] The compound described in Embodiment 17 wherein A^2 represents CR^{4a} and A^3 represents CR^{4b}.

[Embodiment 28] The compound described in Embodiment 18 wherein A^2 represents CR^{4a} and A^3 represents CR^{4b}.

[Embodiment 29] The compound described in Embodiment 19 wherein A^2 represents CR^{4a} and A^3 represents CR^{4b}.

[Embodiment 30] A compound of the present invention wherein Het represents a group represented by formula Het1, A^2 represents CR^{4a}, and A^3 represents a nitrogen atom.

[Embodiment 31] The compound described in Embodiment 30 wherein A^1 represents a nitrogen atom or CH.

[Embodiment 32] The compound described in Embodiment 31 wherein R^2 represents an ethyl group, R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom, R^{4a} represents a hydrogen atom, R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms, q is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 33] The compound described in Embodiment 30 wherein A^1 represents a nitrogen atom.

[Embodiment 34] The compound described in Embodiment 33 wherein R^3 represents a C1-C6 alkyl group optionally having

one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom.

[Embodiment 35] The compound described in Embodiment 33 wherein R^2 represents a C1-C6 alkyl group, R^{4a} represents a hydrogen atom or a halogen atom, q is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 36] The compound described in Embodiment 35 wherein R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom, and R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms.

[Embodiment 37] The compound described in Embodiment 33

wherein R^2 represents a C1-C6 alkyl group, R^3 represents a C1-C6 alkyl group, a C3-C7 cycloalkyl group {the C1-C6 alkyl group and the C3-C7 cycloalkyl group each independently may optionally have one or more substituents selected from the group consisting of a halogen atom and a cyano group}, a phenyl group, a pyridyl group {the phenyl group and the pyridyl group each independently may optionally have one or more substituents selected from Group G}, or a halogen atom, R^{4a} represents a hydrogen atom, R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms, q is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 38] The compound described in Embodiment 30 wherein A^1 represents CH.

[Embodiment 39] The compound described in Embodiment 38 wherein R^2 represents an ethyl group, R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom, R^{4a} represents a hydrogen atom, R^5 represents a C1-C6 alkyl group optionally

having one or more halogen atoms, q is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 40] A compound of the present invention wherein Het represents a group represented by formula Het1, A^2 represents a nitrogen atom, and A^3 represents CR^{4b}.

[Embodiment 41] The compound described in Embodiment 40 wherein A^1 represents a nitrogen atom or a CH.

[Embodiment 42] The compound described in Embodiment 41 wherein R^2 represents an ethyl group, R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom, R^{4b} represents a hydrogen atom, R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms, q is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 43] The compound described in Embodiment 40 wherein A^1 represents a nitrogen atom.

[Embodiment 44] The compound described in Embodiment 43 wherein R^3 represents a C1-C6 alkyl group optionally having

one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom.

[Embodiment 45] The compound described in Embodiment 43 wherein R^2 represents a C1-C6 alkyl group, R^{4b} represents a hydrogen atom or a halogen atom, q is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 46] The compound described in Embodiment 45 wherein R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom, and R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms.

[Embodiment 47] The compound described in Embodiment 43

wherein R^2 represents a C1-C6 alkyl group, R^3 represents a C1-C6 alkyl group, a C3-C7 cycloalkyl group {the C1-C6 alkyl group and the C3-C7 cycloalkyl group each independently may optionally have one or more substituents selected from the group consisting of a halogen atom and a cyano group}, a phenyl group, a pyridyl group {the phenyl group and the pyridyl group each independently may optionally have one or more substituents selected from Group G}, or a halogen atom, R^{4b} represents a hydrogen atom, R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms, q is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 48] The compound described in Embodiment 40 wherein A^1 represents CH.

[Embodiment 49] The compound described in Embodiment 48 wherein R^2 represents an ethyl group, R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or halogen atom, R^{4b} represents a hydrogen atom, R^5 represents a C1-C6 alkyl group optionally

having one or more halogen atoms, q is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 50] A compound of the present invention wherein Het represents a group represented by formula Het1, and A^2 and A^3 represent a nitrogen atom.

[Embodiment 51] The compound described in Embodiment 50 wherein A^1 represents a nitrogen atom or CH.

[Embodiment 52] The compound described in Embodiment 51 wherein R^2 represents an ethyl group, R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom, R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms, q is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 53] The compound described in Embodiment 50 wherein A^1 represent a nitrogen atom.

[Embodiment 54] The compound described in Embodiment 53 wherein R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, a C3-C7

cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom.

[Embodiment 55] The compound described in Embodiment 53 wherein R^2 represents a C1-C6 alkyl group, q is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 56] The compound described in Embodiment 55 wherein R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, or a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom, and R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms.

[Embodiment 57] The compound described in Embodiment 53 wherein R^2 represents a C1-C6 alkyl group, R^3 represents a C1-C6 alkyl group, a C3-C7 cycloalkyl group {the C1-C6 alkyl

group and the C3-C7 cycloalkyl group each independently may optionally have one or more substituents selected from the group consisting of a halogen atom and a cyano group}, a phenyl group, a pyridyl group {the phenyl group and the pyridyl group each independently may optionally have one or more substituents selected from Group G}, or a halogen atom, R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms; q is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 58] The compound described in Embodiment 50 wherein A^1 represents CH.

[Embodiment 59] The compound described in Embodiment 58 wherein R^2 represents an ethyl group, R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom, R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms, q is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 60] A compound of the present invention

wherein Het represents a group represented by formula Het2.

[Embodiment 61] The compound described in Embodiment 60 wherein A^1 represents a nitrogen atom or CH.

[Embodiment 62] The compound described in Embodiment 61 wherein R^2 represents an ethyl group, R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom, R^{4a} and R^{4c} represent a hydrogen atom, R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms, q is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 63] The compound described in Embodiment 60 wherein A^1 represents a nitrogen atom.

[Embodiment 64] The compound described in Embodiment 63 wherein R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the

phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom.

[Embodiment 65] The compound described in Embodiment 63 wherein R^2 represents a C1-C6 alkyl group, R^{4a} and R^{4c} represent a hydrogen atom or a halogen atom, q is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 66] The compound described in Embodiment 65 wherein R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom, and R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms.

[Embodiment 67] The compound described in Embodiment 63 wherein R^2 represents a C1-C6 alkyl group, R^3 represents a C1-C6 alkyl group, a C3-C7 cycloalkyl group {the C1-C6 alkyl group and the C3-C7 cycloalkyl group each independently may optionally have one or more substituents selected from the

group consisting of a halogen atom and a cyano group}, a phenyl group, a pyridyl group {the phenyl group and the pyridyl group each independently may optionally have one or more substituents selected from Group G}, or a halogen atom, R^{4a} and R^{4c} represent a hydrogen atom, R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms, q is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 68] The compound described inn Embodiment 60 wherein A^1 represents a CH.

[Embodiment 69] The compound described in Embodiment 68 wherein R^2 represents an ethyl group, R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom, R^{4a} and R^{4c} represent a hydrogen atom, R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms, q is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 70] The compound described in Embodiment 60 wherein A^2 represents CR^{4a} and A^4 represents CR^{4c}.

[Embodiment 71] The compound described in Embodiment 61 wherein A^2 represents CR^{4a} and A^4 represents CR^{4c}.

[Embodiment 72] The compound described in Embodiment 62 wherein A^2 represents CR^{4a} and A^4 represents CR^{4c}.

[Embodiment 73] The compound described in Embodiment 63 wherein A^2 represents CR^{4a} and A^4 represents CR^{4c}.

[Embodiment 74] The compound described in Embodiment 64 wherein A^2 represents CR^{4a} and A^4 represents CR^{4c}.

[Embodiment 75] The compound described in Embodiment 65 wherein A^2 represents CR^{4a} and A^4 represents CR^{4c}.

[Embodiment 76] The compound described in Embodiment 66 wherein A^2 represents CR^{4a} and A^4 represents CR^{4c}.

[Embodiment 77] The compound described in Embodiment 67 wherein A^2 represents CR^{4a} and A^4 represents CR^{4c}.

[Embodiment 78] The compound described in Embodiment 68 wherein A^2 represents CR^{4a} and A^4 represents CR^{4c}.

[Embodiment 79] The compound described in Embodiment 69 wherein A^2 represents CR^{4a} and A^4 represents CR^{4c}.

[Embodiment 80] A compound of the present invention wherein Het represents a group represented by formula Het2, A^2 represents CR^{4a} and A^4 represents a nitrogen atom.

[Embodiment 81] The compound described in Embodiment 80 wherein A^1 represents a nitrogen atom or CH.

[Embodiment 82] The compound described in Embodiment 81 wherein R^2 represents an ethyl group, R^3 represents a C1-C6

alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom, R^{4a} represents a hydrogen atom, R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms, q is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 83] The compound described in Embodiment 80 wherein A^1 represents a nitrogen atom.

[Embodiment 84] The compound described in Embodiment 83 wherein R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom.

[Embodiment 85] The compound described in Embodiment 83

wherein R^2 represents a C1-C6 alkyl group, R^{4a} represents a hydrogen atom or a halogen atom, q is 0 or 1, Q^1 and Q^2 represent an oxygen atom.

[Embodiment 86] The compound described in Embodiment 85 wherein R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom, R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms.

[Embodiment 87] The compound described in Embodiment 83 wherein R^2 represents a C1-C6 alkyl group, R^3 represents a C1-C6 alkyl group, a C3-C7 cycloalkyl group {the C1-C6 alkyl group and the C3-C7 cycloalkyl group each independently may optionally have one or more substituents selected from the group consisting of a halogen atom and a cyano group}, a phenyl group, a pyridyl group {the phenyl group and the pyridyl group each independently may optionally have one or more substituents selected from Group G}, or a halogen atom, R^{4a} represents a hydrogen atom, R^5 represents a C1-C6 alkyl

group optionally having one or more halogen atoms, q is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 88] The compound described in Embodiment 80 wherein A^1 represents CH.

[Embodiment 89] The compound described in Embodiment 88 wherein R^2 represents an ethyl group, R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom, R^{4a} represents a hydrogen atom, R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms, q is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 90] A compound of the present invention wherein Het represents a group represented by formula Het2, A^2 represents a nitrogen atom, and A^4 represents CR^{4c}.

[Embodiment 91] The compound described in Embodiment 90 wherein A^1 represents a nitrogen atom or CH.

[Embodiment 92] The compound described in Embodiment 91 wherein R^2 represents an ethyl group, R^3 represents a C1-C6

alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom, R^{4c} represents a hydrogen atom, R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms, q is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 93] The compound described in Embodiment 90 wherein A^1 represents a nitrogen atom.

[Embodiment 94] The compound described in Embodiment 93 wherein R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom.

[Embodiment 95] The compound described in Embodiment 93

wherein R^2 represents a C1-C6 alkyl group, R^{4c} represents a hydrogen atom or a halogen atom, q is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 96] The compound described in Embodiment 95 wherein R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom, R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 97] The compound described in Embodiment 93 wherein R^2 represents a C1-C6 alkyl group, R^3 represents a C1-C6 alkyl group, a C3-C7 cycloalkyl group {the C1-C6 alkyl group and the C3-C7 cycloalkyl group each independently may optionally have one or more substituents selected from the group consisting of a halogen atom and a cyano group}, a phenyl group, a pyridyl group {the phenyl group and the pyridyl group each independently may optionally have one or more substituents selected from Group G}, or a halogen atom, R^{4c} represents a hydrogen atom, R^5 represents a C1-C6 alkyl

group optionally having one or more halogen atoms, q is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 98] The compound described in Embodiment 90 wherein A^1 represents CH.

[Embodiment 99] The compound described in Embodiment 98 wherein R^2 represents an ethyl group, R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom, R^{4c} represents a hydrogen atom, R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms, q is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 100] A compound of the present invention wherein Het represents a group represented by formula Het2 and A^2 and A^4 represent a nitrogen atom.

[Embodiment 101] The compound described in Embodiment 100 wherein A^1 represents a nitrogen atom or CH.

[Embodiment 102] The compound described in Embodiment 101 wherein R^2 represents an ethyl group, R^3 represents a C1-C6

alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom, R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms, q is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 103] The compound described in Embodiment 100 wherein A^1 represents a nitrogen atom.

[Embodiment 104] The compound described in Embodiment 103 wherein R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom.

[Embodiment 105] The compound described in Embodiment 103 wherein R^2 represents a C1-C6 alkyl group, q is 0 or 1, and

Q^1 and Q^2 represent an oxygen atom.

[Embodiment 106] The compound described in Embodiment 105 wherein R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom, and R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms.

[Embodiment 107] The compound described in Embodiment 103 wherein R^2 represents a C1-C6 alkyl group, R^3 represents a C1-C6 alkyl group, a C3-C7 cycloalkyl group {the C1-C6 alkyl group and the C3-C7 cycloalkyl group each independently may optionally have one or more substituents selected from the group consisting of a halogen atom and a cyano group}, a phenyl group, a pyridyl group {the phenyl group and the pyridyl group each independently may optionally have one or more substituents selected from Group G}, or a halogen atom, R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms, q is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 108] The compound described in Embodiment 100 wherein A^1 represents CH.

[Embodiment 109] The compound described in Embodiment 108 wherein R^2 represents an ethyl group, R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom, R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms, q is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 110] A compound of the present invention wherein Het represents a group represented by formula Het1, A^2 represents CR^{4a}, A^3 represents CR^{4b}, and when Het represent a group represented by Het2, A^2 represents CR^{4a} and A^4 represents CR^{4c}.

[Embodiment 111] The compound described in Embodiment 110 wherein A^1 represents a nitrogen atom or CH.

[Embodiment 112] The compound described in Embodiment 111 wherein R^2 represents an ethyl group, R^3 represents a C1-C6 alkyl group optionally having one or more substituents

selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom, R^{4a}, R^{4b} and R^{4c} represent a hydrogen atom, R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms, q is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 113] The compound described in Embodiment 110 wherein A^1 represents a nitrogen atom.

[Embodiment 114] The compound described in Embodiment 113 wherein R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom.

[Embodiment 115] The compound described in Embodiment 113 wherein R^2 represents a C1-C6 alkyl group, R^{4a}, R^{4b} and R^{4c}

represent a hydrogen atom or a halogen atom, q is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 116] The compound described in Embodiment 115 wherein R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom, and R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms.

[Embodiment 117] The compound described in Embodiment 113 wherein R^2 represents a C1-C6 alkyl group, R^3 represents a C1-C6 alkyl group, a C3-C7 cycloalkyl group {the C1-C6 alkyl group and the C3-C7 cycloalkyl group each independently may optionally have one or more substituents selected from the group consisting of a halogen atom and a cyano group}, a phenyl group, a pyridyl group {the phenyl group and the pyridyl group each independently may optionally have one or more substituents selected from Group G}, or a halogen atom, R^{4a}, R^{4b}, R^{4c} represent a hydrogen atom, R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms, q

is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 118] The compound described in Embodiment 113 wherein R^2 represents an ethyl group, R^3, R^{4a}, R^{4b} and R^{4c} represent a hydrogen atom, R^5 represents a C1-C6 alkyl group, q is 0, n is 2, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 119] The compound described in Embodiment 110 wherein A^1 represents CH.

[Embodiment 120] The compound described in Embodiment 119 wherein R^2 represents an ethyl group, R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom, R^{4a}, R^{4b} and R^{4c} represent a hydrogen atom, R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms, q is 0 or 1, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 121] A compound of the present invention wherein A^1 represents a nitrogen atom or CH, R^2 represents an ethyl group, R^3 represents a C1-C6 alkyl group, a C3-C7 cycloalkyl group {the C1-C6 alkyl group and the C3-C7

cycloalkyl group each independently may optionally have one or more substituents selected from the group consisting of a halogen atom and a cyano group}, a phenyl group, a pyrazolyl group, a pyridyl group {the phenyl group, the pyrazolyl group, and the pyridyl group each independently may optionally have one or more substituents selected from Group G}, or a halogen atom, R^{4a}, R^{4b} and R^{4c} represent a hydrogen atom, R^5 represents a C1-C6 alkyl group or a C3-C6 cycloalkyl group, q is 0 or 1, n is 2, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 122] A compound of the present invention wherein A^1 represents a nitrogen atom or CH, R^2 represents an ethyl group, R^3 represents a C1-C6 alkyl group, a C3-C7 cycloalkyl group {the C1-C6 alkyl group and the C3-C7 cycloalkyl group each independently may optionally have one or more substituents selected from the group consisting of a halogen atom and a cyano group}, a phenyl group, a pyridyl group {the phenyl group, the pyrimidinyl group, and the pyridyl group each independently may optionally have one or more substituents selected from Group G}, or a halogen atom, R^{4a}, R^{4b} and R^{4c} represent a hydrogen atom, R^5 represents a C1-C6 alkyl group, q is 0 or 1, n is 2, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 123] A compound of the present invention wherein T represents a C1-C5 chain hydrocarbon group having

one or more halogen atoms, OR^1, $S(O)_vR^1$, $OS(O)_2R^1$, CH_2OR^1, NR^1R^{29}, $C(O)R^1$, $C(O)NR^1R^{29}$, $NR^{29}C(O)R^1$, $N=CR^1R^{30}$, a group represented by formula T-1, a group represented by formula T-2, a group represented by formula T-3, a group represented by formula T-4, a group represented by formula T-5, a group represented by formula T-6, a group represented by formula T-7, a group represented by formula T-8, a group represented by formula T-9, a group represented by formula T-10, a group represented by formula T-11, or a group represented by formula T-12, and R^1, R^{1x}, R^{1y} and R^{1ay} are identical to or different from each other and each represents independently a C1-C5 chain hydrocarbon group having one or more halogen atoms.

[Embodiment 124] A compound of the present invention wherein T represents a C1-C5 alkyl group having three or more fluorine atoms, OR^1, $S(O)_vR^1$, $OS(O)_2R^1$, CH_2OR^1, NR^1R^{29}, $C(O)R^1$, $C(O)NR^1R^{29}$, $NR^{29}C(O)R^1$, $N=CR^1R^{30}$, a group represented by formula T-1, a group represented by formula T-2, a group represented by formula T-3, a group represented by formula T-4, a group represented by formula T-5, a group represented by formula T-6, a group represented by formula T-7, a group represented by formula T-8, a group represented by formula T-9, a group represented by formula T-10, a group represented by formula T-11, or a group represented by formula T-12, and R^1, R^{1x}, R^{1y} and R^{1ay} are identical to or different from each

other and each represents independently a C1-C5 alkyl group having three or more fluorine atoms.

[Embodiment 125] A compound of the present invention wherein T represents a C1-C5 chain hydrocarbon group having one or more halogen atoms, OR^1, $S(O)_vR^1$, $OS(O)_2R^1$, NR^1R^{29}, a group represented by formula T-1, a group represented by formula T-2, a group represented by formula T-3, a group represented by formula T-4, or a group represented by formula T-8, and R^1, R^{1x} and R^{1y} are identical to or different from each other and each represents independently a C1-C5 chain hydrocarbon group having one or more halogen atoms.

[Embodiment 126] A compound of the present invention wherein T represents a C1-C5 alkyl group having three or more fluorine atoms, OR^1, $S(O)_vR^1$, $OS(O)_2R^1$, NR^1R^{29}, a group represented by formula T-1, a group represented by formula T-2, a group represented by formula T-3, a group represented by formula T-4, or a group represented by formula T-8, and R^1, R^{1x} and R^{1y} are identical to or different from each other and each represents independently a C1-C5 alkyl group having three or more fluorine atoms.

[Embodiment 127] A compound of the present invention wherein T represents a C1-C5 chain hydrocarbon group having one or more halogen atoms, OR^1, $S(O)_vR^1$, $OS(O)_2R^1$, NR^1R^{29}, and R^1 represents a C1-C5 chain hydrocarbon group having one or more halogen atoms.

[Embodiment 128] A compound of the present invention wherein T represents a C1-C5 alkyl group having three or more fluorine atoms, OR^1, $S(O)_vR^1$, $OS(O)_2R^1$, NR^1R^{29}, and R^1 represents a C1-C5 alkyl group having three or more fluorine atoms.

[Embodiment 129] A compound of the present invention wherein T represents OR^1.

[Embodiment 130] The compound described in Embodiment 129 wherein R^1 represents a C1-C5 chain hydrocarbon group having one or more halogen atoms.

[Embodiment 131] The compound described in Embodiment 129 wherein R^1 represents a C1-C5 alkyl group having three or more fluorine atoms.

[Embodiment 132] A compound of the present invention wherein T represents a group represented by formula T-1, a group represented by formula T-2, a group represented by formula T-3, a group represented by formula T-4, or a group represented by formula T-8.

[Embodiment 133] The compound described in Embodiment 132 wherein R^{1x} and R^{1y} are identical to or different from each other and each represents independently a C1-C5 chain hydrocarbon group having one or more halogen atoms.

[Embodiment 134] The compound described in Embodiment 132 wherein R^{1x} and R^{1y} are identical to or different from each other and each represents independently a C1-C5 alkyl group

having three or more fluorine atoms.

[Embodiment 135] The compound described in anyone of Embodiments 1 to 121 or 122 wherein T represents a C1-C5 chain hydrocarbon group having one or more halogen atoms, OR^1, $S(O)_vR^1$, $OS(O)_2R^1$, CH_2OR^1, NR^1R^{29}, $C(O)R^1$, $C(O)NR^1R^{29}$, $NR^{29}C(O)R^1$, $N=CR^1R^{30}$, a group represented by formula T-1, a group represented by formula T-2, a group represented by formula T-3, a group represented by formula T-4, a group represented by formula T-5, a group represented by formula T-6, a group represented by formula T-7, a group represented by formula T-8, a group represented by formula T-9, a group represented by formula T-10, a group represented by formula T-11, or a group represented by formula T-12, and R^1, R^{1x}, R^{1y} and R^{1ay} are identical to or different from each other and each represents independently a C1-C5 chain hydrocarbon group having one or more halogen atoms.

[Embodiment 136] The compound described in Embodiments 1 to 121 or 122 wherein T represents a C1-C5 alkyl group having three or more fluorine atoms, OR^1, $S(O)_vR^1$, $OS(O)_2R^1$, CH_2OR^1, NR^1R^{29}, $C(O)R^1$, $C(O)NR^1R^{29}$, $NR^{29}C(O)R^1$, $N=CR^1R^{30}$, a group represented by formula T-1, a group represented by formula T-2, a group represented by formula T-3, a group represented by formula T-4, a group represented by formula T-5, a group represented by formula T-6, a group represented by formula T-7, a group represented by formula T-8, a group represented

by formula T-9, a group represented by formula T-10, a group represented by formula T-11, or a group represented by formula T-12, and R^1, R^{1x}, R^{1y} and R^{1ay} are identical to or different from each other and each represents independently a C1-C5 alkyl group having three or more fluorine atoms.

[Embodiment 137] The compound described in anyone of Embodiments 1 to 121 or 122 wherein T represents a C1-C5 chain hydrocarbon group having one or more halogen atoms, OR^1, $S(O)_vR^1$, $OS(O)_2R^1$, NR^1R^{29}, a group represented by formula T-1, a group represented by formula T-2, a group represented by formula T-3, a group represented by formula T-4, or a group represented by formula T-8, and R^1, R^{1x}, and R^{1y} are identical to or different from each other and each represents independently a C1-C5 chain hydrocarbon group having one or more halogen atoms.

[Embodiment 138] The compound described in anyone of Embodiments 1 to 121 or 122 wherein T represents a C1-C5 alkyl group having three or more fluorine atoms, OR^1, $S(O)_vR^1$, $OS(O)_2R^1$, NR^1R^{29}, a group represented by formula T-1, a group represented by formula T-2, a group represented by formula T-3, a group represented by formula T-4, or a group represented by formula T-8, and R^1, R^{1x}, and R^{1y} are identical to or different from each other and each represents independently a C1-C5 alkyl group having three or more fluorine atoms.

[Embodiment 139] The compound described in anyone or more Embodiments 1 to 121 or 122 wherein T represents a C1-C5 chain hydrocarbon group having one or more halogen atoms, OR^1, $S(O)_vR^1$, $OS(O)_2R^1$, NR^1R^{29}, and R^1 represents a C1-C5 chain hydrocarbon group having one or more halogen atoms.

[Embodiment 140] The compound described in anyone of Embodiments 1 to 121 or 122 wherein T represents a C1-C5 alkyl group having three or more fluorine atoms, OR^1, $S(O)_vR^1$, $OS(O)_2R^1$, or NR^1R^{29}, and R^1 represents a C1-C5 alkyl group having three or more fluorine atoms.

[Embodiment 141] The compound described in anyone of Embodiments 1 to 121 or 122 wherein T represents OR^1.

[Embodiment 142] The compound described in anyone of Embodiments 1 to 121 or 122 wherein T represents OR^1, and R^1 represents a C1-C5 chain hydrocarbon group having one or more halogen atoms.

[Embodiment 143] The compound described in anyone of Embodiments 1 to 121 or 122 wherein T represents OR^1, and R^1 represents a C1-C5 alkyl group having three or more fluorine atoms.

[Embodiment 144] The compound described in anyone of Embodiments 1 to 121 or 122 wherein T represents a group represented by formula T-1, a group represented by formula T-2, a group represented by formula T-3, a group represented by formula T-4, or a group represented by formula T-8.

[Embodiment 145] The compound described in anyone of Embodiments 1 to 121 or 122 wherein T represents a group represented by formula T-1, a group represented by formula T-2, a group represented by formula T-3, a group represented by formula T-4, or a group represented by formula T-8, and R^{1x} and R^{1y} are identical to or different from each other and each represents independently a C1-C5 chain hydrocarbon group having one or more halogen atoms.

[Embodiment 146] The compound described in anyone of Embodiments 1 to 121 or 122 wherein T represents a group represented by formula T-1, a group represented by formula T-2, a group represented by formula T-3, a group represented by formula T-4, or a group represented by formula T-8, and R^{1x} and R^{1y} are identical to or different from each other and each represent independently a C1-C5 alkyl group having three or more fluorine atoms.

[Embodiment 147] The compound described in Embodiments 1 to 121 or 122 wherein T represents OR^1, a group represented by formula T-1, a group represented by formula T-2, or a group represented by formula T-8, R^1, R^{1x} and R^{1y} are identical to or different from each other and each represents independently a C1-C5 alkyl group having one or more fluorine atoms, X^1 represents CR^{1a}, X^2 represents CR^{1b}, X^3 represents CR^{1c} and X^5 represents CR^{1e}.

[0014]

Examples of the embodiment of the compound Z of the present invention include the following compounds.

[0015]

[Embodiment 148] A compound Z of the present invention wherein R^2 represents an ethyl group, R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a pyridyl group, a pyrimidinyl group, a pyrazolyl group, a triazolyl group {the phenyl group, the pyridyl group, the pyrimidinyl group, the pyrazolyl group, and the triazolyl group each independently may optionally have one or more substituents selected from Group J}, OR^{12}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, or a halogen atom, R^{4a}, R^{4b} and R^{4c} represent a hydrogen atom, R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms, q is 0 or 1, n is 2, and Q^1 and Q^2 represent an oxygen atom.

[Embodiment 149] The compound described in Embodiment 148 wherein A^1 represents a nitrogen atom, T represents a C1-C5 alkyl group having one or more substituents selected from the group consisting of a cyano group and a halogen atom, OR^1, $S(O)_vR^1$, $OS(O)_2R^1$, NR^1R^{29}, a group represented by formula T-1, a group represented by formula T-2, a group represented by formula T-3, a group represented by formula T-4, or a group represented by formula T-8, and R^1, R^{1x} and R^{1y} are

identical to or different from each other and each represents independently a C1-C5 alkyl group optionally having one or more substituents selected from the group consisting of a cyano group and a halogen atom.

[Embodiment 150] The compound described in Embodiment 148 wherein A^1 represents a nitrogen atom or CH, T represents a C1-C5 alkyl group having one or more substituents selected from the group consisting of a cyano group and a halogen atom, OR^1, $S(O)_vR^1$, $OS(O)_2R^1$, or NR^1R^{29}, and R^1 represents a C1-C5 alkyl group having one or more substituents selected from the group consisting of a cyano group and a halogen atom.

[Embodiment 151] The compound described in Embodiment 148 wherein A^1 represents a nitrogen atom, T represents a group represented by formula T-1, a group represented by formula T-2, a group represented by formula T-3, a group represented by formula T-4, or a group represented by formula T-8, and R^{1x} and R^{1y} are identical to or different from each other and each represents independently a C1-C5 alkyl group optionally having one or more substituents selected from the group consisting of a cyano group and a halogen atom.

[Embodiment 152] The compound described in Embodiment 148 wherein A^1 represents a nitrogen atom, and T represents a C1-C5 alkoxy group having one or more substituents selected from the group consisting of a cyano group and a halogen

atom.

[Embodiment 153] The compound described in Embodiment 148 wherein R^5 represents a C1-C6 alkyl group optionally having one or more halogen atoms.

[Embodiment 154] The compound described in Embodiment 153 wherein A^1 represents a nitrogen atom or CH, T represents a C1-C5 alkyl group having one or more substituents selected from the group consisting of a cyano group and a halogen atom, OR^1, $S(O)_vR^1$, $OS(O)_2R^1$, NR^1R^{29}, a group represented by formula T-1, a group represented by formula T-2, a group represented by formula T-3, a group represented by formula T-4, or a group represented by formula T-8, and R^1, R^{1x} and R^{1y} are identical to or different from each other and each represents independently a C1-C5 alkyl group optionally having one or more substituents selected from the group consisting of a cyano group and a halogen atom.

[Embodiment 155] The compound described in Embodiment 154 wherein A^1 represents a nitrogen atom.

[Embodiment 156] The compound described in Embodiment 153 wherein A^1 represents a nitrogen atom or CH, T represents a C1-C5 alkyl group having one or more substituents selected from the group consisting of a cyano group and a halogen atom, OR^1, $S(O)_vR^1$, $OS(O)_2R^1$, or NR^1R^{29}, and R^1 represents a C1-C5 alkyl group optionally having one or more substituents selected from the group consisting of a cyano group and a

halogen atom.

[Embodiment 157] The compound described in Embodiment 156 wherein A^1 represents a nitrogen atom.

[Embodiment 158] The compound described in Embodiment 153 wherein A^1 represents a nitrogen atom or CH, T represents a group represented by formula T-1, a group represented by formula T-2, a group represented by formula T-3, a group represented by formula T-4, or a group represented by formula T-8, and R^{1x} and R^{1y} are identical to or different from each other and each represents independently a C1-C5 alkyl group optionally having one or more substituents selected from the group consisting of a cyano group and a halogen atom.

[Embodiment 159] The compound described in Embodiment 158 wherein A^1 represents a nitrogen atom.

[Embodiment 160] The compound described in Embodiment 153 wherein A^1 represents a nitrogen atom or CH, and T represents a C1-C5 alkoxy group having one or more substituents selected from the group consisting of a cyano group and a halogen atom.

[Embodiment 161] The compound described in Embodiment 160 wherein A^1 represents a nitrogen atom.

[0016]

Examples of the embodiment of the intermediate compound D include the following compounds.

[0017]

[Embodiment 162] An intermediate compound D wherein R^2 represents a C1-C6 alkyl group optionally having one or more halogen atoms, n is 2, R^W represents a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, T^W represents a halogen atom, a C1-C6 alkylsulfanyl group, a C1-C6 alkylsulfinyl group, a C1-C6 alkylsulfonyl group, and R^{4a}, R^{4b} and R^{4c} each represents a hydrogen atom.

[Embodiment 163] The compound described in Embodiment 162 wherein A^2 represents CH, A^3 represents a nitrogen atom or CH, and A^4 represents a nitrogen atom or CH.

[Embodiment 164] The compound described in Embodiment 162 wherein A^2 represents CH, A^3 represents CH, and A^4 represents a nitrogen atom.

[Embodiment 165] The compound described in Embodiment 162 wherein A^2 represents CH, A^3 represents a nitrogen atom, and A^4 represents CH.

[Embodiment 166] The compound described in Embodiments 162 to 165 wherein R^2 represents an ethyl group, R^W represents a C1-C3 alkyl group, and T^W represents a halogen atom or a C1-C3 alkylsulfanyl group.

[Embodiment 167] The compound described in Embodiments 162 to 165 wherein R^2 represents an ethyl group, R^W represents a C1-C3 alkyl group, and T^W represents a halogen atom.

[0018]

Examples of the embodiment of the intermediate compound

E include the following compounds.

[0019]

[Embodiment 168] An intermediate compound E wherein R^2 represents a C1-C6 alkyl group optionally having one or more halogen atoms, n is 0 or 2, R^W represents a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a benzyl group optionally having one or more substituents selected from Group A, or a hydrogen atom, T^{W2} represents a halogen atom, a C1-C6 alkylsulfanyl group, a C1-C6 alkylsulfinyl group, or a C1-C6 alkylsulfonyl group, R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, or a hydrogen atom, and R^{4a}, R^{4b} and R^{4c} each represents a hydrogen atom.

[Embodiment 169] The compound described in Embodiment 168 wherein A^2 represents CH, A^3 represents a nitrogen atom or CH, and A^4 represents a nitrogen atom or CH.

[Embodiment 170] The compound described in Embodiment 168 wherein A^2 represents CH, A^3 represents CH, and A^4 represents a nitrogen atom.

[Embodiment 171] The compound described in Embodiment 168 wherein A^2 represents CH, A^3 represents a nitrogen atom, and A^4 represents CH.

[Embodiment 172] The compound described in Embodiments 168 to 171 wherein R^2 represents an ethyl group, R^W represents a C1-C3 alkyl group or a benzyl group, T^{W2} represents a

halogen atom or a C1-C3 alkylsulfanyl group, and q is 0 or 1.

[Embodiment 173] The compound described in Embodiments 168 to 171 wherein R^2 represents an ethyl group, R^W represents a C1-C3 alkyl group or a benzyl group, T^{W2} represents a halogen atom, and q is 0 or 1.

[0020]

Examples of the embodiment of the intermediate compound F include the following compounds.

[0021]

[Embodiment 174] An intermediate compound F wherein A^1 represents a nitrogen atom or CH, R^2 represents a C1-C6 alkyl group optionally having one or more halogen atoms, n is 0 or 2, X^L represents a halogen atom, a hydroxy group, a C1-C6 alkylsulfanyl group, a C1-C6 alkylsulfinyl group, a C1-C6 alkylsulfonyl group, R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, a halogen atom or $NR^{11}R^{12}$, and R^{4a}, R^{4b} and R^{4c} each represents a hydrogen atom.

[Embodiment 175] The compound described in Embodiment 175 wherein A^2 represents CH, A^3 represents a nitrogen atom or CH, and A^4 represents a nitrogen atom or CH.

[Embodiment 176] The compound described in Embodiment 174 wherein A^2 represents CH, A^3 represents CH, and A^4 represents a nitrogen atom.

[Embodiment 177] The compound described in Embodiment 174 wherein A^2 represents CH, A^3 represents a nitrogen atom, and A^4 represents CH.

[Embodiment 178] The compound described in Embodiments 174 to 177 wherein R^2 represents an ethyl group, X^L represents a halogen atom, a C1-C3 alkylsulfanyl group or a C1-C3 alkylsulfonyl group, and q is 0 or 1.

[Embodiment 179] The compound described in Embodiments 174 to 177 wherein Q represents an oxygen atom.

[Embodiment 180] The compound described in Embodiments 174 to 177 wherein R^5 represents a C1-C6 chain hydrocarbon group {the C1-C6 chain hydrocarbon group have one or more substituents selected from the group consisting of a halogen atom, a cyclopropyl group, a phenyl group, and a cyclothiazolyl group} or a C3-C6 cycloalkyl group.

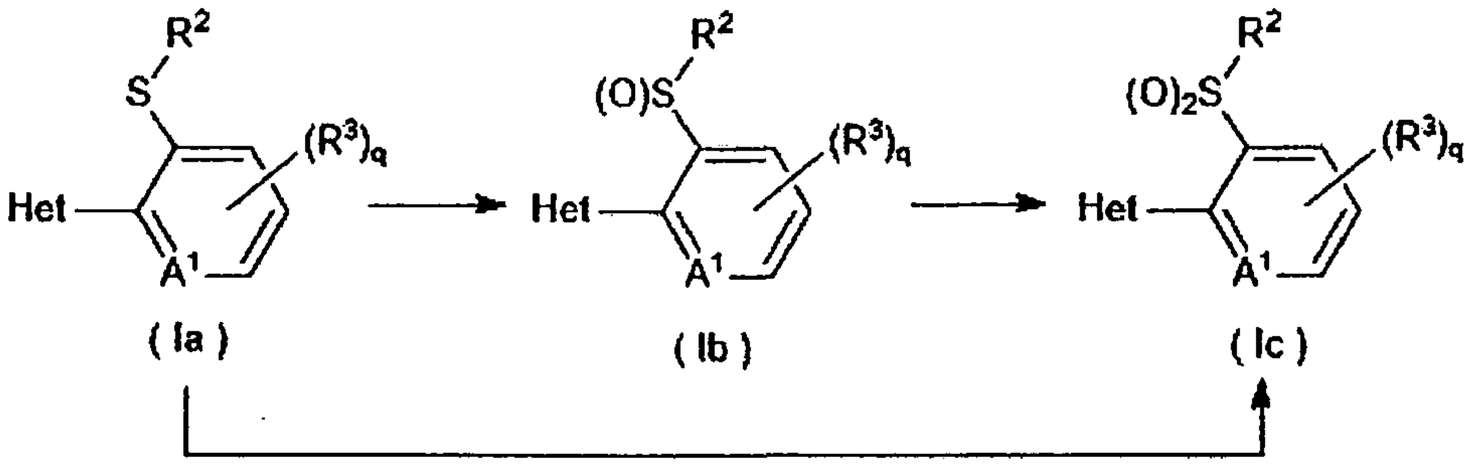
[0022]

Next, a process for preparing the compound Z of the present invention is explained.

[0023]

Process 1

A compound represented by formula (Ib) (hereinafter, referred to as Compound (Ib)) or a compound represented by formula (Ic) (hereinafter, referred to as Compound (Ic)) may be prepared by oxidizing a compound represented by formula (Ia) (hereinafter, referred to as Compound (Ia)).



[wherein the symbols are the same as defined above]

[0024]

First, a process for preparing the Compound (Ib) from the Compound (Ia) is described.

The reaction is usually carried out in a solvent.

Examples of the solvent to be used in the reaction include halogenated hydrocarbons such as dichloromethane and chloroform (hereinafter, collectively referred to as halogenated hydrocarbons); nitriles such as acetonitrile (hereinafter collectively referred to nitriles); alcohols such as methanol and ethanol (hereinafter, collectively referred to as alcohols); acetic acid; water; and mixed solvents thereof.

Examples of the oxidizing agent to be used in the reaction include sodium periodate, m-chloroperoxybenzoic acid (hereinafter, referred to as mCPBA) and hydrogen peroxide. When hydrogen peroxide is used as an oxidizing agent, sodium carbonate or a catalyst may be added as needed.

Examples of the catalyst to be used in the reaction include tungstic acid, and sodium tungstate.

In the reaction, the oxidizing agent is used usually within a range of 1 to 1.2 molar ratio(s), the base is used usually within a range of 0.01 to 1 molar ratio(s), and the catalyst is used usually within a range of 0.01 to 0.5 molar ratios, as opposed to 1 mole of the compound (Ia).

The reaction temperature of the reaction is usually within a range of -20 to 80°C. The reaction period of the reaction is usually within a range of 0.1 to 12 hours.

When the reaction is completed, water is added to reaction mixtures, and the reaction mixtures are extracted with organic solvent(s), and if necessary, the organic layers are washed with an aqueous solution of a reducing agent (such as sodium sulfite, and sodium thiosulfate) and an aqueous solution of a base (such as sodium hydrogen carbonate). The resulting organic layers are worked up (for example, drying and concentration) to give the compound (Ib).

[0025]

Next, a process for preparing the compound (Ic) from the compound (Ib) is described.

The reaction is usually carried out in a solvent. Examples of the solvent to be used in the reaction include halogenated hydrocarbons, nitriles, alcohols, acetic acid, water, and mixed solvents thereof.

Examples of the oxidizing agent to be used in the reaction include mCPBA and peroxide hydrogen. When peroxide

hydrogen is used as an oxidizing agent, a base or a catalyst may be added as needed.

Examples of the base to be used in the reaction include sodium carbonate.

Examples of the catalyst to be used in the reaction include sodium tungstate.

In the reaction, the oxidizing agent is used usually within a range of 1 to 2 molar ratio(s), the base is used usually within a range of 0.01 to 1 molar ratio(s), and the catalyst is used usually within a range of 0.01 to 0.5 molar ratios, as opposed to 1 mole of the compound (Ib).

The reaction temperature of the reaction is usually within a range of -20 to 120°C. The reaction period of the reaction is usually within a range of 0.1 to 12 hours.

When the reaction is completed, water is added to reaction mixtures, and the reaction mixtures are extracted with organic solvent(s), and if necessary, the organic layers are washed with an aqueous solution of a reducing agent (such as sodium sulfite, and sodium thiosulfate) and an aqueous solution of a base (such as sodium hydrogen carbonate). The resulting organic layers are worked up (for example, drying and concentration) to give the compound (Ic).

[0026]

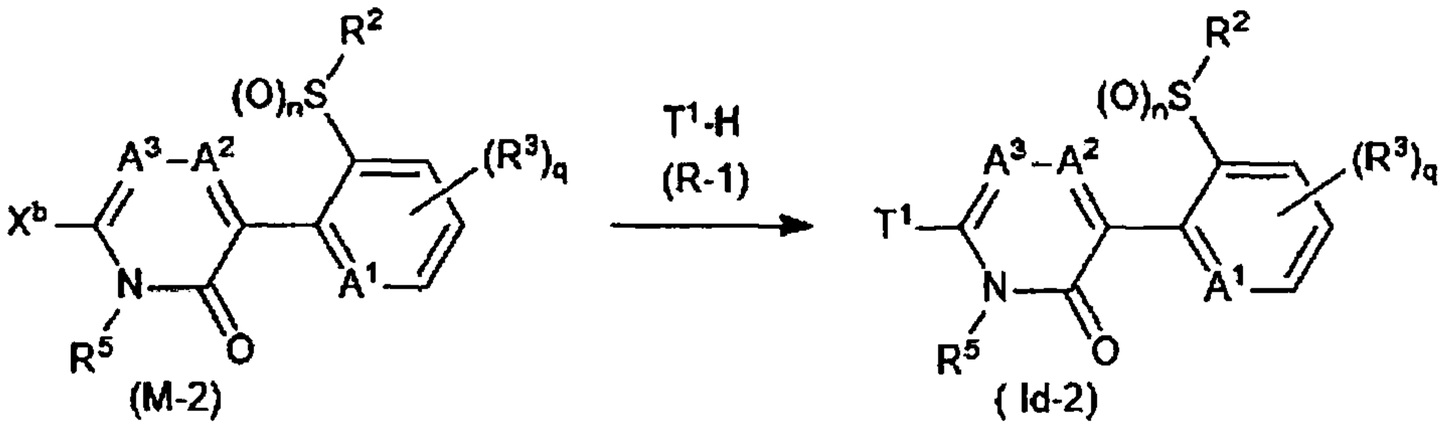
Also, the compound (Ic) may be prepared by reacting the compound (Ia) with an oxidizing agent in one step (one pot).

The reaction may be carried out by using the oxidizing agent in a ratio of usually 2 to 5 molar ratios as opposed to 1 mole of the compound (Ia) according to the method for preparing the compound (Ic) from the compound (Ib).

[0027]

Process 2

A compound represented by formula (Id-2) (hereinafter, referred to as Compound (Id-2)) may be prepared by reacting a compound represented by formula (M-2) (hereinafter, referred to as Compound (M-2)) and a compound represented by formula (R-1) (hereinafter, referred to as Compound (R-1)) in the presence of a base.



[wherein X^b represents a chlorine atom or a bromine atom, T^1 represents OR^1, NR^1R^{29} a group represented by formula T-5, a group represented by formula T-6, a group represented by formula T-7, or a group represented by formula T-8, and the other symbols are the same as defined above.]

The reaction is usually carried out in the presence of a solvent. Examples of the solvents to be used in the reaction include ethers such as tetrahydrofuran (hereinafter,

sometimes referred to as THF) and methyl *tert*-butyl ether (hereinafter, referred to as MTBE) (hereinafter, collectively referred to as ethers); aromatic hydrocarbons such as toluene and xylene (hereinafter, collectively referred to as aromatic hydrocarbons); nitriles; N-methyl pyrrolidone (hereinafter, referred to as NMP); and aprotic polar solvents such as dimethylformamide (hereinafter, referred to as DMF) and dimethyl sulfoxide (hereinafter, referred to DMSO) (hereinafter, collectively referred to as polar aprotic solvent); and mixed solvents thereof.

Examples of the base to be used in the reaction include alkali metal carbonates (such as potassium carbonate) (hereinafter, collectively referred to as alkali metal carbonates); and alkali metal hydrides such as sodium hydride (hereinafter, collectively referred to as alkali metal hydrides).

In the reaction, the compound (R-1) is used usually within a range of 1 to 2 molar ratio(s), and the base is used usually within a range of 1 to 10 molar ratio(s), as opposed to 1 mole of the compound (M-2).

The reaction temperature of the reaction is usually within a range of -20 to 150°C. The reaction period of the reaction is usually within a range of 0.5 to 24 hours.

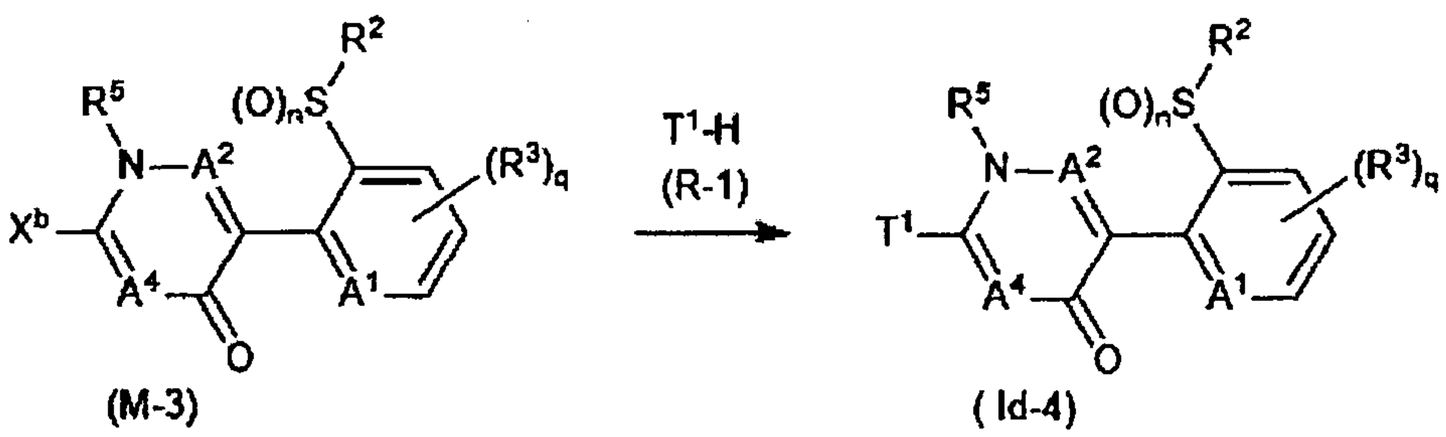
When the reaction is completed, water is added to reaction mixtures, and the reaction mixtures are extracted

with organic solvent(s), and the organic layers are worked up (for example, drying and concentration) to give the compound (Id-2).

[0028]

Process 3

A compound represented by formula (Id-4) may be prepared by reacting a compound represented by formula (M-3) (hereinafter, referred to as Compound (M-3)) with the compound (R-1) in the presence of a base.



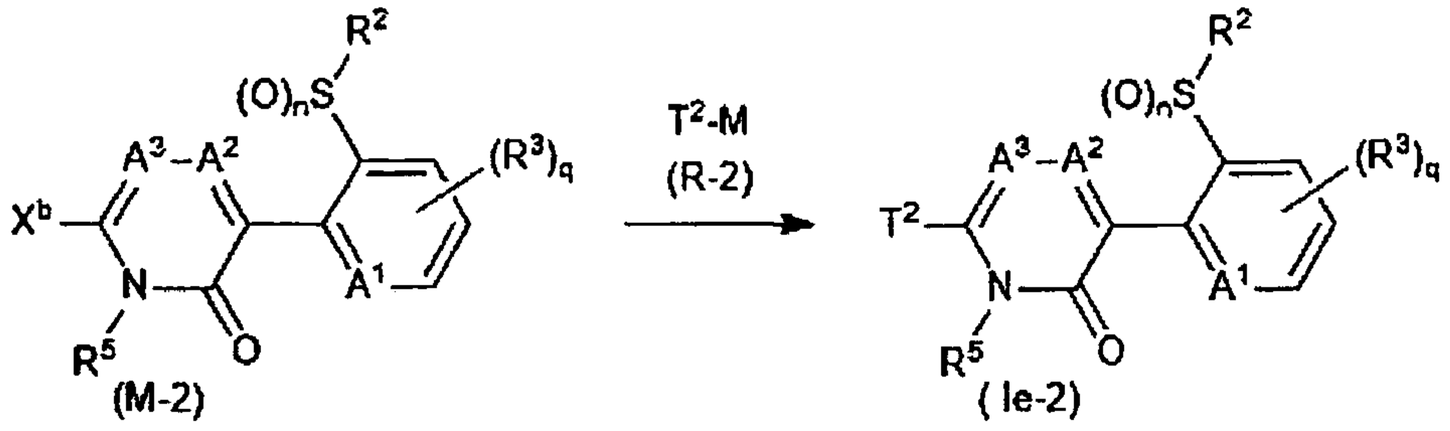
[wherein the symbols are the same as defined above]

The reaction may be carried out according to the method described in Process 2.

[0029]

Process 4

A compound represented by formula (Ie-2) (hereinafter, referred to Compound (Ie-2)) may be prepared by reacting the compound (M-2) with a compound represented by formula (R-2) (hereinafter, referred to Compound (R-2)) in the presence of a metal catalyst.



[wherein T^2 represents a group represented by formula T-1, a group represented by formula T-2, a group represented by formula T-3, a group represented by formula T-4, a group represented by formula T-9, a group represented by formula T-10, a group represented by formula T-11, or a group represented by formula T-12, M represents 9-borabiclo[3.3.1]nonan-9-yl, a borono group, a 4,4,5,5,-tetramethyl-1,3,2-dioxaborolan-2-yl, a tributylstannyl group, ZnCl, MgCl, or MgBr; and the other symbols are the same as defined above]

The reaction is usually carried out in the presence of a solvent. Examples of the solvent to be used in the reaction include ethers, aromatic hydrocarbons, aprotic polar solvents, water, and mixed solvents thereof.

Examples of the metal catalyst to be used in the reaction include palladium catalysts such as tetrakis(triphenylphosphine)palladium(0), 1,1'-bis(diphenylphosphino)ferrocene palladium(II) dichloride, tris(dibenzylideneacetone)dipalladium(0), and palladium(II) acetate; nickel catalysts such as

bis(cyclooctadiene)nickel(0) and nickel(II) chloride; and copper catalyst such as copper(I) iodide and copper(I) chloride.

A ligand, a base and/or an inorganic halogenated compound may be added to the reaction as needed.

Examples of the ligand to be used in the reaction include triphenylphosphine, Xantphos, 2,2'-bis(diphenylphoshino)-1,1'-binaphthyl, 1,1'-bis(diphenylphoshino)ferrocene, 2-dicyclohexylphosphino-2',4',6'-triisopropylbiphenyl, 2-dicyclohexylphosphino-2',6'-dimethoxybiphenyl, 1,2-bis(diphenylphosphino)ethane, 2,2'-bipyridine, 2-aminoethanol, 8-hydroxyquinoline, and 1,10-phenanthroline.

Examples of the base to be used in the reaction include alkali metal hydrides; alkali metal carbonates; and organic bases such as triethylamine, diisopropylethylamine, pyridine, and 4-(dimethylamino)pyridine.

Examples of the inorganic halogenated compounds include alkali metal fluorides such as potassium fluoride, and sodium fluoride; and alkali metal chlorides such as lithium chloride, and sodium chloride.

In the reaction, the compound (R-2) is usually used within a range of 1 to 10 molar ratio(s), the metal catalyst is usually used within a range of 0.01 to 0.5 molar ratios, the ligand is usually used within a range of 0.01 to 1 molar

ratio(s), the base is usually used within a range of 0.1 to 1 molar ratio(s), and the inorganic halogenated compound is usually used within a range of 0.1 to 5 molar ratios, as opposed to 1 mole of the compound (M-2).

The reaction temperature is usually within a range of -20 to 200°C. The reaction period of the reaction is usually within a range of 0.1 to 24 hours.

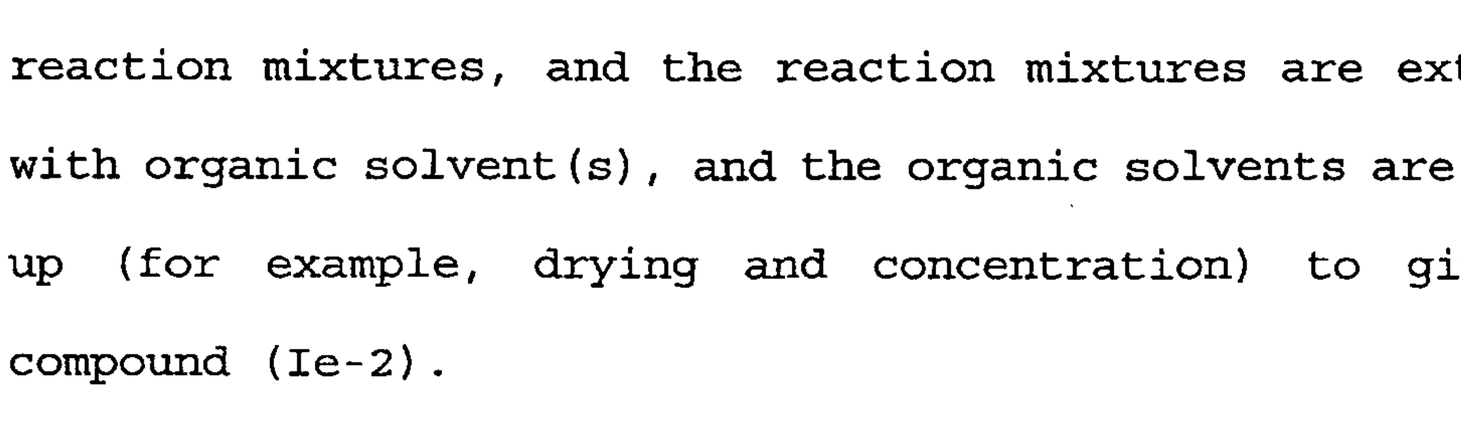
When the reaction is completed, water is added to the reaction mixtures, and the reaction mixtures are extracted with organic solvent(s), and the organic solvents are worked up (for example, drying and concentration) to give the compound (Ie-2).

The compound (R-2) is a commercially available compound, or can be prepared by using a known method.

[0030]

Process 5

A compound represented by formula (Ie-4) may be prepared by reacting the compound (M-3) with the compound (R-2) in the presence of a metal catalyst.



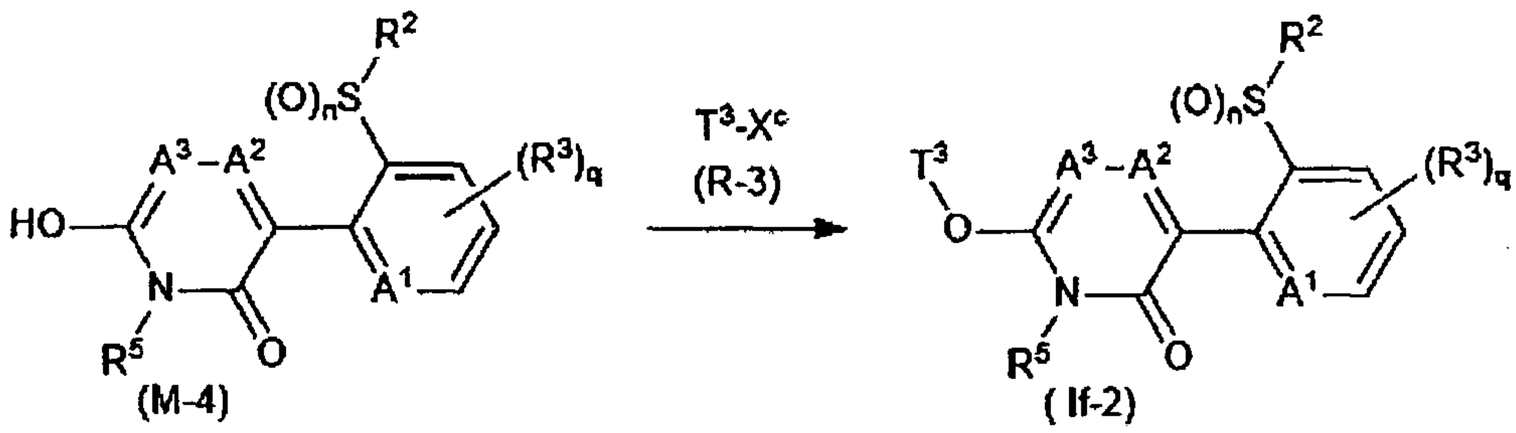
[wherein the symbols are the same as defined above.]

The reaction may be carried out according to the method described in Process 4.

[0031]

Proces 6

A compound represented by formula (If-2) may be prepared by reacting a compound represented by formula (M-4) (hereinafter, referred to as Compound (M-4)) with a compound represented by formula (R-3) (hereinafter, referred to as Compound (R-3)) in the presence of a base.



[wherein X^c represents a chlorine atom, a bromine atom or an iodine atom, T^3 represents a C1-C10 chain hydrocarbon group having one or more halogen atoms, a (C1-C5 alkoxy)C2-C5 alkyl group having one or more halogen atoms, a (C1-C5 alkylsulfanyl)C2-C5 alkyl group having one or more halogen atoms, a (C1-C5 alkylsulfinyl)C2-C5 alkyl group having one or more halogen atoms, a (C1-C5 alkylsulfonyl)C2-C5 alkyl group having one or more halogen atoms, a (C3-C7 cycloalkyl)C1-C3 alkyl group having one or more substituents selected from Group G, a C3-C7 cycloalkyl group having one or more substituents selected from Group G, or $S(O)_2R^1$, and

the other symbols are the same as defined above.]

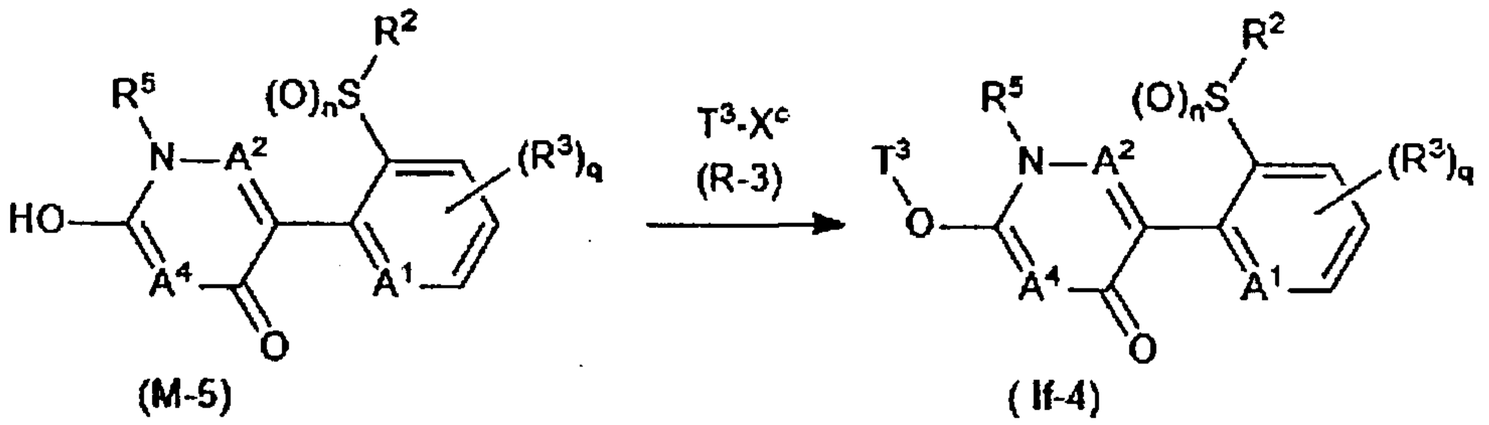
The reaction may be carried out by using the compound (M-4) in place of the compound (R-1), and the compound (R-3) in place of the compound (M-2) according to the method described in Process 2.

The compound (R-3) is a commercially available compound, or can be prepared by using a known method.

[0032]

Process 7

A compound represented by formula (If-4) may be prepared by reacting a compound represented by formula (M-5) (hereinafter, referred to Compound (M-5)) with the compound (R-3) in the presence of a base.



(M-5) (If-4)

[wherein the symbols are the same as defined above.]

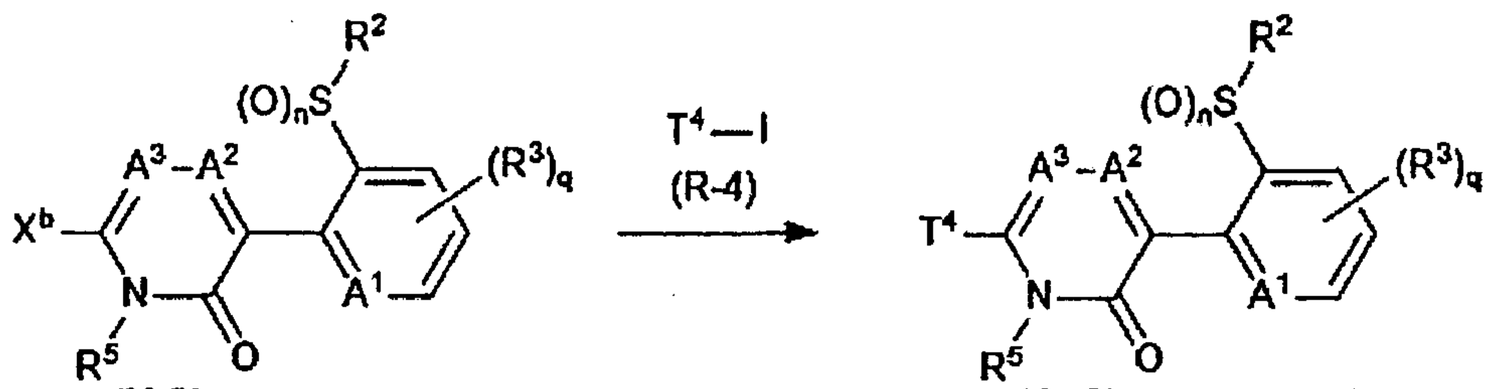
The reaction may be carried out according to the method described in Process 6.

[0033]

Process 8

A compound represented by formula (Ig-2) (hereinafter, referred to as Compound (Ig-2)) may be prepared by reacting

the compound (M-2) with a compound represented by formula (R-4) (hereinafter, referred to as Compound (R-4)) in the presence of a copper.



(M-2) (Ig-2)

[wherein, T^4 represents a C1-C10 chain hydrocarbon group having one or more halogen atoms, a (C1-C5 alkoxy)C2-C5 alkyl group having one or more halogen atoms, a (C1-C5 alkylsulfanyl)C2-C5 alkyl group having one or more halogen atoms, a (C1-C5 alkylsulfinyl)C2-C5 alkyl group having one or more halogen atoms, a (C1-C5 alkylsulfonyl)C2-C5 alkyl group having one or more halogen atoms, a (C3-C7 cycloalkyl)C1-C3 alkyl group having one or more substituents selected from Group G, or a C3-C7 cycloalkyl group having one or more substituents selected from Group G, and the other symbols are the same as defined above.]

The compound (R-4) is a commercially available compound, or can be prepared by using a known method.

The reaction is usually carried out in the presence of a solvent. Examples of the solvent to be used in the reaction include aromatic hydrocarbons, aprotic polar solvents, and mixed solvents thereof.

In the reaction, the compound (R-4) is usually used within a range of 1 to 10 molar ratio(s), and the copper is usually used within a range of 1 to 10 molar ratio(s), as opposed to 1 mole of the compound (M-2).

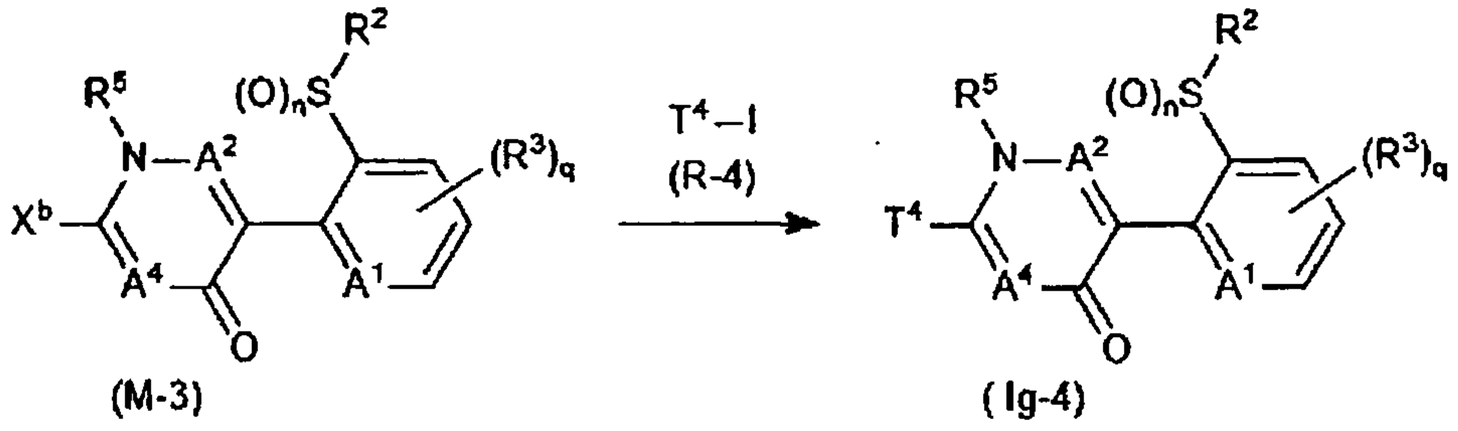
The reaction temperature is usually within a range of 40 to 200°C. The reaction period of the reaction is usually within a range of 0.1 to 24 hours.

When the reaction is completed, water is added to the reaction mixtures, and the reaction mixtures are extracted with organic solvent(s), and the organic solvents are worked up (for example, drying and concentration) to give the compound (Ig-2).

[0034]

Process 9

The compound represented by formula (Ig-4) may be prepared by reacting the compound (M-3) with the compound (R-4) in the presence of a copper.



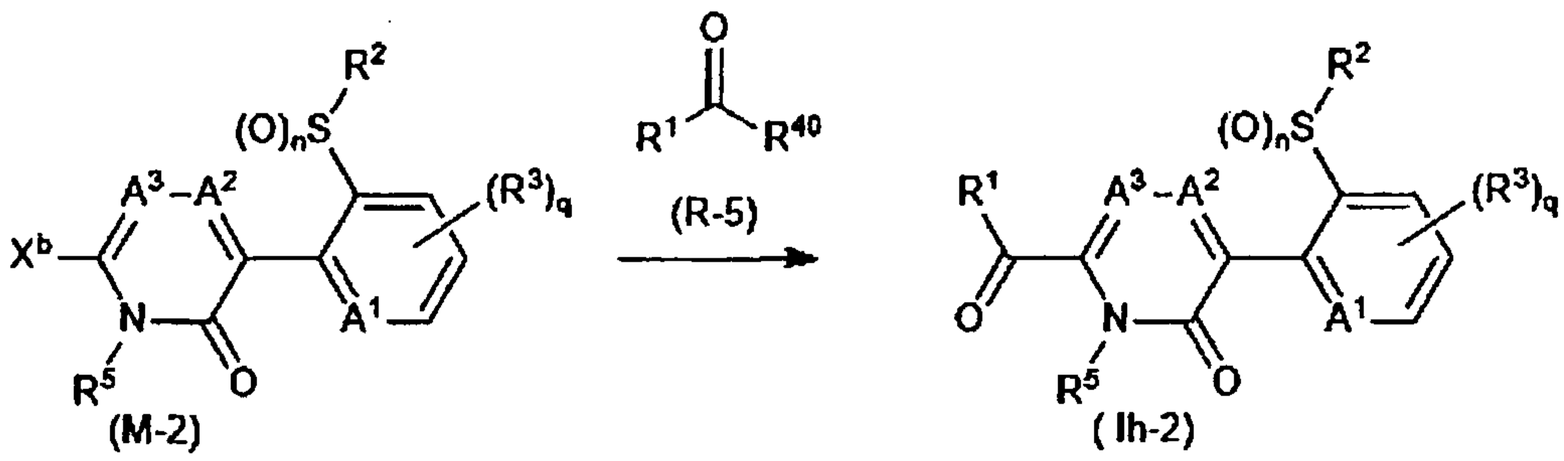
[wherein the symbols are the same as defined above.]

The reaction may be carried out according to the method described in Process 8.

[0035]

Process 10

A compound represented by formula (Ih-2) (hereinafter, referred to Compound (Ih-2)) may be prepared by reacting the compound (M-2) with a compound represented by formula (R-5) (hereinafter, referred to as Compound (R-5)) in the presence of a base.



[wherein, R^{40} represents a methoxy group, an ethoxy group, a phenoxy group, or $N(CH_3)OCH_3$, and the other symbols are the same as defined above.]

The compound (R-5) is a commercially available compound, or can be prepared by using a known method.

The reaction is usually carried out in the presence of a solvent. Examples of the solvent to be used in the reaction include ethers, and aromatic hydrocarbons.

Examples of the base to be used in the reaction include butyl lithium, lithium diisopropylamide, lithium tetramethylpiperidide, lithium bis(trimethylsilyl)amide and the like.

In the reaction, the compound (R-5) is usually used

within a range of 1 to 10 molar ratio(s), and the base is usually used within a range of 1.0 to 2.0 molar ratio(s), as opposed to 1 mole of the compound (M-2).

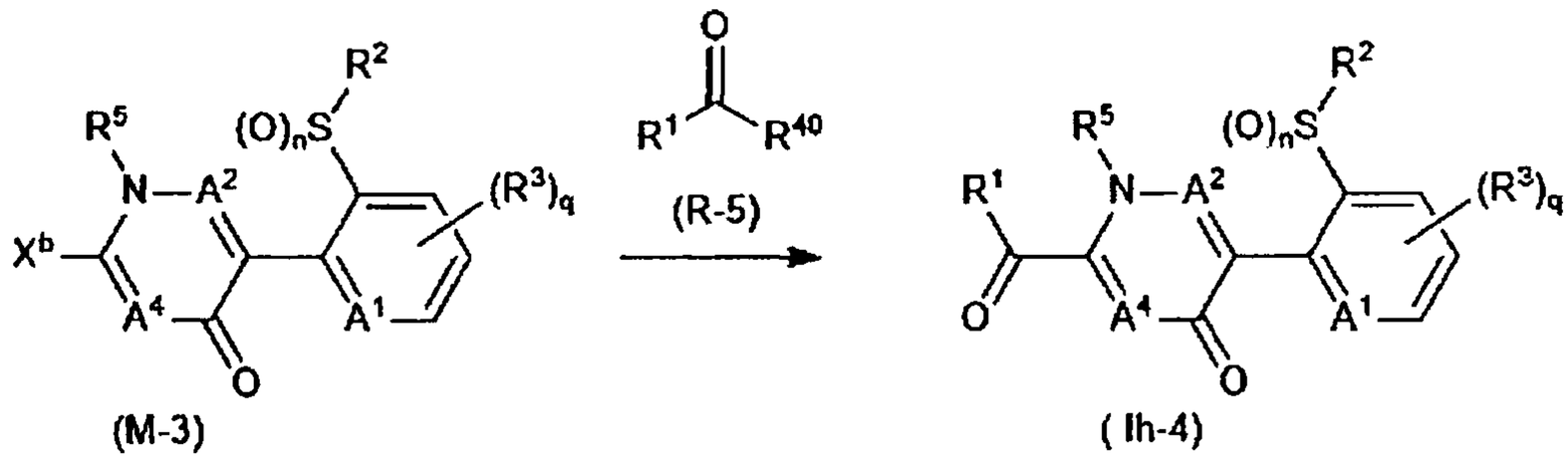
The reaction temperature is usually within a range of -100 to 60°C. The reaction period of the reaction is usually within a range of 0.1 to 24 hours.

When the reaction is completed, water is added to the reaction mixtures, and the reaction mixtures are extracted with organic solvent(s), and the organic solvents are worked up (for example, drying and concentration) to give the compound (Ih-2).

[0036]

Process 11

A compound represented by formula (Ih-4) may be prepared by reacting the compound (M-3) with the compound (R-5) in the presence of a base.



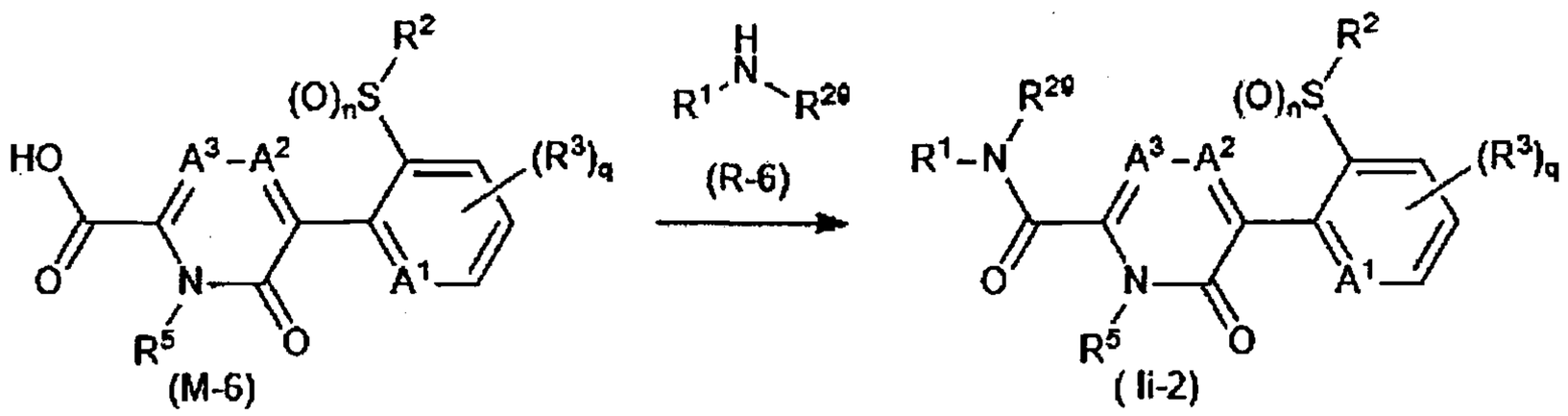
[wherein the symbols are the same as defined above.]

The reaction may be carried out according to the method described in Process 10.

[0037]

Process 12

A compound represented by formula (Ii-2) (hereinafter, referred to as Compound (Ii-2)) may be prepared by reacting a compound represented by formula (M-6) (hereinafter, referred to as Compound (M-6)) with a compound represented by formula (R-6) (hereinafter, referred to as Compound (R-6)) in the presence of a condensing agent.



[wherein the symbols are the same as defined above.]

The compound (R-6) is a commercially available compound, or can be prepared by using a known method.

The reaction is usually carried out in a solvent. Examples of the solvent to be used in the reaction include ethers, halogenated hydrocarbons, aromatic hydrocarbons, aprotic polar solvents, and mixed solvents thereof.

Examples of the condensing agent to be used in the reaction include 1-ethyl-3-(3-dimethylaminopropyl)carbodiimide hydrochloride and the like.

A base may be added to the reaction as needed, and examples of the bases include organic bases.

In the reaction, the compound (R-6) is used usually

within a range of 1 to 10 molar ratio(s), the condensing agent is used usually within a range of 1 to 5 molar ration(s), and the base is used usually within a range of 0.1 to 10 molar ratios, as opposed to 1 mole of the compound (M-6).

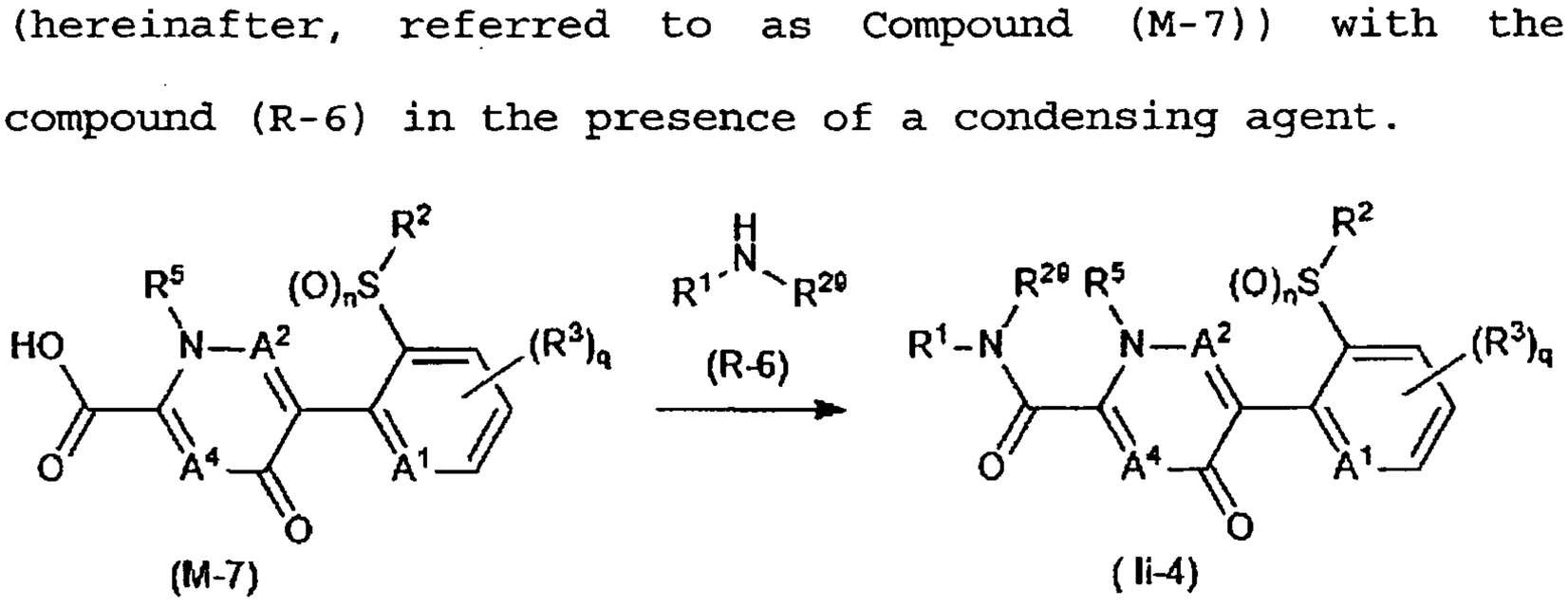
The reaction temperature of the reaction is usually within a range of -20 to 120°C. The reaction period of the reaction is usually within a range of 0.1 to 24 hours.

When the reaction is completed, water is added to the reaction mixtures, and the reaction mixtures are extracted with organic solvent(s), and the organic solvents are worked up (for example, drying and concentration) to give the compound (Ii-2).

[0038]

Process 13

A compound represented by formula (Ii-4) may be prepared by reacting a compound represented by formula (M-7) (hereinafter, referred to as Compound (M-7)) with the compound (R-6) in the presence of a condensing agent.



[wherein the symbols are the same as defined above.]

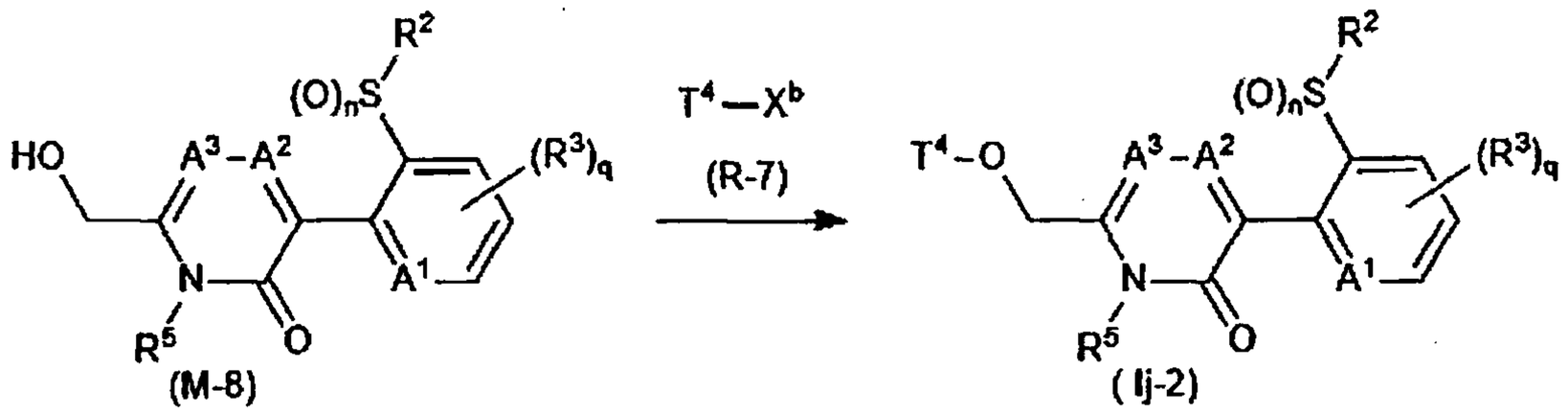
The reaction may be carried out according to the method

described in Process 12.

[0039]

Process 14

A compound represented by formula (Ij-2) (hereinafter, referred to as Compound (Ij-2)) may be prepared by reacting a compound represented by formula (M-8) (hereinafter, referred to as Compound (M-8)) with a compound represented by formula (R-7) (hereinafter, referred to as Compound (R-7)) in the presence of a base.



[wherein the symbols are the same as defined above.]

The compound (R-7) is a commercially available compound, or can be prepared by a known method.

The reaction is usually carried out in a solvent. Examples of the solvent to be used in the reaction include ethers, aromatic hydrocarbons, aprotic polar solvents, and mixed solvents thereof.

Examples of the base to be used in the reaction include organic bases, alkali metal hydrides, and alkali metal carbonates.

In the reaction, the compound (R-7) is used usually

within a range of 1 to 10 molar ratio(s), and the base is used usually within a range of 0.1 to 5 molar ratios, as opposed to 1 mole of the compound (M-8).

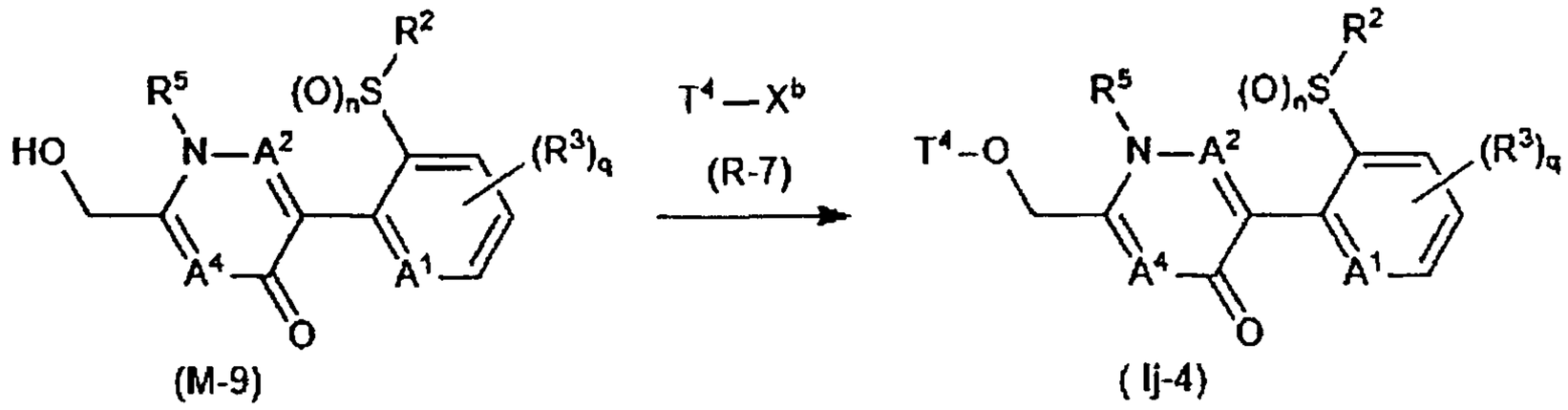
The reaction temperature of the reaction is usually within a range of -20 to 120°C. The reaction period of the reaction is usually within a range of 0.1 to 24 hours.

When the reaction is completed, water is added to the reaction mixtures, and the reaction mixtures are extracted with organic solvent(s), and the organic solvents are worked up (for example, drying and concentration) to give the compound (Ij-2).

[0040]

Process 15

A compound represented by formula (Ij-4) may be prepared by reacting a compound represented by formula (M-9) (hereinafter, referred to as Compound (M-9)) with the compound (R-7) in the presence of a base.



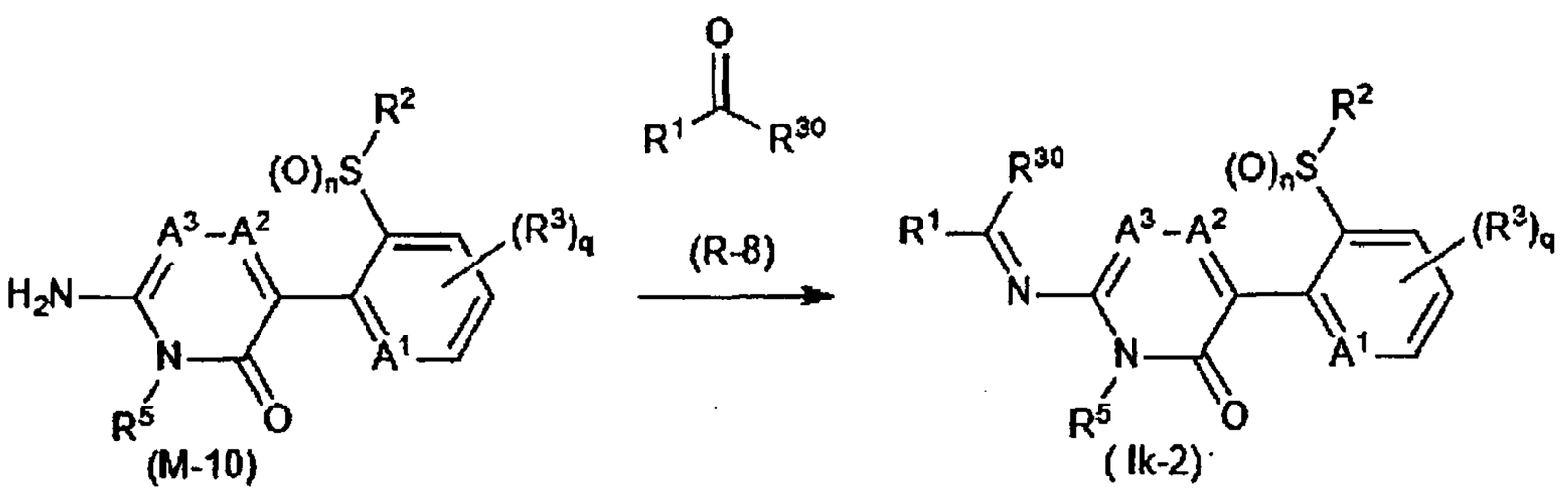
[wherein the symbols are the same as defined above.]

The reaction may be carried out according to the method described in Process 14.

[0041]

Process 16

A compound represented by formula (Ik-2) (hereinafter, referred to as Compound (Ik-2)) may be prepared by reacting a compound represented by formula (M-10) (hereinafter, referred to as Compound (M-10)) with a compound represented by formula (R-8) (hereinafter, referred to as Compound (R-8)).



[wherein the symbols are the same as defined above.]

The compound (R-8) is a commercially available compound, or can be prepared by using a known method.

The reaction is usually carried out in the presence of a solvent. Examples of the solvent to be used in the reaction include ethers, halogenated hydrocarbons, aromatic hydrocarbons, aprotic polar solvents, and mixed solvents thereof.

An acid may be added to the reaction as needed, and examples of the acid include p-toluenesulfonic acid and 10-camphorsulfonic acid and the others.

In the reaction, the compound (R-8) is used usually within a range of 1 to 10 molar ratio(s), and the acid is used usually within a range of 0.1 to 10 molar ratios, as opposed to 1 mole of the compound (M-10).

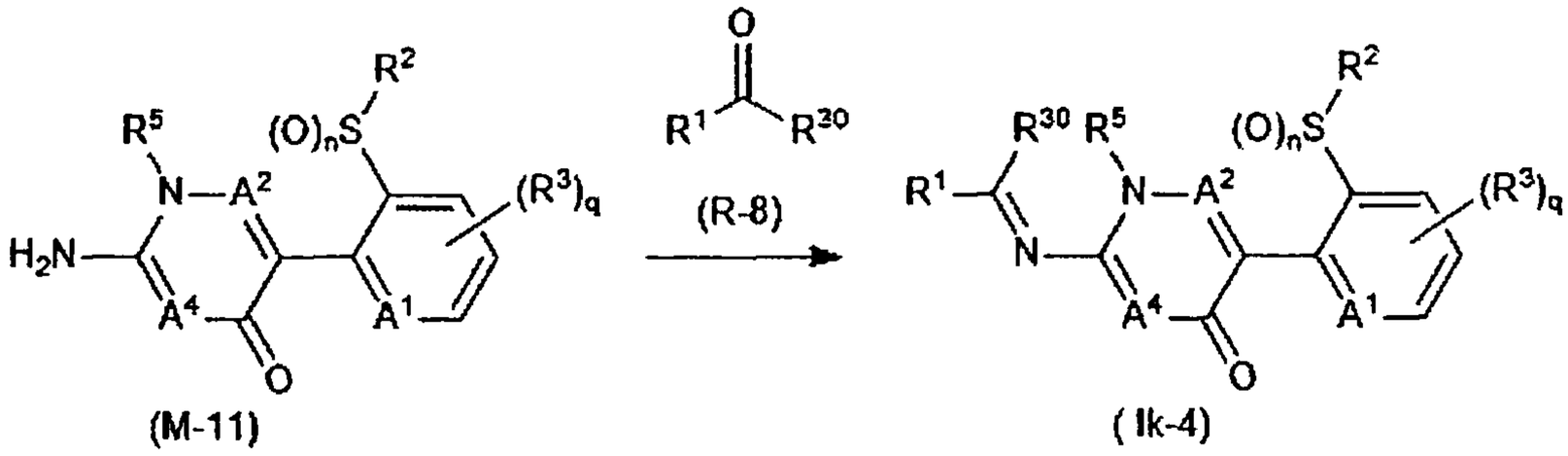
The reaction temperature is usually within a range of -20 to 180°C. The reaction period of the reaction is usually within a range of 0.1 to 24 hours.

When the reaction is completed, water is added to the reaction mixtures, and the reaction mixtures are extracted with organic solvent(s), and the organic solvents are worked up (for example, drying and concentration) to give the compound (Ik-2).

[0042]

Process 17

The compound (Ik-4) may be prepared by reacting a compound represented by formula (M-11) (hereinafter, referred to as Compound (M-11)) with the compound (R-8).



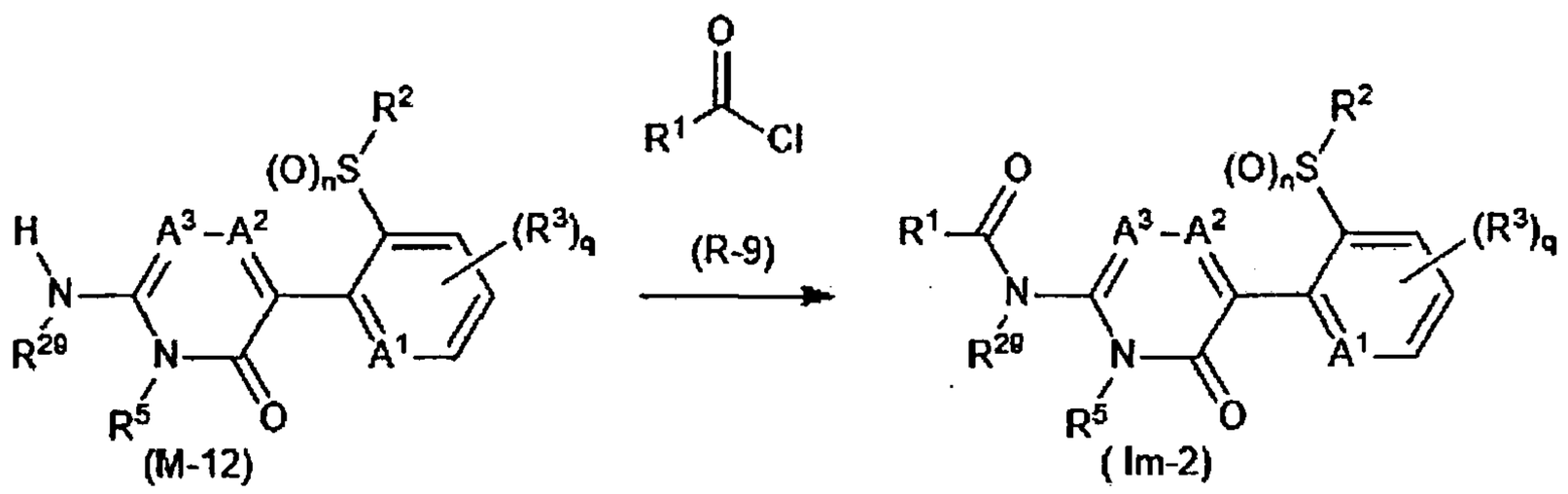
[wherein the symbols are the same as defined above.]

The reaction may be carried out according to the method described in Process 16.

[0043]

Process 18

A compound represented by formula (Im-2) (hereinafter, referred to as Compound (Im-2)) may be prepared by reaction a compound represented by formula (M-12) (hereinafter, referred to as Compound (M-12)) with a compound represented by formula (R-9) (hereinafter, referred to as Compound (R-9)).



[wherein the symbols are the same as defined above.]

The compound (R-9) is a commercially available compound, or can be prepared by using a known method.

The reaction is usually carried out in the presence of a solvent. Examples of the solvent to be used in the reaction include ethers, halogenated hydrocarbons, aromatic hydrocarbons, aprotic polar solvents, and mixed solvents thereof.

A base may be added to the reaction as needed, and examples of the base include organic bases.

In the reaction, the compound (R-9) is used usually

within a range of 1 to 10 molar ratio(s), and the base is used usually within a range of 0.1 to 10 molar ratios, as opposed to 1 mole of the compound (M-12).

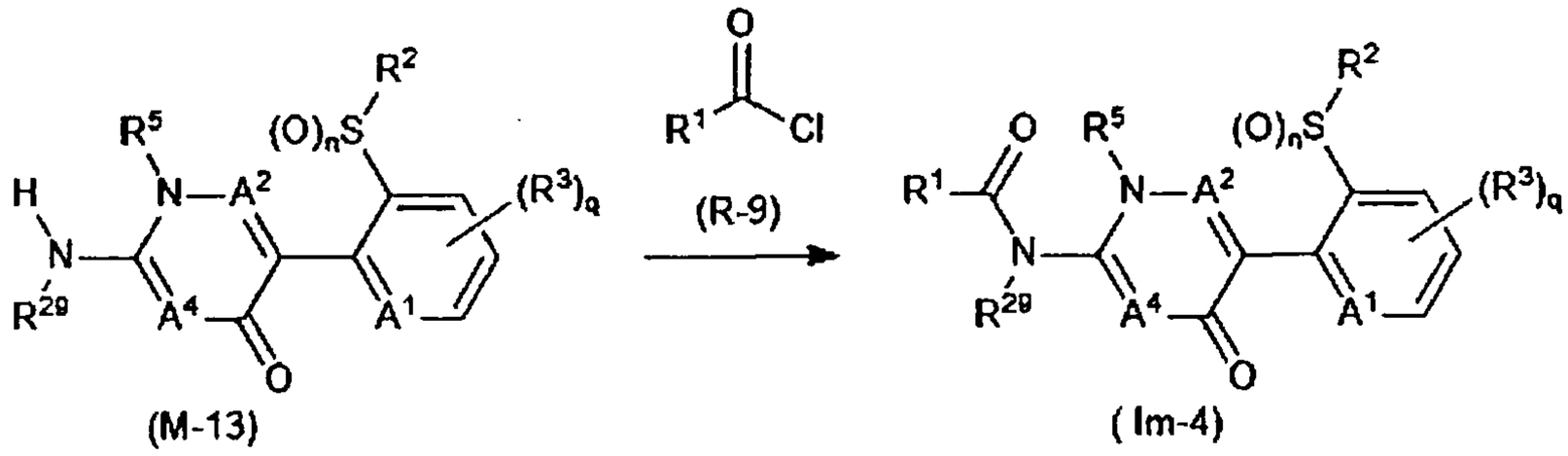
The reaction temperature is usually within a range of -20 to 120°C. The reaction period of the reaction is usually within a range of 0.1 to 24 hours.

When the reaction is completed, water is added to the reaction mixtures, and the reaction mixtures are extracted with organic solvent(s), and the organic solvents are worked up (for example, drying and concentration) to give the compound (Im-2).

[0044]

Process 19

The compound represented by formula (Im-4)) may be prepared by reacting a compound represented by formula (M-13) (hereinafter, referred to as Compound (M-13)) with the compound (R-9).



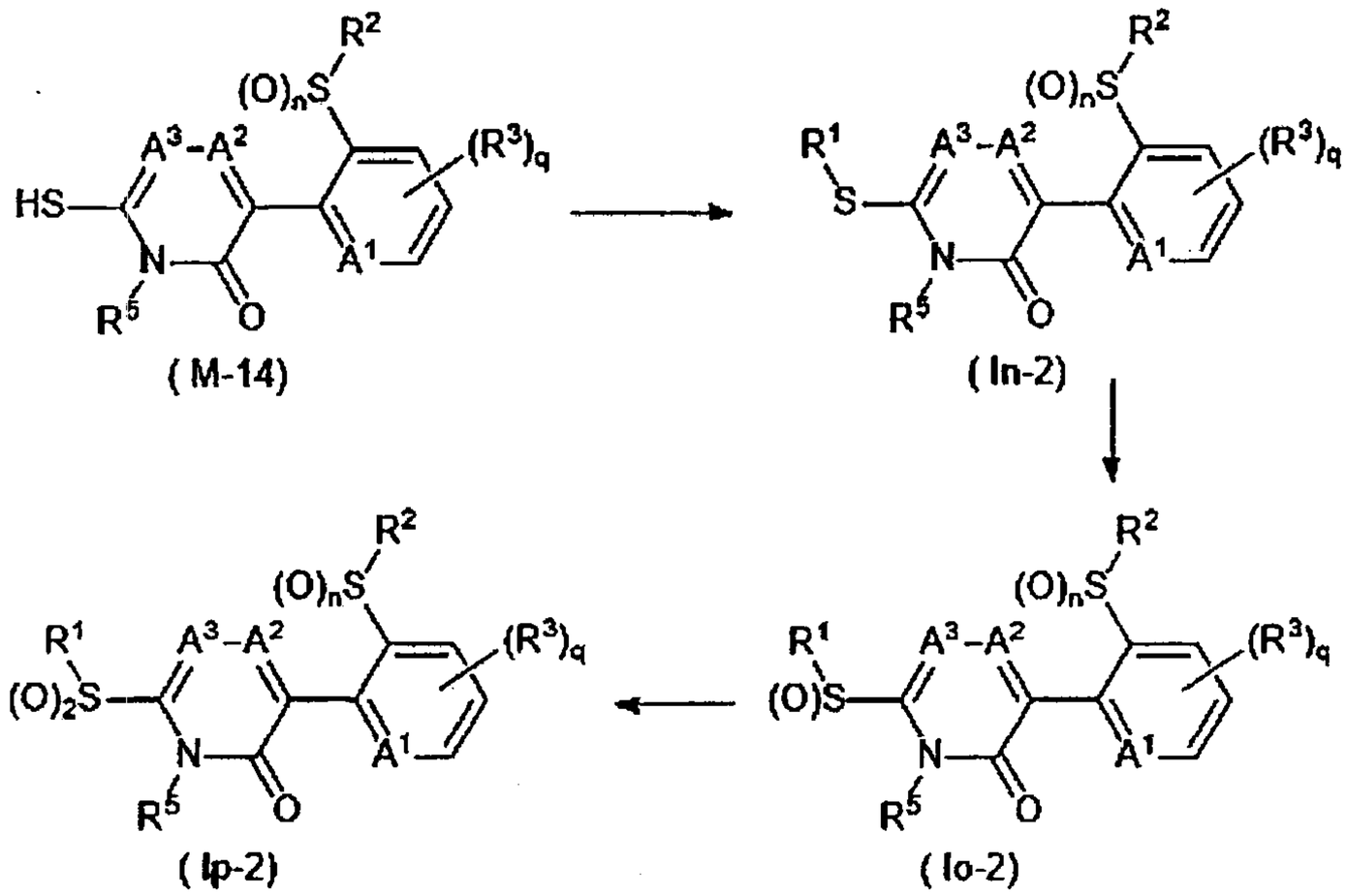
[wherein the symbols are the same as defined above.]

The reaction may be carried out according to the method described in Process 18.

[0045]

Process 20

A compound represented by formula (In-2) (hereinafter, referred to as Compound (In-2)), a compound represented by formula (Io-2) (hereinafter, referred to as Compound (Io-2)) and a compound represented by formula (Ip-2) (hereinafter, referred to as Compound (Ip-2)) may be prepared according to the following method.



[wherein the symbols are the same as defined above.]

First, the process for preparing the compound (In-2) is described.

The compound (In-2)) may be prepared by using a compound represented by formula (M-14) (hereinafter, referred to as Compound (M-14)) in place of the compound (M-8) according to the method described in Process 14.

[0046]

Next, the process for preparing the compound (Io-2) is described.

The compound (Io-2) can be prepared by using the compound (In-2) in place of the compound (Ia) according to the method described in Process 1.

[0047]

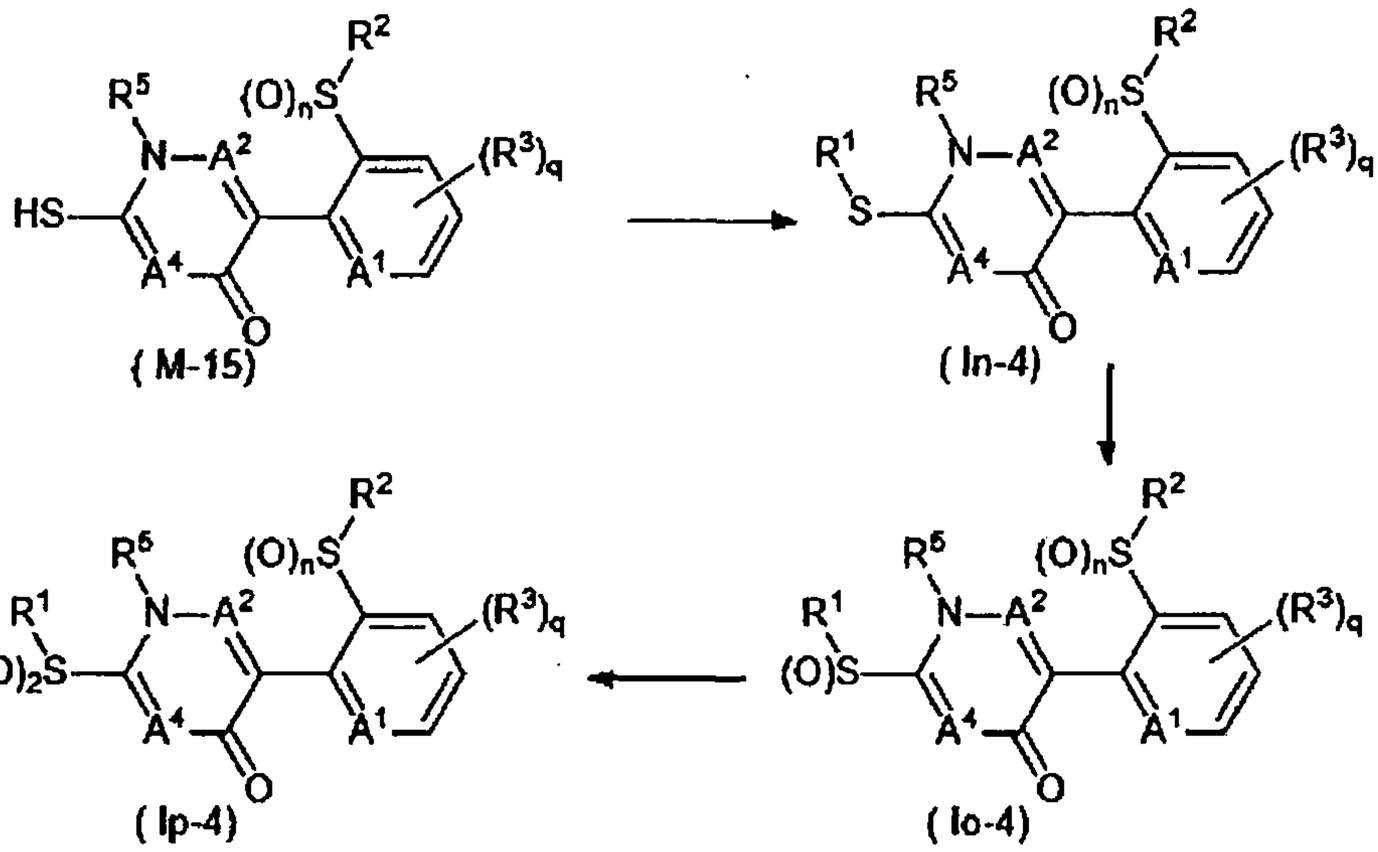
Next, the process for preparing the compound (Ip-2) is described.

The compound (Ip-2) can be prepared by using the compound (Io-2) in place of the compound (Ib) according to the method described in Process 1.

[0048]

Process 21

A compound represented by formula (In-4) (hereinafter, referred to as Compound (In-4)), a compound represented by formula (Io-4) (hereinafter, referred to as Compound (Io-4)), and a compound represented by formula (Ip-4) (hereinafter referred to as Compound (Ip-4)) can be prepared according to the following method.



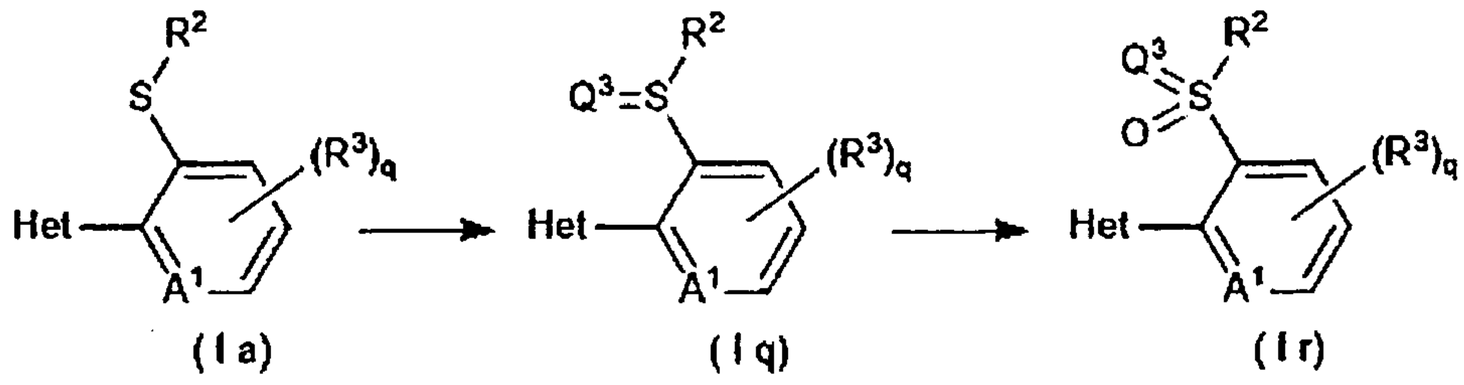
[wherein the symbols are the same as defined above.]

The reaction may be carried out according to the method described in Process 20.

[0049]

Process 22

A compound represented by formula (Iq) (hereinafter, referred to as Compound (Iq)) and a compound represented by formula (Ir) (hereinafter, referred to as Compound (Ir)) may be prepared according to the following scheme.



[wherein Q^3 represents N-CN, N-NO_2, NR^5, N-C(O)R^5 or N-C(O)OR^{15}, and the other symbols are the same as defined above.]

The compound (Iq) may be prepared by using the compound

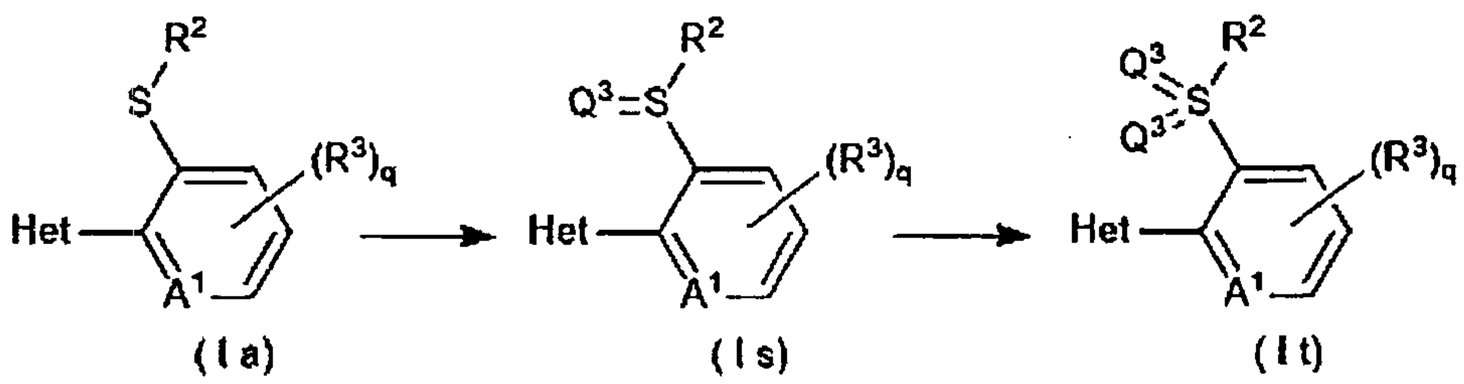
(Ia) according to the method described in Organic Letters, 9(19), 3809, 2007.

The compound (Ir) may be prepared by using the compound (Iq) according to the method described in Process 1 for preparing the compound (Ib) from the compound (Ia).

[0050]

Process 23

A compound represented by formula (Is) (hereinafter, referred to as Compound (Is)) and a compound represented by formula (It) (hereinafter, referred to as Compound (It)) may be prepared according to the following scheme.



[wherein the symbols are the same as defined above.]

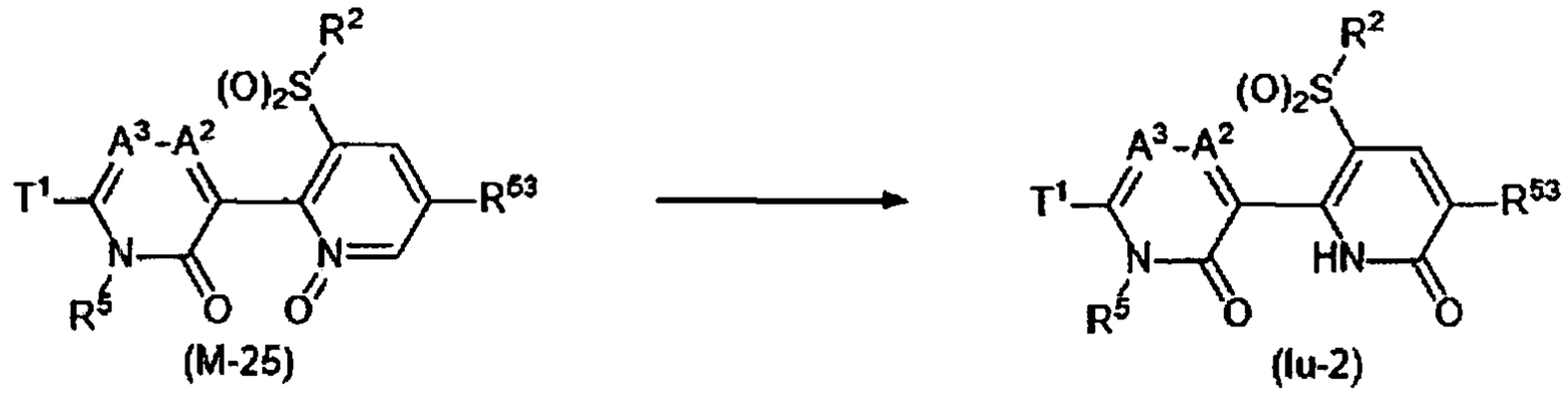
The compound (Is) may be prepared by using the compound (Ia), or the compound (It) may be prepared by using the compound (Is), each according to the method described in Russian Journal of Organic Chemistry, Vol, No. 5, 778-779, 2013.

[0051]

Process 24

A compound represented by formula (Iu-2) (hereinafter, referred to as Compound (Iu-2)) may be prepared by reacting

a compound represented by formula (M-25) (hereinafter, referred to as Compound (M-25)) with trifluoroacetic anhydride in the presence of organic bases. Also, the compound (Iu-2) may be prepared by reacting the compound (M-25) with acetic anhydride, followed by reacting with methanol.



[wherein, R^{53} represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group optionally having one or more substituents selected from Group H, or a five or six membered aromatic heterocyclic group optionally having one or more substituents selected from Group H, and the other symbols are the same as defined above.]

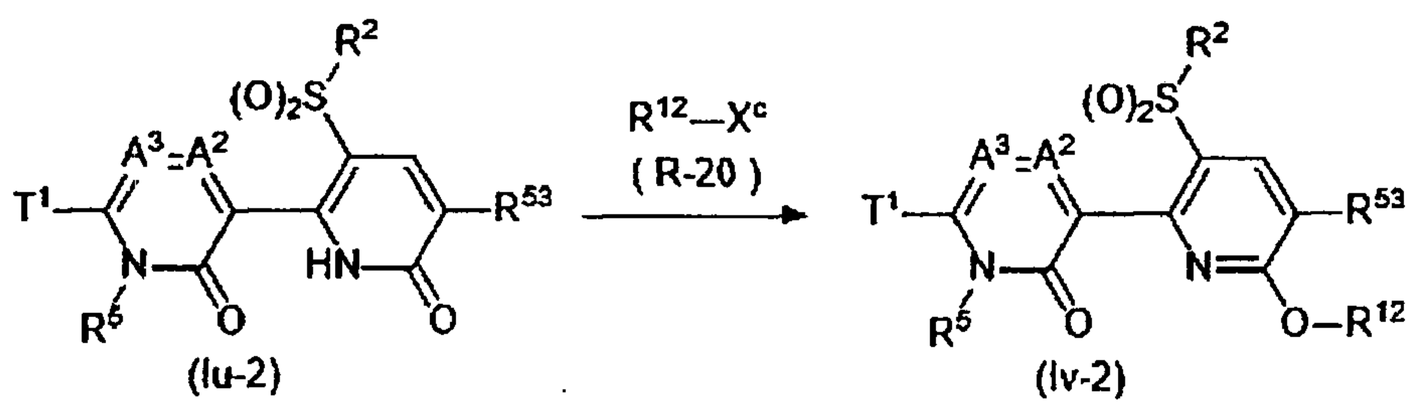
The reaction may be carried out according to the method described in WO 2009/076387.

[0052]

Process 25

A compound represented by formula (Iv-2) may be prepared by reacting the compound (Iu-2) with a compound represented by formula (R-20) (hereinafter, referred to as Compound (R-

20)) in the presence of a base.



[wherein the symbols are the same as defined above.]

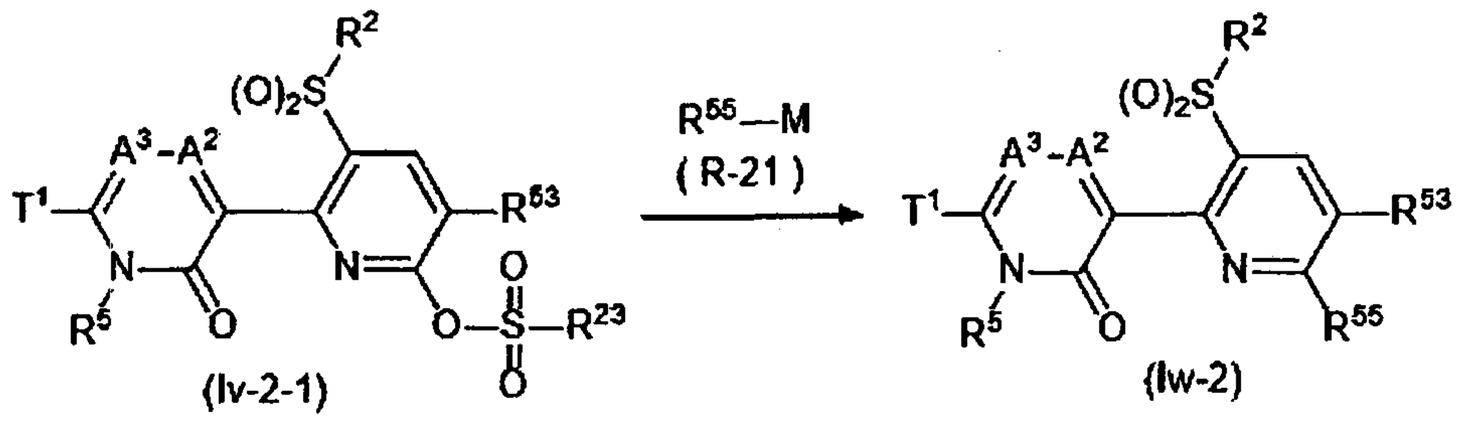
The reaction may be carried out by using the compound (Iu-2) in place of the compound (M-4) and using the compound (R-20) in place of the compound (R-3) according to the method described in Process 6.

The compound (R-20) is a commercially available compound, or can be prepared by using a known method.

[0053]

Process 26

A compound represented by formula (Iw-2) can be prepared by reacting a compound represented by formula (Iv-2-1) (hereinafter, referred to as Compound (Iv-2-1)) and a compound represented by formula (R-21) (hereinafter, referred to as Compound (R-21)) in the presence of metal catalyst.



[wherein, R^{55} represents a C1-C6 chain hydrocarbon group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group optionally having one or more substituents selected from Group H, or a five or six membered aromatic heterocyclic group optionally having one or more substituents selected from Group H, and the other symbols are the same as defined above.]

The reaction may be carried out by using the compound (Iv-2-1) in place of the compound (M-2) and using the compound (R-21) in place of the compound (R-2) according to the method described in Process 4.

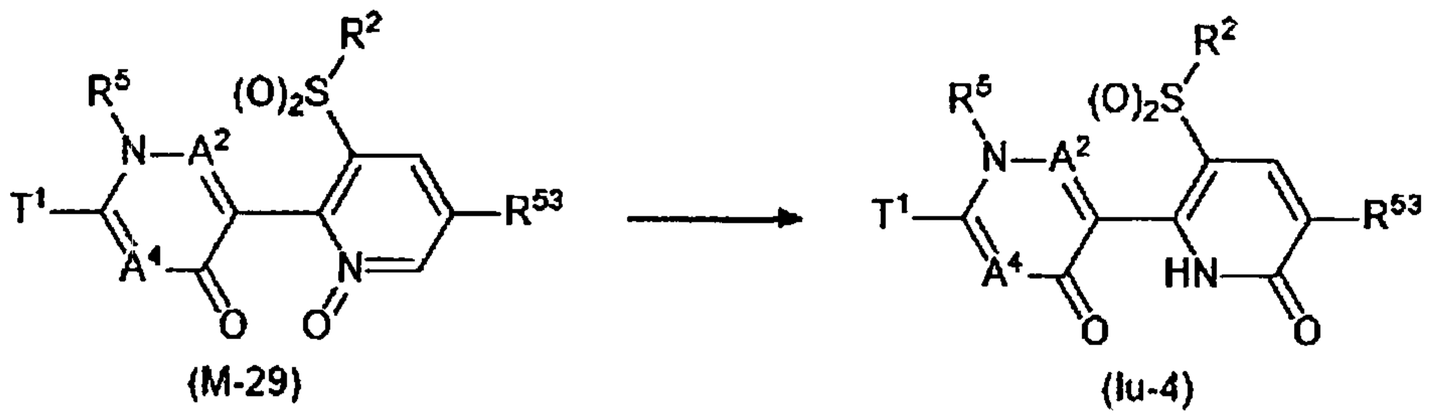
The compound (R-21) is a commercially available compound, or can be prepared by using a known method.

[0054]

Process 27

A compound represented by formula (Iu-4) (hereinafter, referred to as Compound (Iu-4)) may be prepared by reacting a compound represented by formula (M-29) (hereinafter,

referred to as Compound (M-29)) with trifluroacetic anhydride in the presence of organic bases. Also, the compound (Iu-4) may be prepared by reacting the compound (M-29) with acetic anhydride, followed by reacting with methanol.



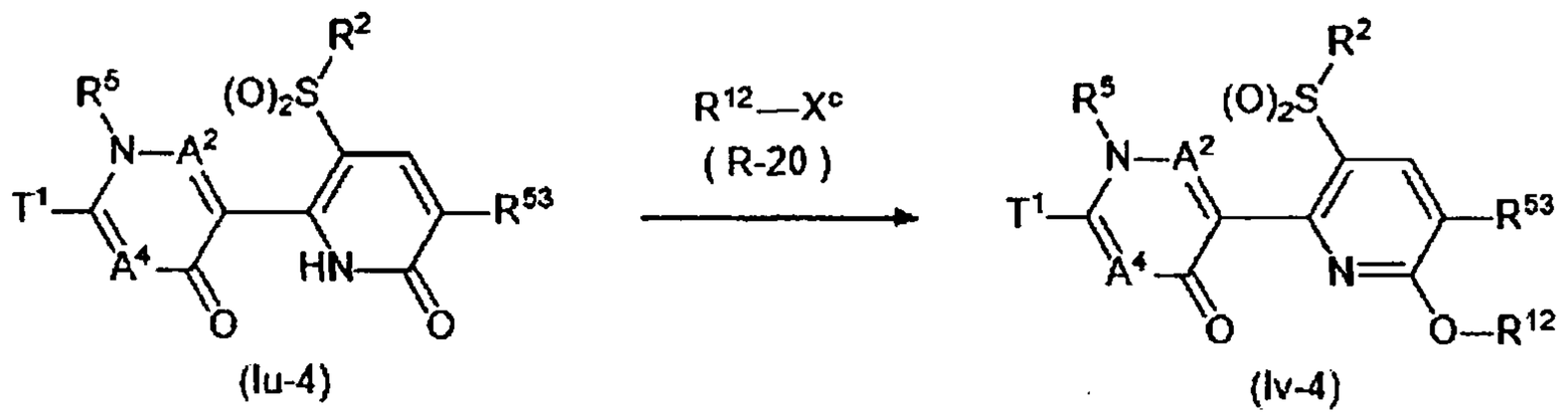
[wherein the symbols are the same as defined above.]

The reaction may be carried out according to the method described in WO 2009/076387.

[0055]

Process 28

A compound represented by formula (Iv-4) may be prepared by reacting the compound (Iu-4) with the compound (R-20) in the presence of a base.



[wherein the symbols are the same as defined above.]

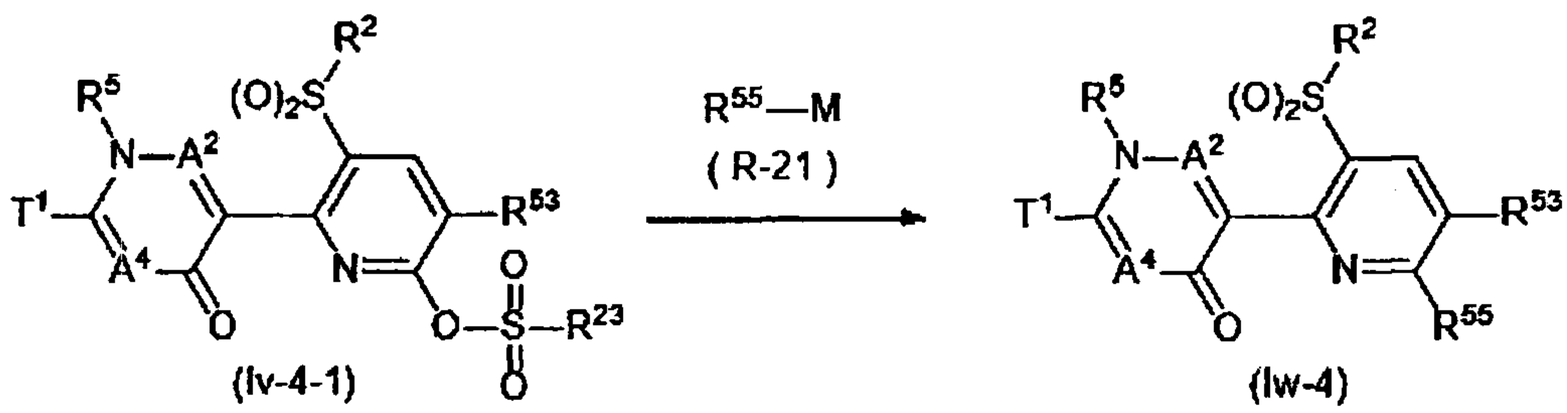
The reaction may be carried out by using the compound (Iu-4) in place of the compound (M-4) and using the compound

(R-20) in place of the compound (R-3) according to the method described in Process 6.

[0056]

Process 29

A compound represented by formula (Iw-4) may be prepared by reacting a compound represented by formula (Iv-4-1) (hereinafter, referred to as Compound (Iv-4-1)) with the compound (R-21) in the presence of a metal catalyst.



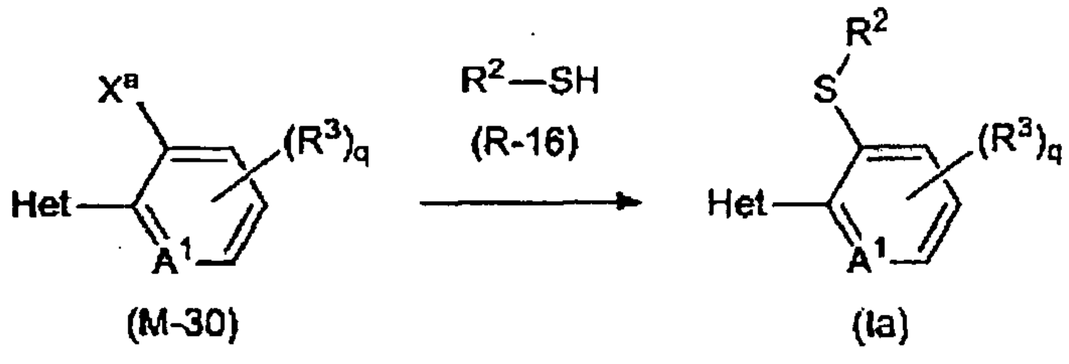
[wherein the symbols are the same as defined above.]

The reaction may be carried out by using the compound (Iv-4-1) in place of the compound (M-2) and using the compound (R-21) in place of the compound (R-2) according to the method described in Process 4.

[0057]

Process 30

The compound (Ia) may be prepared by reacting a compound represented by formula (M-30) (hereinafter, referred to as Compound (M-30)) with a compound represented by formula (R-16) (hereinafter, referred to as Compound (R-16)) in the presence of a base.



[wherein X^a represents a fluorine atom or a chlorine atom, and the other symbols are the same as defined above.]

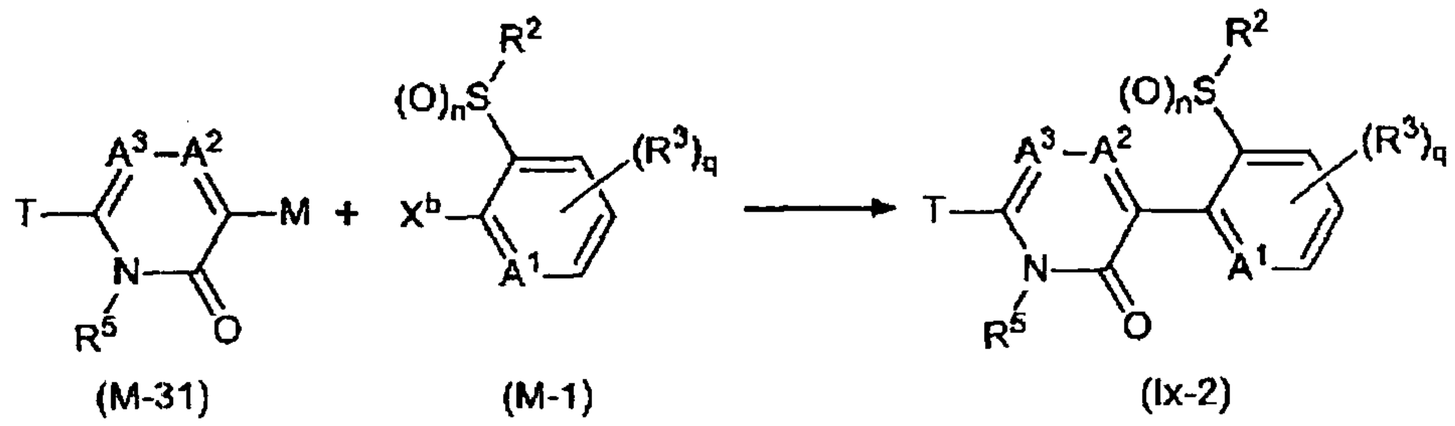
The reaction may be carried out by using the compound (M-30) in place of the compound (M-2) and using the compound (R-16) in place of the compound (R-1) according to the method described in Process 2.

The compound (R-16) is a commercially available compound, or can be prepared by using a known method.

[0058]

Process 31

A compound represented by formula (Ix-2) (hereinafter, referred to as Compound (Ix-2)) may be prepared by reacting a compound represented by formula (M-31) (hereinafter, referred to as Compound (M-31)) with a compound represented by formula (M-1) (hereinafter, referred to as Compound (M-1)) in the presence of a metal catalyst.



[wherein the symbols are the same as defined above.]

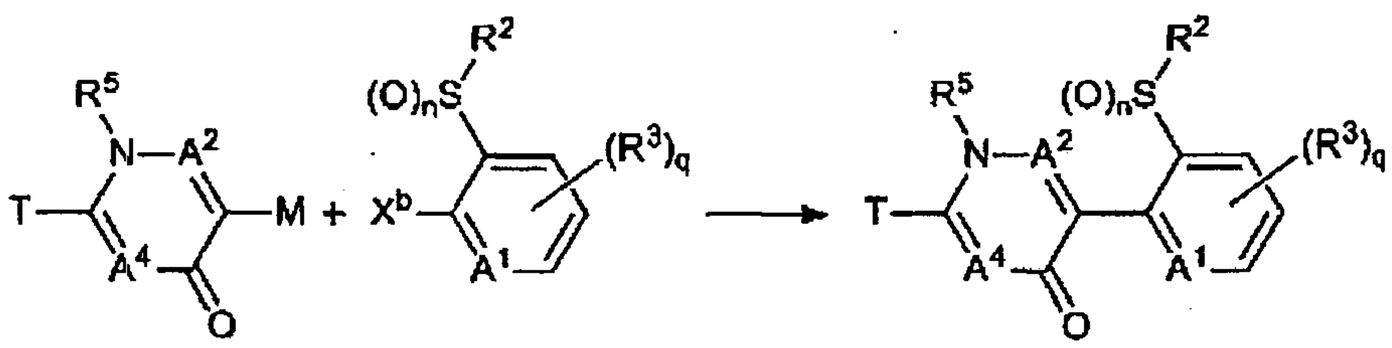
The reaction may be carried out by using the compound (M-31) in place of the compound (R-2) and using the compound (M-1) in place of the compound (M-2) according to the method described in Process 4.

The compound (M-31) can be prepared by using the method described in the reference process 31 or a known method.

[0059]

Process 32

A compound represented by formula (Ix-4) (hereinafter, referred to as Compound (Ix-4)) may be prepared by reacting a compound represented by formula (M-32) (hereinafter, referred to as Compound (M-32)) with the compound (M-1) in the presence of a metal catalyst.



(M-32) (M-1) (Ix-4)

[wherein the symbols are the same as defined above.]

The reaction may be carried out by using the compound (M-32) in place of the compound (R-2) and using the compound (M-1) in place of the compound (M-2) according to the method described in Process 4.

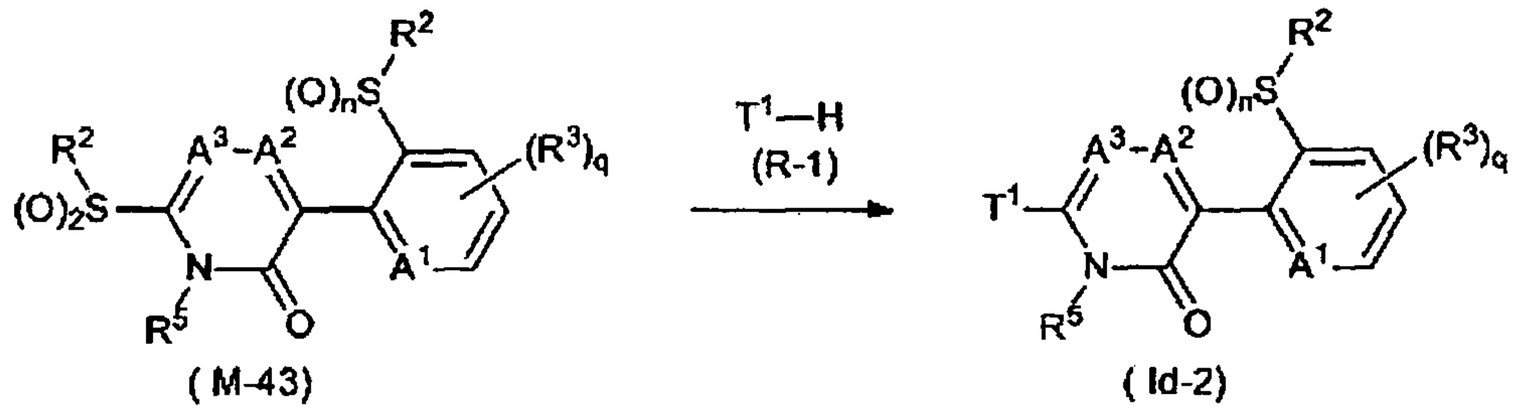
The compound (M-32) can be prepared by using the method

described in the reference process 32 or a known method.

[0060]

Process 33

The compound (Id-2) may be prepared by reacting a compound represented by formula (M-43) (hereinafter, referred to as Compound (M-43)) with the compound (R-1) in the presence of a base.



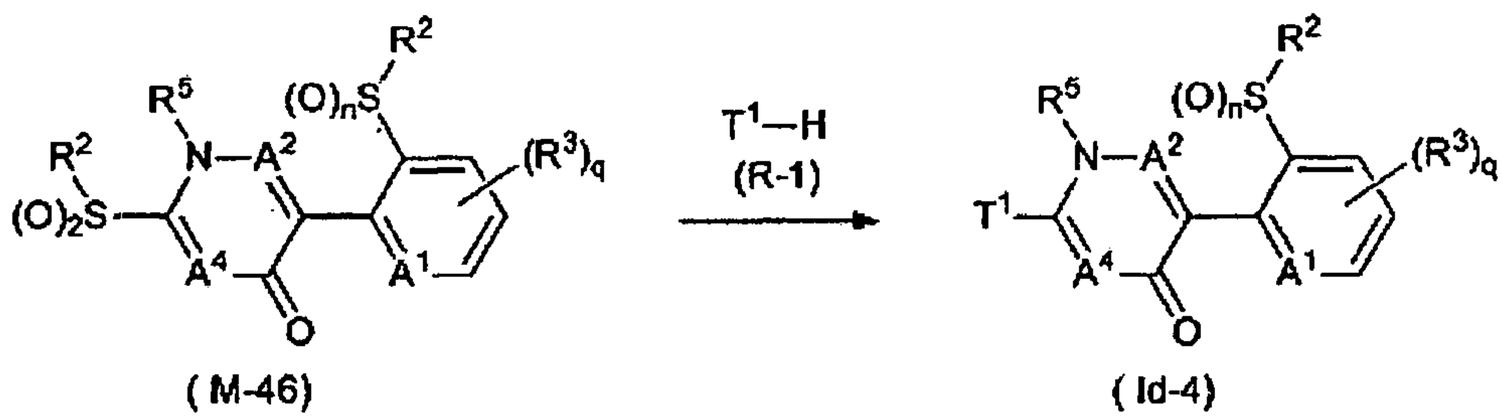
[wherein the symbols are the same as defined above.]

The reaction may be carried out by using the compound (M-43) in place of the compound (M-2) according to the method described in Process 2.

[0061]

Process 34

The compound (Id-4) may be prepared by reacting a compound represented by formula (M-46) (hereinafter, referred to as Compound (M-46)) with the compound (R-1) in the presence of a base.



(M-46) (Id-4)

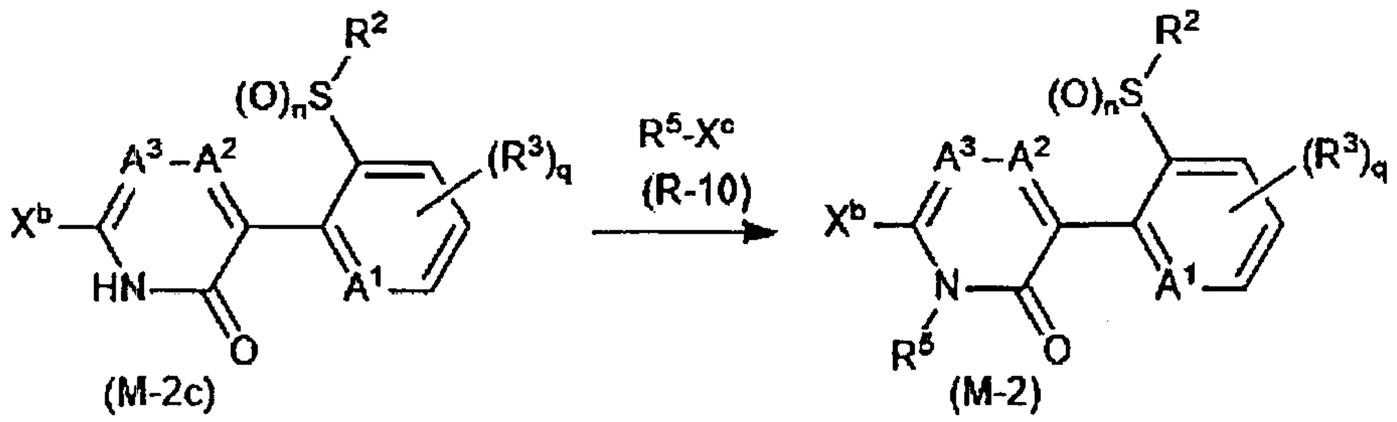
[wherein the symbols are the same as defined above.]

The reaction may be carried out by using the compound (M-46) in place of the compound (M-2) according to the method described in Process 2.

[0062]

Reference Process 1

The compound (M-2) may be prepared by reacting a compound represented by formula (M-2c) (hereinafter, referred to as Compound (M-2c)) with a compound represented by formula (R-10) (hereinafter, referred to as Compound (R-10)) in the presence of a base.



(M-2c) (M-2)

[wherein the symbols are the same as defined above.]

The reaction may be carried out by using the compound (R-10) in place of the compound (M-2) and using the compound (M-2c) in place of the compound (R-1) according to the method

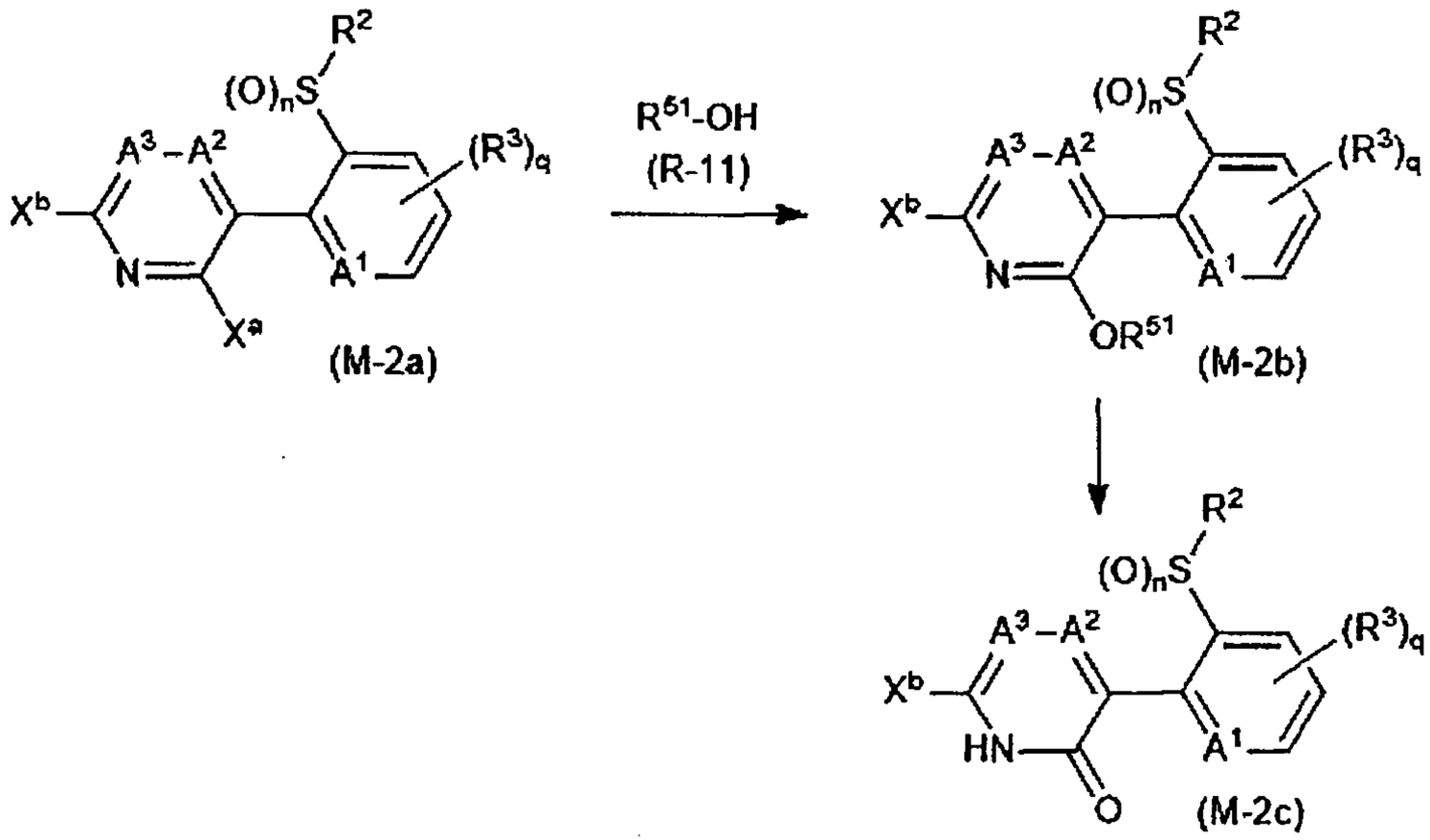
described in Process 2.

The compound (R-10) is a commercially available compound, or can be prepared by using a known method.

[0063]

Reference Process 2

The compound (M-2c) may be prepared according to the following scheme.



[wherein, R^{51} represents a methyl group, an ethyl group, or a benzyl group, and the other symbols are the same as defined above.]

A compound represented by formula (M-2b) (hereinafter, referred to as Compound (M-2b)) may be prepared by reacting a compound represented by formula (M-2a) (hereinafter, referred to as Compound (M-2a)) with a compound represented by formula (R-11) (hereinafter, referred to as Compound (R-

11) in the presence of a base. The reaction may be carried out according to method described in Process 2.

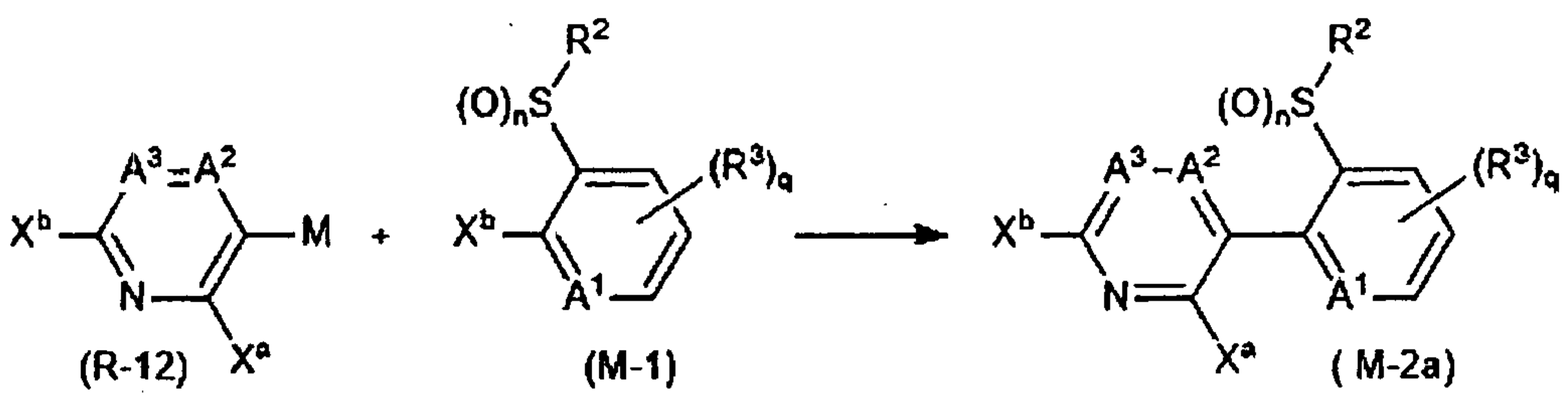
The compound (M-2c) may be prepared by reacting the compound (M-2b) with an acid. The reaction may be carried out according to the method described in, for example, WO 2016/052455.

The compound (R-11) is a commercially available compound, or can be prepared by using a known method.

[0064]

Reference Process 3

The compound (M-2a) may be prepared by reacting a compound represented by formula (R-12) (hereinafter, referred to as Compound (R-12)) with the compound (M-1) in the presence of a metal catalyst.



[wherein the symbols are the same as defined above.]

The reaction may be carried out by using the compound (M-1) in place of the compound (M-2) and using the compound (R-12) in place of the compound (R-2) according to the method described in Process 4.

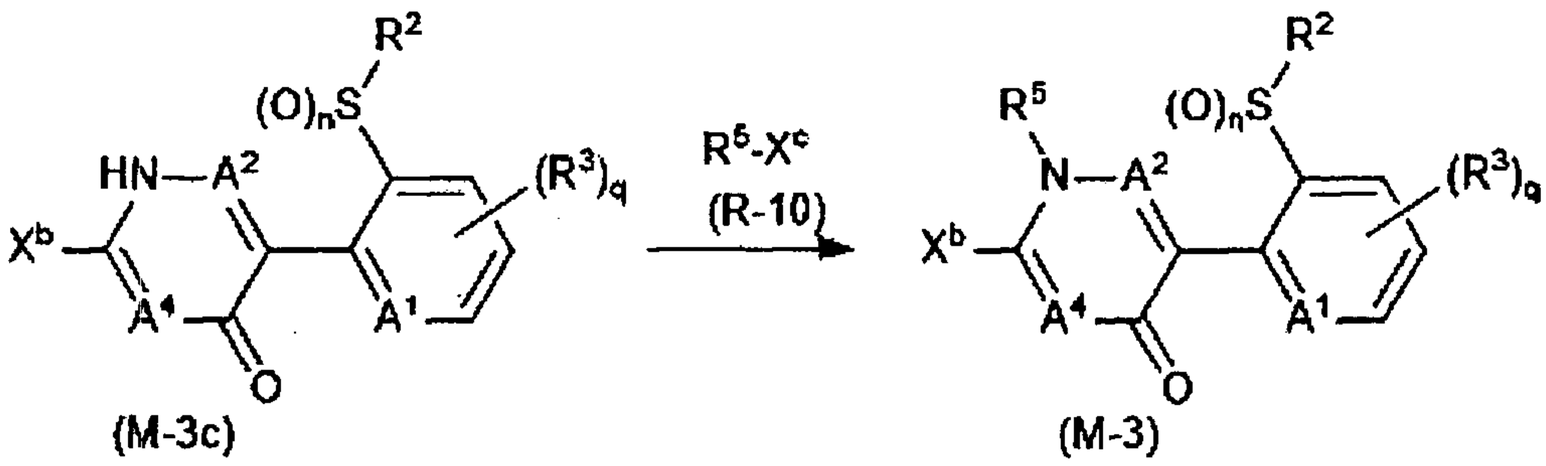
The compound (R-12) is a commercially available

compound, or can be prepared by using a known method.

[0065]

Reference Process 4

The compound (M-3) may be prepared by reacting a compound represented by formula (M-3c) (hereinafter, referred to as Compound (M-3c)) with the compound (R-10) in the presence of a base.



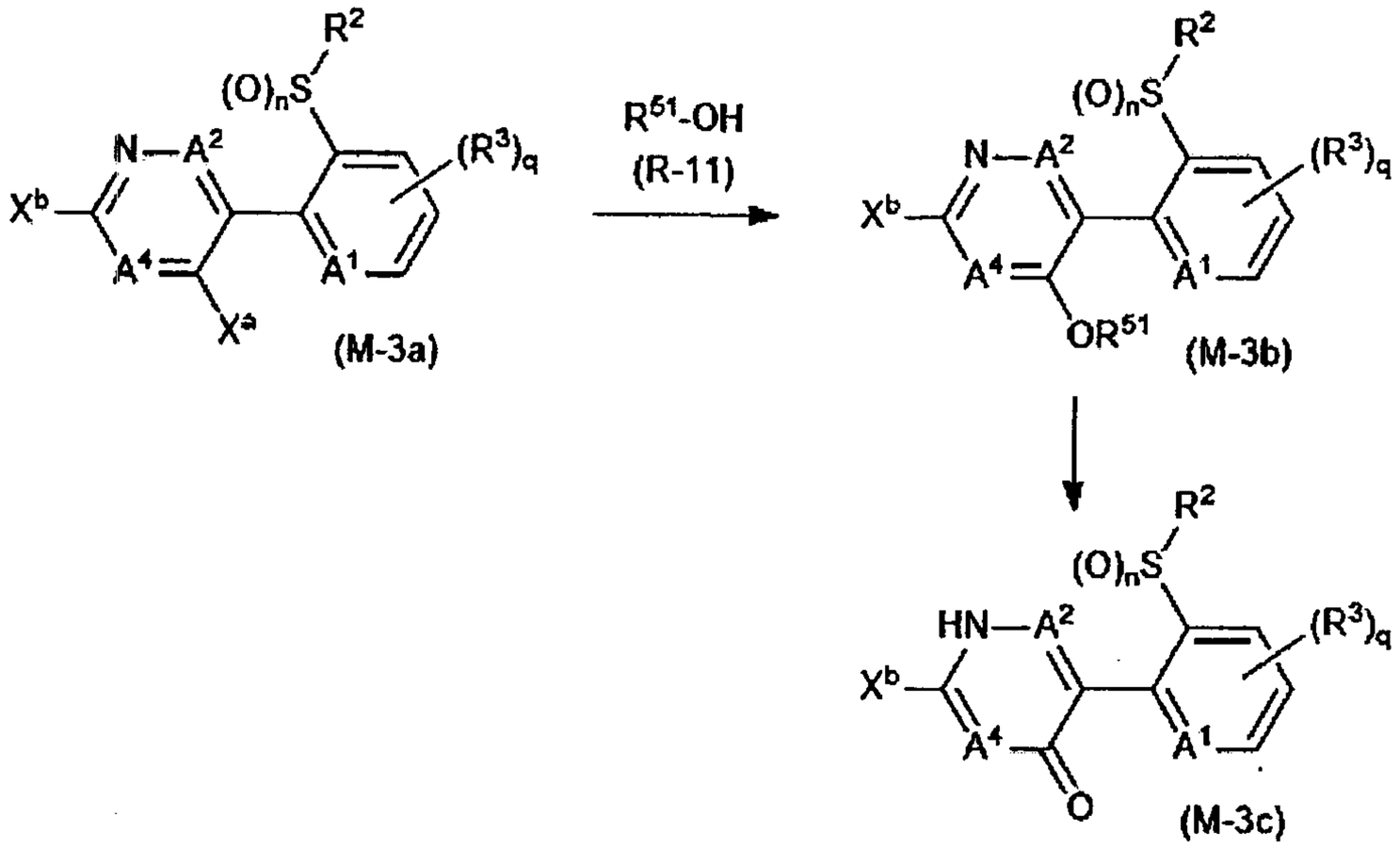
[wherein the symbols are the same as defined.]

The reaction may be carried out according to the method described in Reference Process 1.

[0066]

Reference Process 5

The compound (M-3c) may be prepared according to the following scheme.



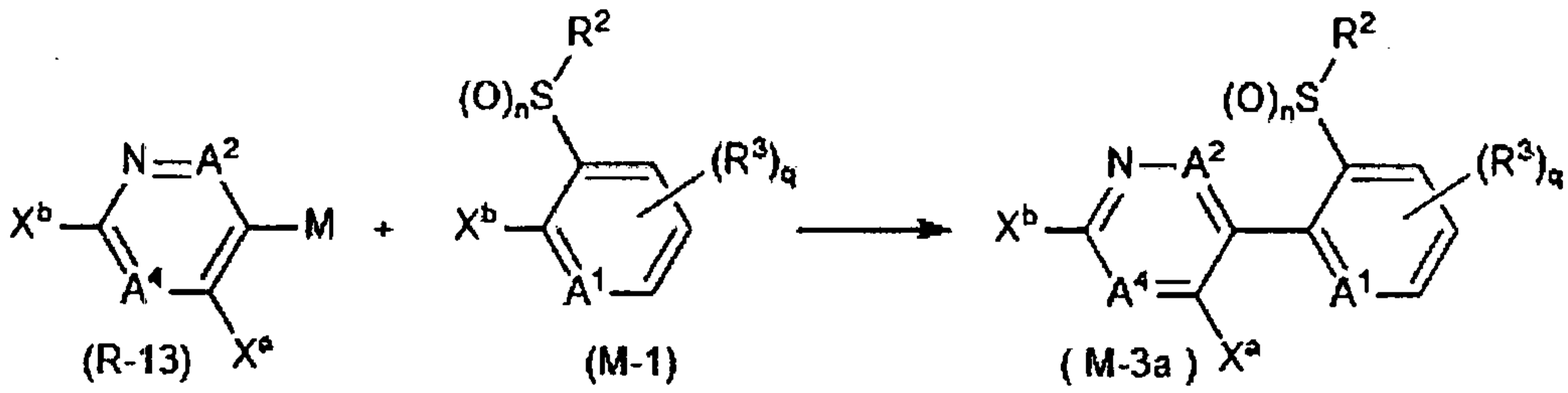
[wherein the symbols are the same as defined above.]

These reactions may be carried out according to the methods described in Reference Process 2.

[0067]

Reference Process 6

A compound represented by formula (M-3a) may be prepared by reacting a compound represented by formula (R-13) (hereinafter, referred to as Compound (R-13)) with the compound (M-1) in the presence of a metal catalyst.



[wherein the symbols are the same as defined above.]

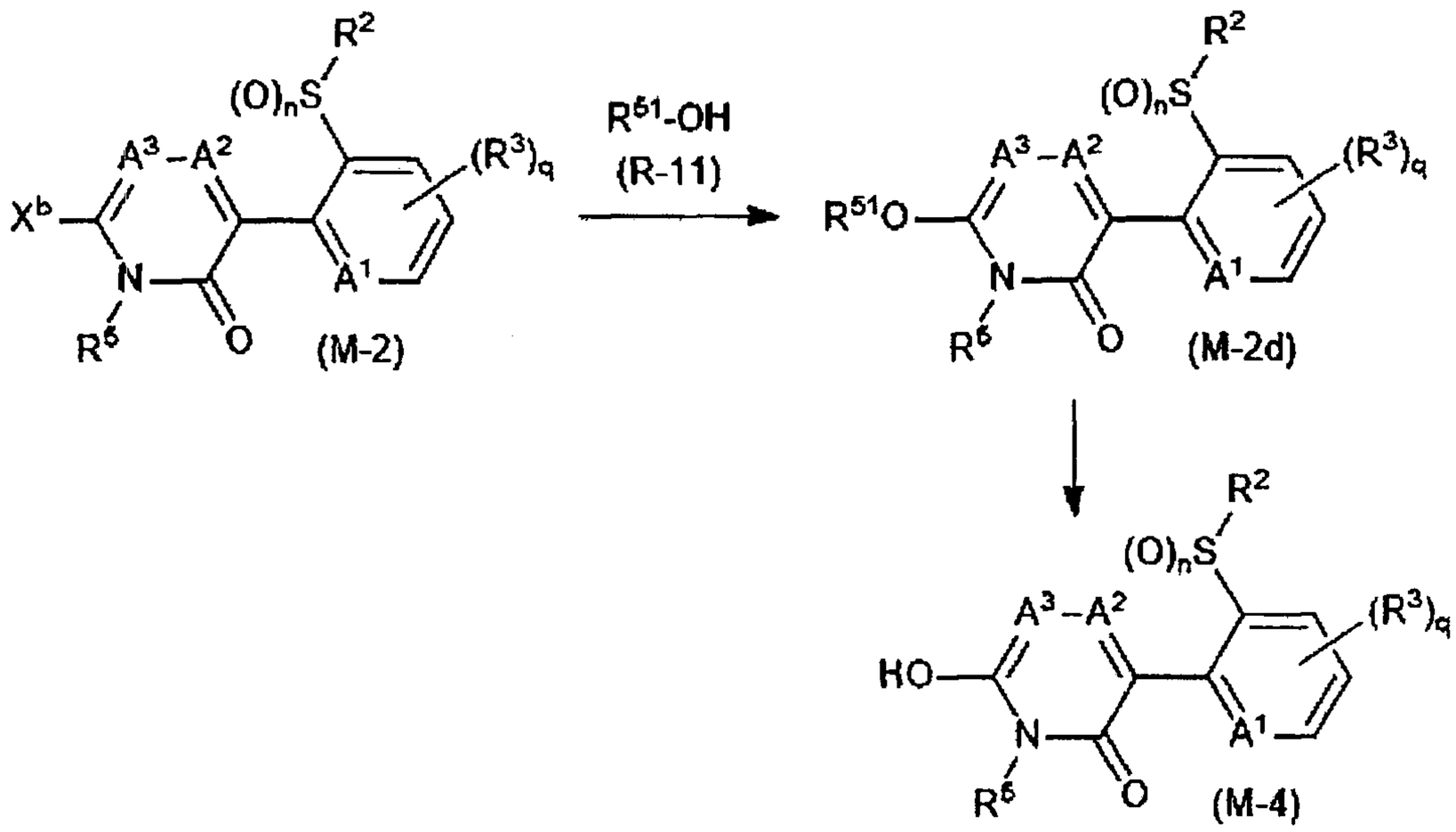
The reaction may be carried out according to the method described in Reference Process 3.

The compound (R-13) is a commercially available compound, or can be prepared by using a known method.

[0068]

Reference Process 7

The compound (M-4) may be prepared according to the following scheme.



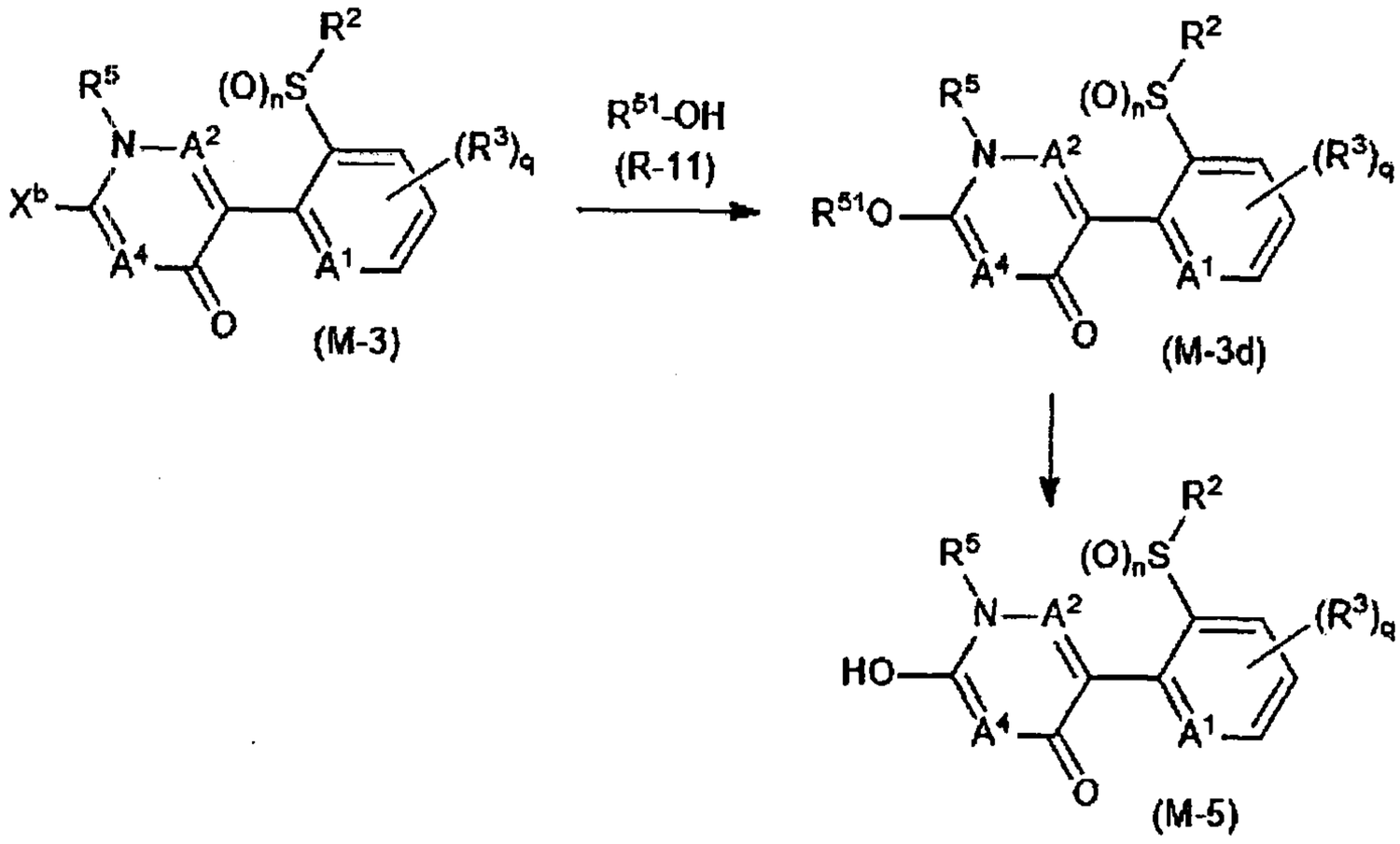
[wherein the symbols are the same as defined above.]

These reactions may be carried out according to the methods described in Reference Process 2.

[0069]

Reference Process 8

The compound (M-5) may be prepared according to the following scheme.



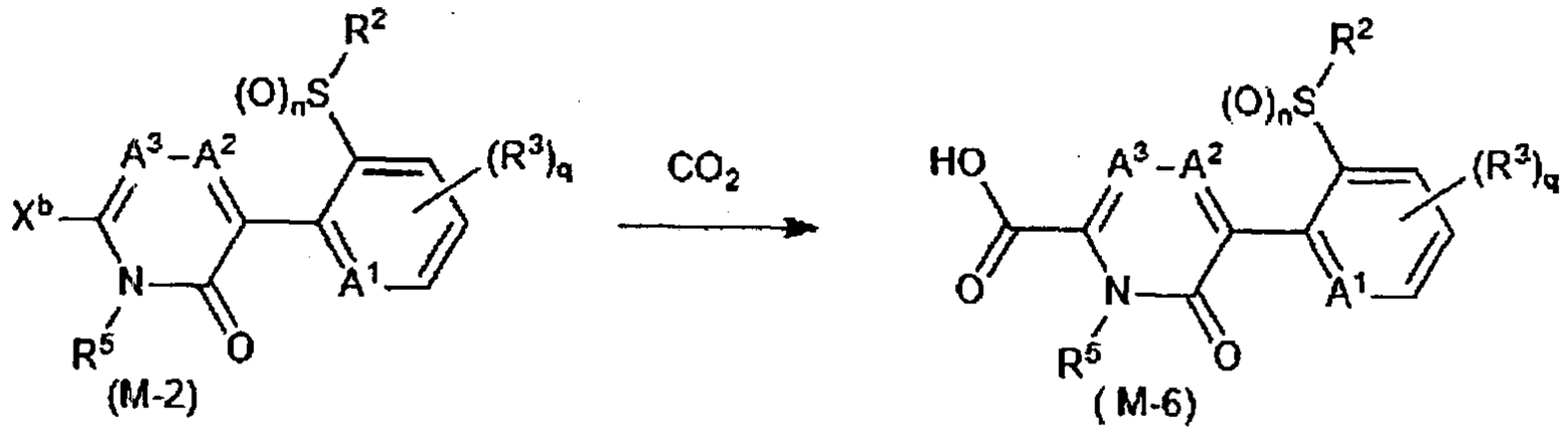
[wherein the symbols are the same as defined above.]

These reactions may be carried out according to the methods described in Reference Process 2.

[0070]

Reference Process 9

The compound (M-6) may be prepared by reacting the compound (M-2) with dry ice in the presence of a base.



[wherein the symbols are the same as defined above.]

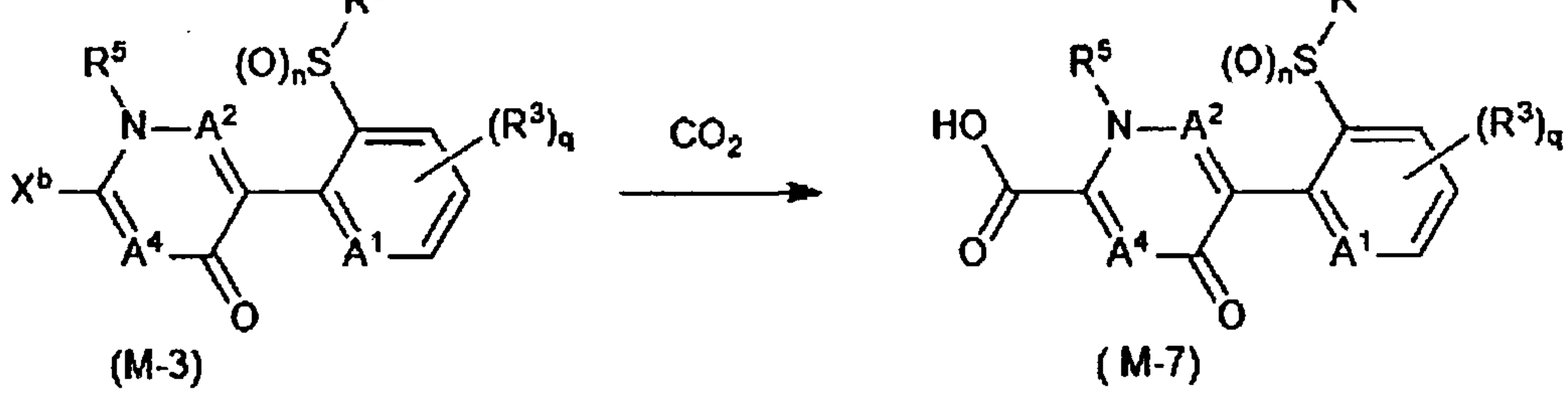
The reaction may be carried out by using dry ice in place of the compound (R-5) according to the method described

in Process 10.

[0071]

Reference Process 10

The compound (M-7) may be prepared by reacting the compound (M-3) with dry ice in the presence of a base.



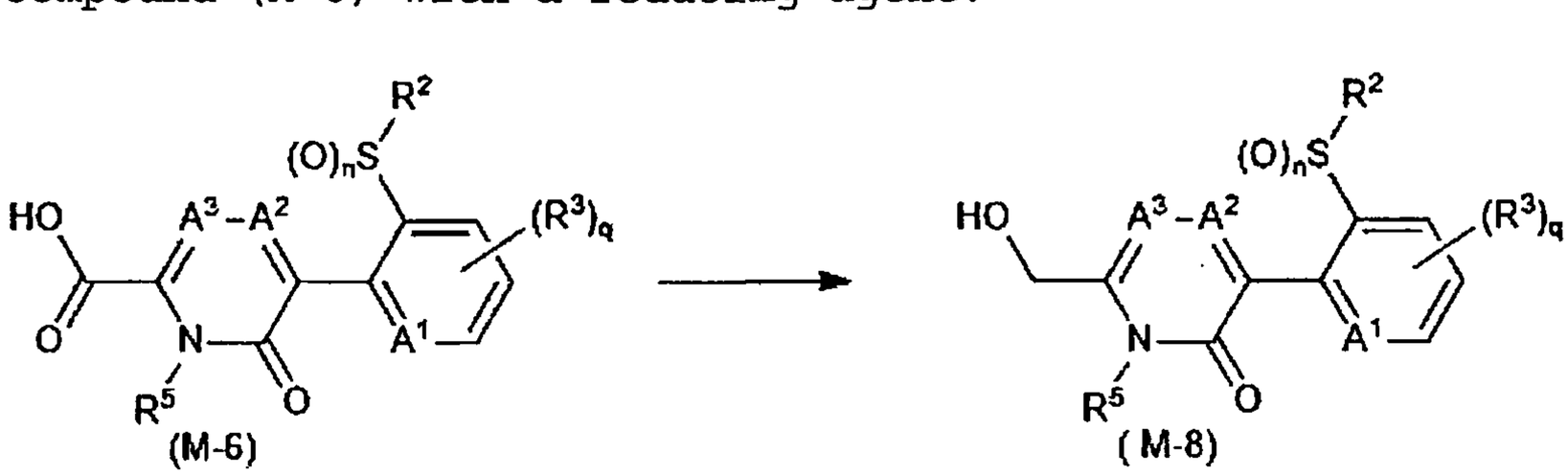
[wherein the symbols are the same as defined above.]

The reaction may be carried out by using dry ice in place of the compound (R-5) according to the method described in Process 10.

[0072]

Reference Process 11

The compound (M-8) may be prepared by reacting the compound (M-6) with a reducing agent.



[wherein the symbols are the same as defined above.]

The reaction is usually carried out in a solvent.

Examples of the solvent to be used in the reaction include ethers, aliphatic hydrocarbons, aromatic hydrocarbons, alcohols, and mixed solvents thereof.

Examples of the reducing agent to be used in the reaction include sodium borohydride, lithium borohydride, lithium aluminium hydride, diisobutylaluminum hydride, and the others.

In the reaction, the reducing agent is used usually within a range of 1 to 5 molar ratio(s), as opposed to 1 mole of the compound (M-6).

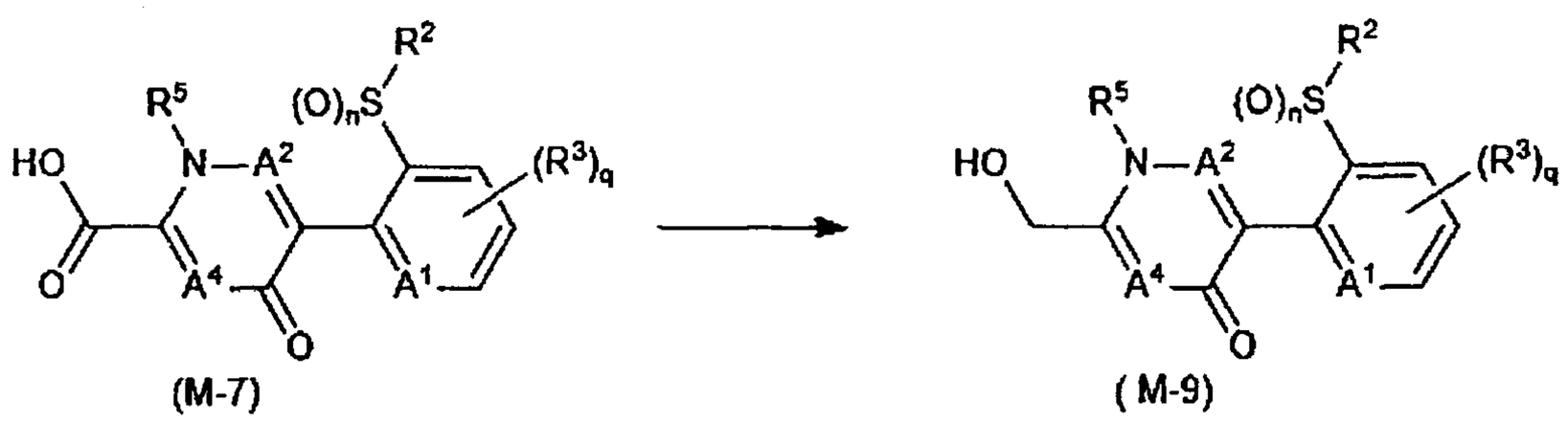
The reaction temperature of the reaction is usually within a range of -20 to 120°C. The reaction period of the reaction is usually within a range of 0.1 to 24 hours.

When the reaction is completed, water is added to the reaction mixtures, and the reaction mixtures are extracted with organic solvent(s), and the organic solvents are worked up (for example, drying and concentration) to give the compound (M-8).

[0073]

Reference Process 12

The compound (M-9) may be prepared by reacting the compound (M-7) with a reducing agent.



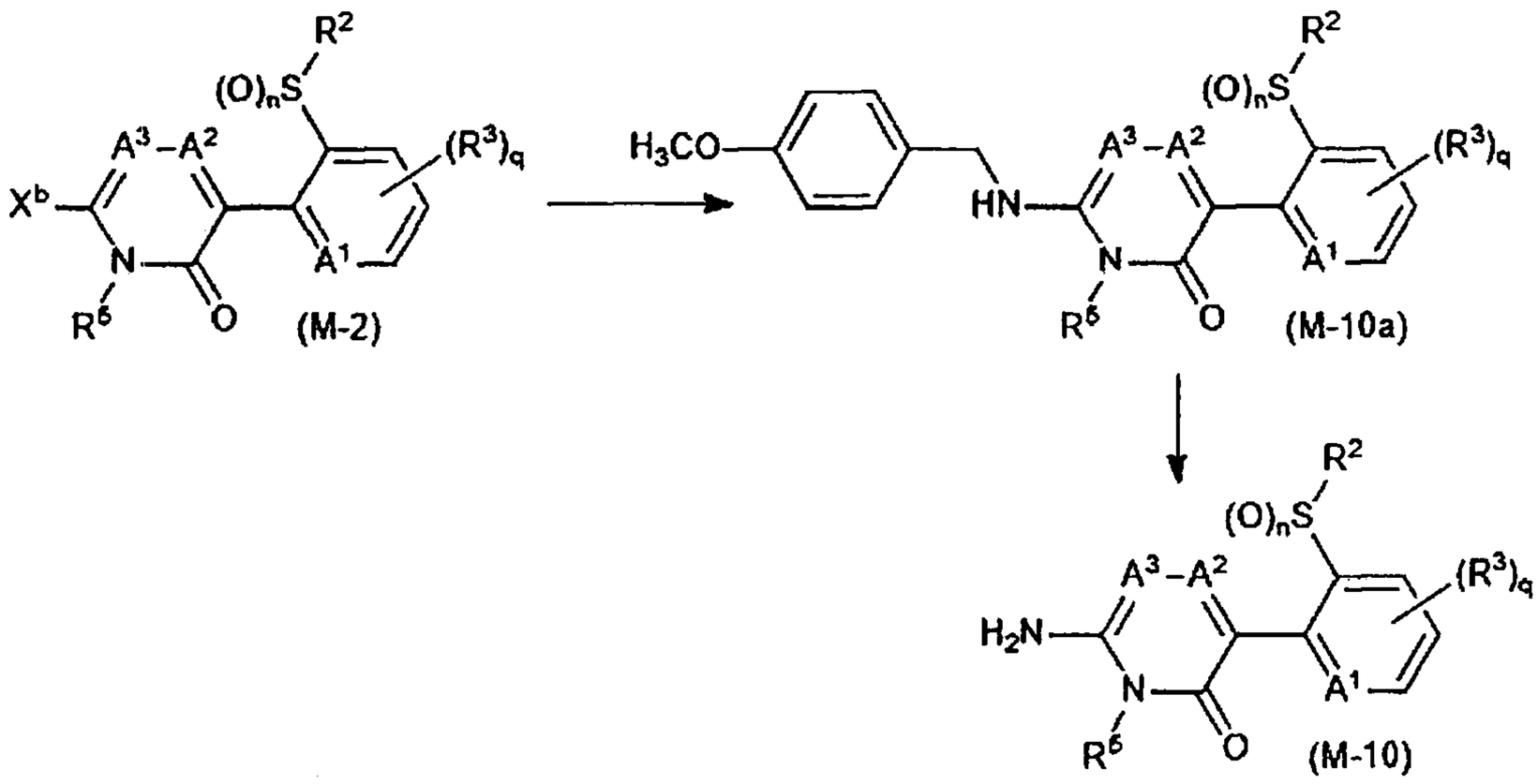
[wherein the symbols are the same as defined above.]

These reactions may be carried out according to the methods described in Reference Process 11.

[0074]

Reference Process 13

The compound (M-10) may be prepared according to the following scheme.



[wherein the symbols are the same as defined above.]

A compound represented by formula (M-10a) (hereinafter, referred to as Compound (M-10a)) may be prepared by using the compound (M-2) in place of the compound (M-2a) and using

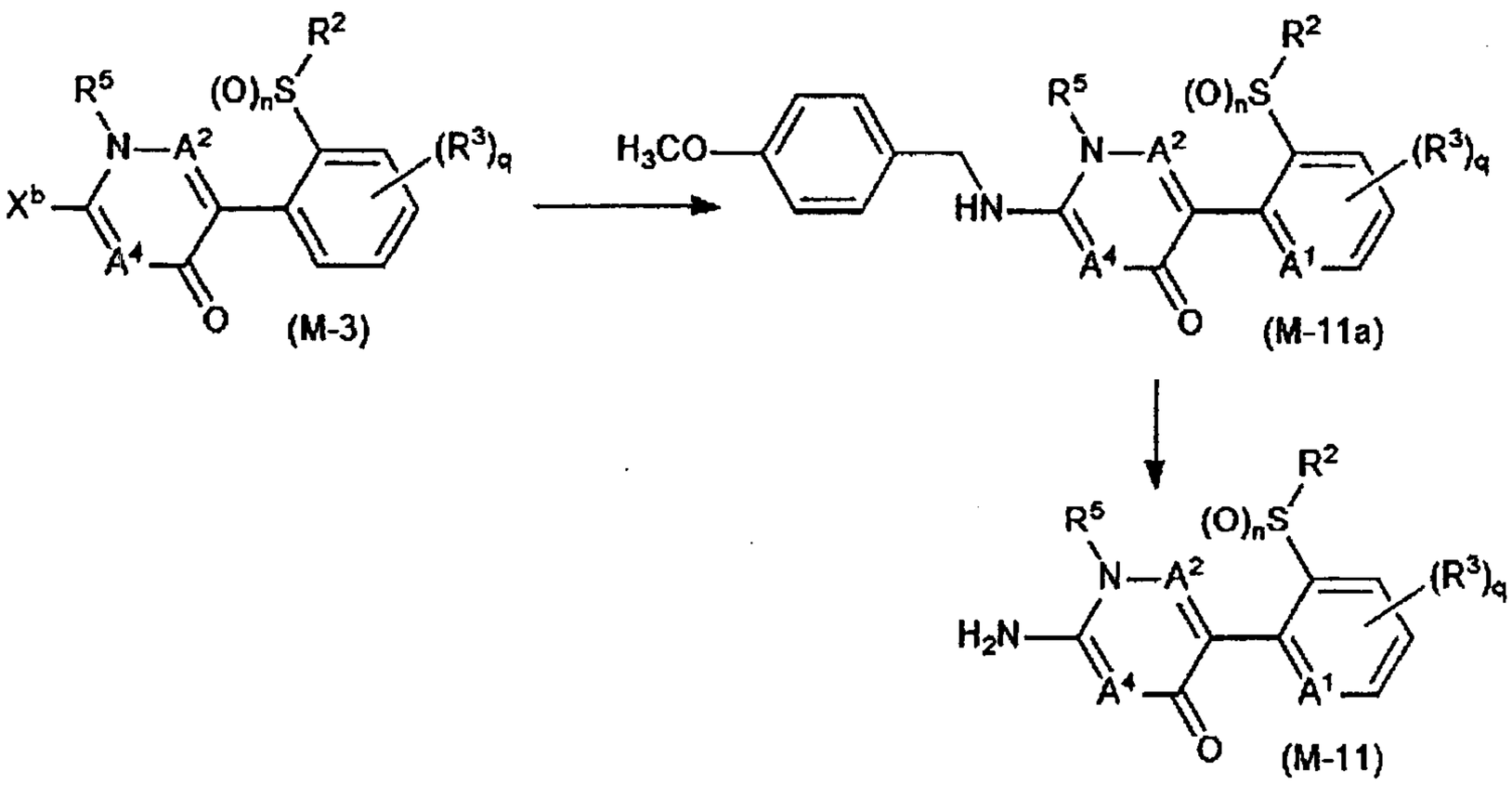
p-methoxybenzylamine in place of the compound (R-11) according to the method described in Reference Process 2.

The compound (M-10) may be prepared by using the compound (M-10a) in place of the compound (M-2b) according to the method described in Reference Process 2.

[0075]

Reference Process 14

The compound (M-11) may be prepared according to the following scheme.



[wherein the symbols are the same as defined above.]

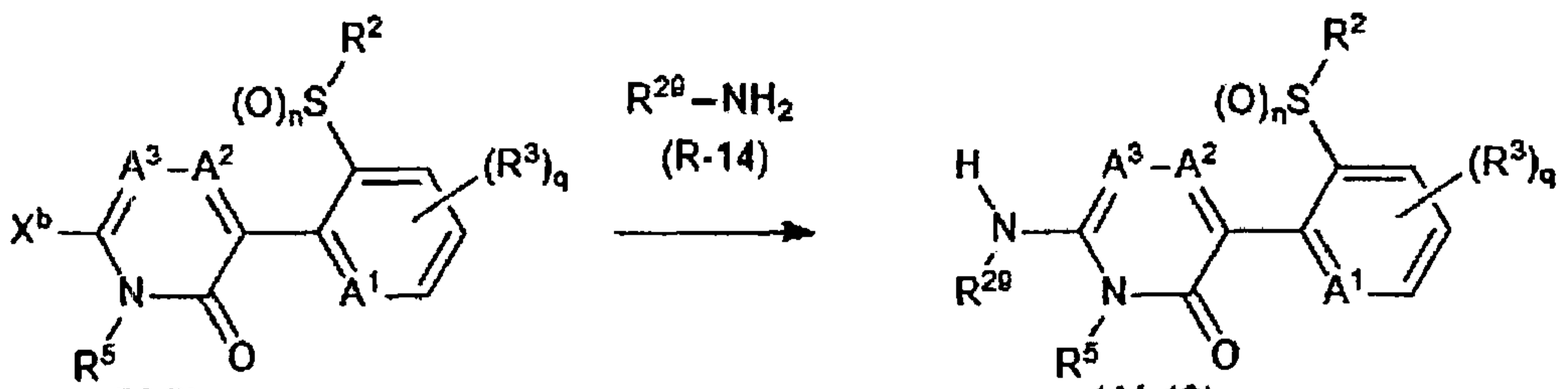
These reactions may be carried out according to the methods described in Reference Process 13.

[0076]

Reference Process 15

The compound (M-12) may be prepared by reacting the compound (M-2) with a compound represented by formula (R-14)

(hereinafter, referred to as Compound (R-14)) in the presence of a base.



[wherein the symbols are the same as defined above.]

The compound (R-14) is a commercially available compound, or can be prepared by using a known method.

The reaction is usually carried out in a solvent.

Examples of the solvent to be used in the reaction include ethers, aromatic hydrocarbons, polar aprotic solvent, and mixed solvents thereof.

Examples of the palladium catalyst include aryl palladium (II) chloride.

In the reaction, phenol as the additive, and potassium tert-butoxide as the base are used.

In the reaction, the compound (R-14) is usually used within a range of 1 to 10 molar ratio(s), the palladium catalyst is usually used within a range of 0.01 to 1 molar ratio(s), phenol is usually used within a range of 1 to 5 molar ratio(s), and potassium tert-butoxide is usually used within a range of 0.1 to 10 molar ratios, as opposed to 1 mole of the compound (M-2).

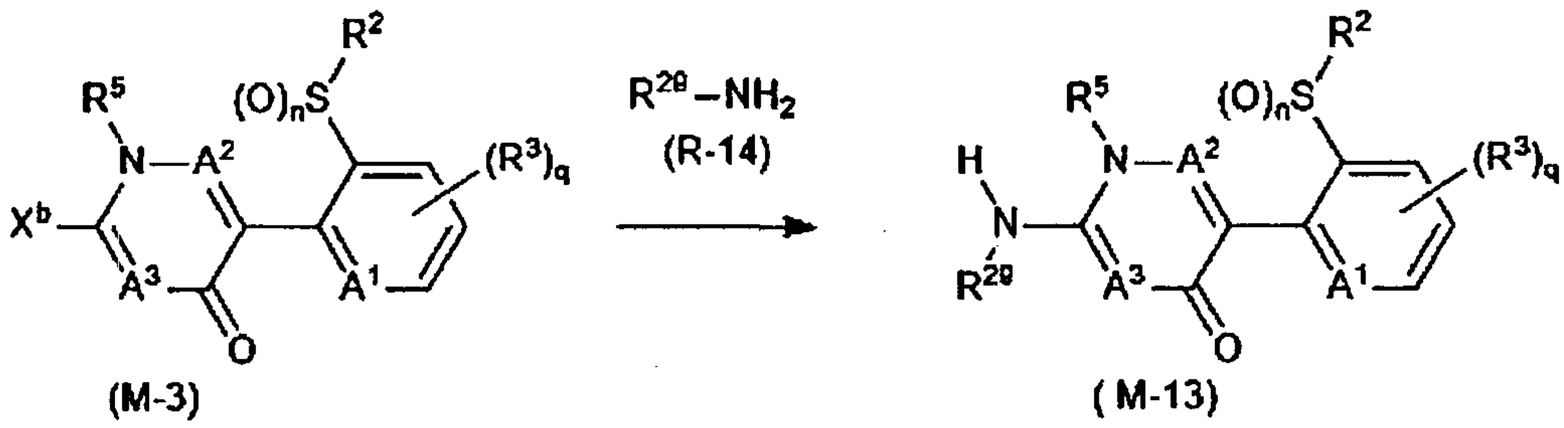
The reaction temperature of the reaction is usually within a range of 40 to 180°C. The reaction period of the reaction is usually within a range of 0.1 to 24 hours.

When the reaction is completed, water is added to reaction mixtures, and the reaction mixtures are extracted with organic solvent(s), and the organic layers are worked up (for example, drying and concentration) to give the compound (M-12).

[0077]

Reference Process 16

The compound (M-13) may be prepared by reacting the compound (M-3) with the compound (R-14) in the presence of a base.



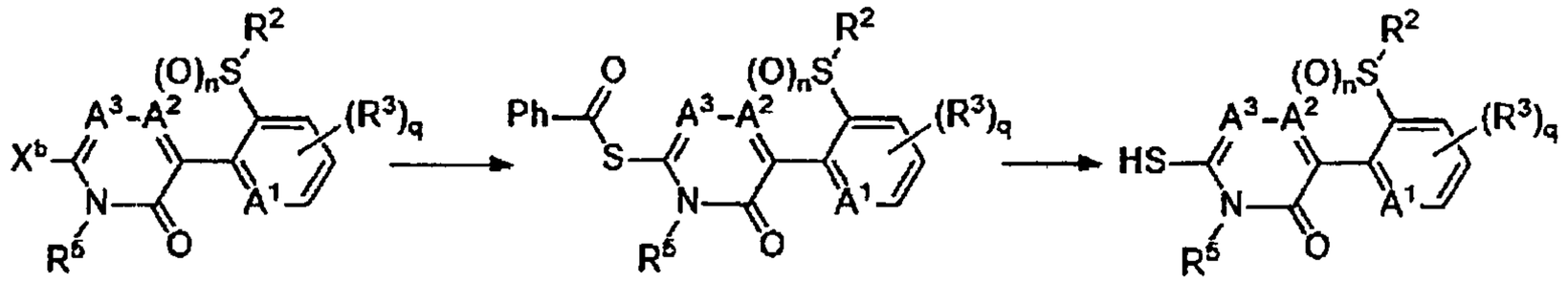
[wherein the symbols are the same as defined above.]

The reaction may be carried out according to the method described in Reference process 15.

[0078]

Reference Process 17

The compound (M-14) may be prepared according to the following scheme.



[wherein the symbols are the same as defined above.]

First, a process for preparing a compound represented by formula (M-14a) (hereinafter, referred to as Compound (M-14a)) is described.

The compound (M-14a) may be prepared by reacting the compound (M-2) with thiobenzoic acid in the presence of a copper catalyst and a base.

The reaction is usually carried out in the presence of a solvent. Examples of the solvent to be used in the reaction include ethers, aromatic hydrocarbons, aprotic polar solvents, water, and mixed solvents thereof.

Examples of the copper catalyst to be used in the reaction include copper chloride, copper bromide, and copper iodide.

Examples of the base to be used in the reaction include alkali metal hydrides, alkali metal carbonates, and organic bases.

A ligand may be added to the reaction as needed. Examples of the ligand to be used in the reaction include 2,2'-bipyridine, 2-aminoethanol, 8-hydroxyquinoline, 1,10-phenanthroline, and the others.

In the reaction, thiobenzoic acid is usually used within a range of 1 to 10 molar ratio(s), the copper catalyst is usually used within a range of 0.01 to 0.5 molar ratios, the ligand is usually used within a range of 0.01 to 1 molar ratio(s), and the base is usually used with a range of 0.1 to 5 molar ratios, as opposed to 1 mole of the compound (M-2).

The reaction temperature is usually within a range of -20 to 200°C. The reaction period of the reaction is usually within a range of 0.1 to 24 hours.

When the reaction is completed, water is added to reaction mixtures, and the reaction mixtures are extracted with organic solvent(s), and the organic layers are worked up (for example, drying and concentration) to give the compound (M-14a).

[0079]

Next, the process for preparing the compound (M-14) is described.

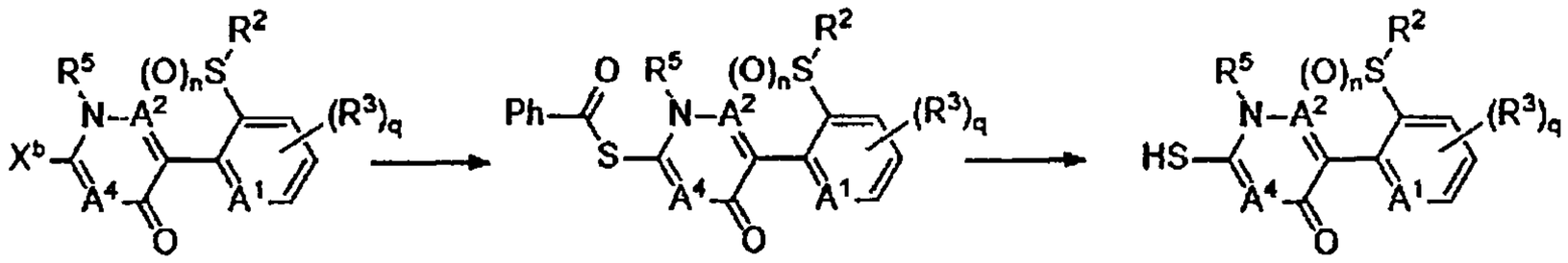
The compound (M-14) may be prepared, for example, according to the method described WO 2011/068171 or the method described in Journal of Organic Chemistry, 1978, 43(6), 1190-1192.

[0080]

Reference Process 18

The compound (M-15) may be prepared according to the

following scheme.



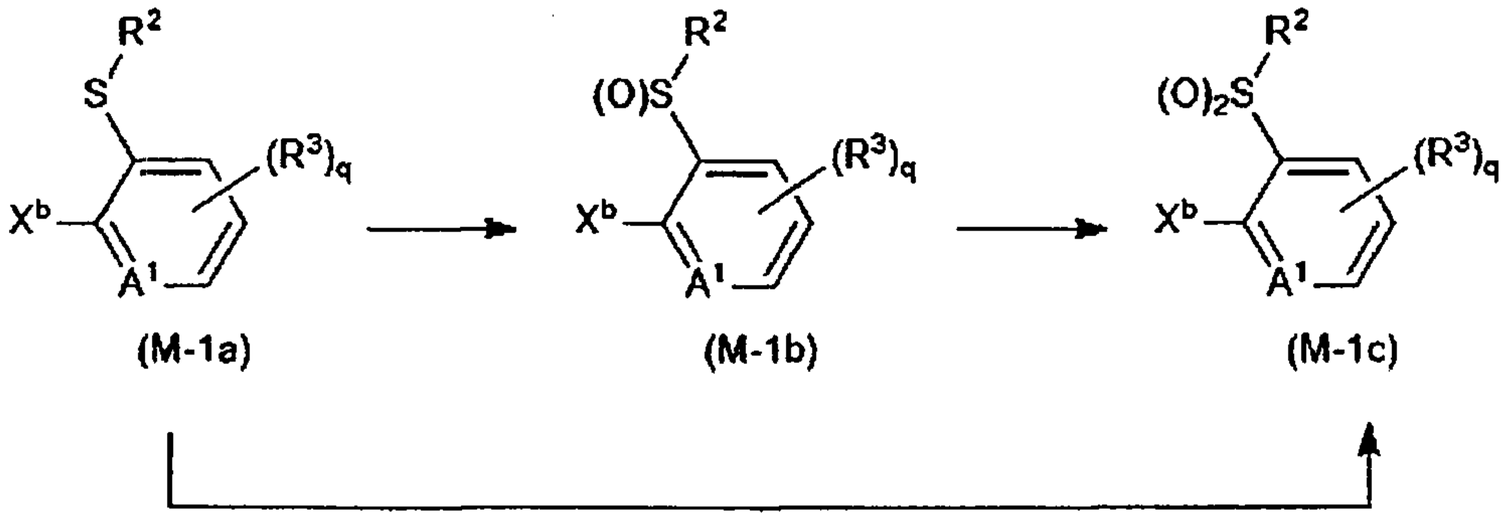
[wherein the symbols are the same as defined above.]

These reactions may be carried out according to the methods described in Reference Process 17.

[0081]

Reference Process 19

A compound represented by formula (M-1b) and a compound represented by formula (M-1c) may be prepared by oxidizing a compound represented by formula (M-1a) (hereinafter, referred to as Compound (M-1a)).



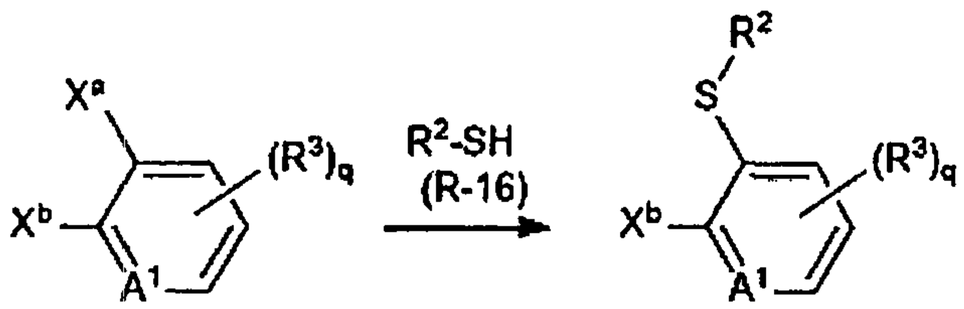
[wherein the symbols are the same as defined above.]

These reactions may be carried out according to the methods described in Process 1.

[0082]

Reference Process 20

The compound (M-1a) may be prepared by reacting a compound represented by formula (R-15) (hereinafter, referred to as Compound (R-15)) with the compound (R-16) in the presence of a base.



(R-15) (M-1a)

[wherein the symbols are the same as defined above.]

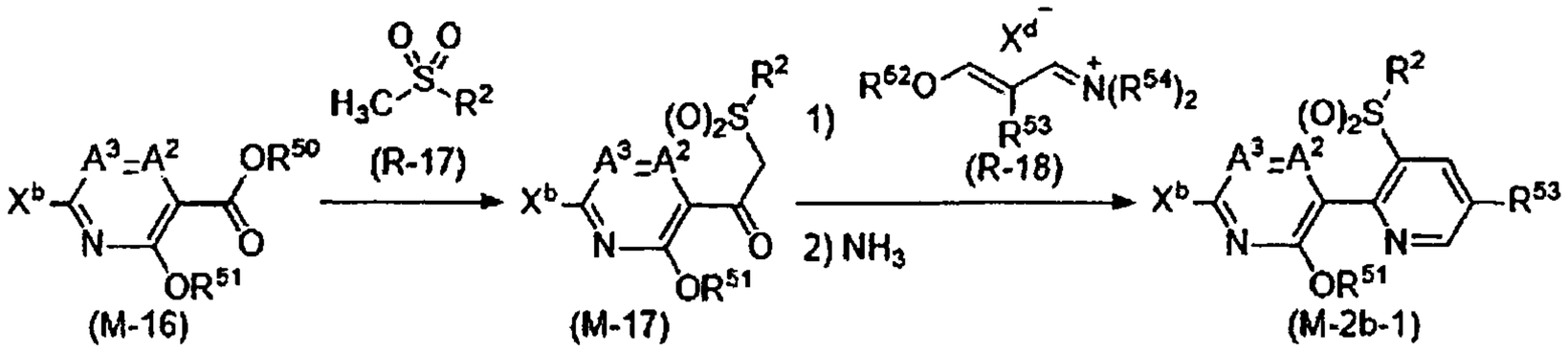
The reaction may be carried out according to the method described in Process 2.

The compound (R-15) is commercially available compounds, or can be prepared by using a known method.

[0083]

Reference Process 21

A compound represented by formula (M-2b-1) (hereinafter, referred to as Compound (M-2b-1)) may be prepared according to the following scheme.



[wherein R^{50} represents a methyl group or an ethyl group, R^{52} and R^{54} are identical to or different from each other and each represents independently a C1-C6 alkyl group, X^d

represents a fluorine atom, a chlorine atom, a bromine atom, an iodine atom, BF_4, or PF_6, and the other symbols are the same as defined above.]

[0084]

A compound represented by formula (M-17) (hereinafter, referred to as Compound (M-17)) may be prepared by reacting a compound represented by formula (M-16) (hereinafter, referred to as Compound (M-16)) with a compound represented by formula (R-17) (hereinafter, referred to as Compound (R-17)) in the presence of a base.

The reaction is usually carried out in the presence of a solvent. Examples of the solvent to be used in the reaction include alcohols, ethers, aromatic hydrocarbons, aprotic polar solvents, and mixed solvents thereof.

Examples of the base to be used in the reaction include n-butyl lithium, s-butyl lithium, t-butyl lithium, lithium diisopropylamide, lithium bis(trimethylsilyl)amide, sodium bis(trimethylsilyl)amide, potassium bis(trimethylsilyl)amide, potassium t-butoxide, sodium methoxide, sodium ethoxide, and alkali metal hydrides.

In the reaction, the compound (R-17) is usually used within a range of 1 to 5 molar ratio(s), and the base is usually used within a range of 1 to 5 molar ratio(s), as opposed to 1 mole of the compound (M-16). Preferably, the compound (R-17) is used within a range of 1.0 to 1.1 molar

ratio(s), and the base is used within a range of 1 to 2 molar ratio(s), as opposed to 1 mole of the compound (M-16).

The reaction temperature of the reaction is usually within a range of -78 to 100°C. The reaction period of the reaction is usually within a range of 0.5 to 12 hours.

When the reaction is completed, water is added to reaction mixtures, and the reaction mixtures are extracted with organic solvent(s), and the organic layers are worked up (for example, drying and concentration) to give the compound (M-17).

The compound (M-16) is a commercially available compound, or can be prepared by using a known method.

The compound (R-17) is a commercially available compound, or can be prepared by using the method described in Journal of Molecular Catalysis A: Chemical, 2011, 341(1-2), 57.

[0085]

The compound (M-2b-1) may be prepared by reacting the compound (M-17) with a compound represented by formula (R-18) (hereinafter, referred to as Compound (R-18)), followed by reacting with ammonia.

[0086]

The step 1 in which the compound (M-17) is reacted with the compound (R-18) is described.

The reaction is usually carried out in a solvent.

Examples of the solvent to be used in the reaction include ethers; aromatic hydrocarbons; halogenated hydrocarbons (such as dichloromethane and chloroform) (hereinafter, collectively referred to as aliphatic hydrocarbons); alcohols; esters; nitriles; aprotic polar solvents; nitrogen-containing aromatic compounds such as pyridine and 2,6-lutidine (hereinafter, collectively referred to as nitrogen-containing aromatic compounds); and mixed solvents thereof.

A base may be used in the reaction, and examples of the base include alkali metal carbonates, alkali metal hydrides, and organic bases.

When a base is used in the reaction, the base is usually used within a range of 1 to 10 molar ratio(s), as opposed to 1 mole of the compound (M-17).

In the reaction, the compound (R-18) is usually used within a range of 1 to 10 molar ratio(s), as opposed to 1 mole of the compound (M-17).

The reaction temperature of the reaction is usually within a range of -50 to 200°C. The reaction period of the reaction is usually within a range of 0.1 to 24 hours.

When the reaction is completed, the reaction mixtures are concentrated to obtain the residues and then the residues are used as itself in the second step, or alternatively, water is added to the reaction mixtures and the mixtures are

extracted with organic solvent(s), and the organic layers are worked up (for example, drying and concentration) to obtain the residues, and then the residues may be used as itself in the second step.

[0087]

Next, the step 2 in which the residues obtained in the step 1 is reacted with ammonia to obtain the compound (M-2b-1) is described.

The reaction is usually carried out in the presence of a solvent. Examples of the solvents to be used in the reaction include ethers, nitriles, alcohols, aprotic polar solvents, nitrogen-containing aromatic compounds, and mixed solvents thereof.

Ammonia to be used in the reaction may be used as an aqueous solution or an alcoholic solution thereof.

In the reaction, ammonia is usually used within a range of 1 to 100 molar ratio(s), as opposed to 1 mole of the compound (M-17) used in the step 1.

The reaction temperature of the reaction is usually within a range of 0 to 100°C. The reaction period of the reaction is usually within a range of 0.1 to 24 hours.

When the reaction is completed, water is added to reaction mixtures, and the reaction mixtures are extracted with organic solvent(s), and the organic layers are worked up (for example, drying and concentration) to give the

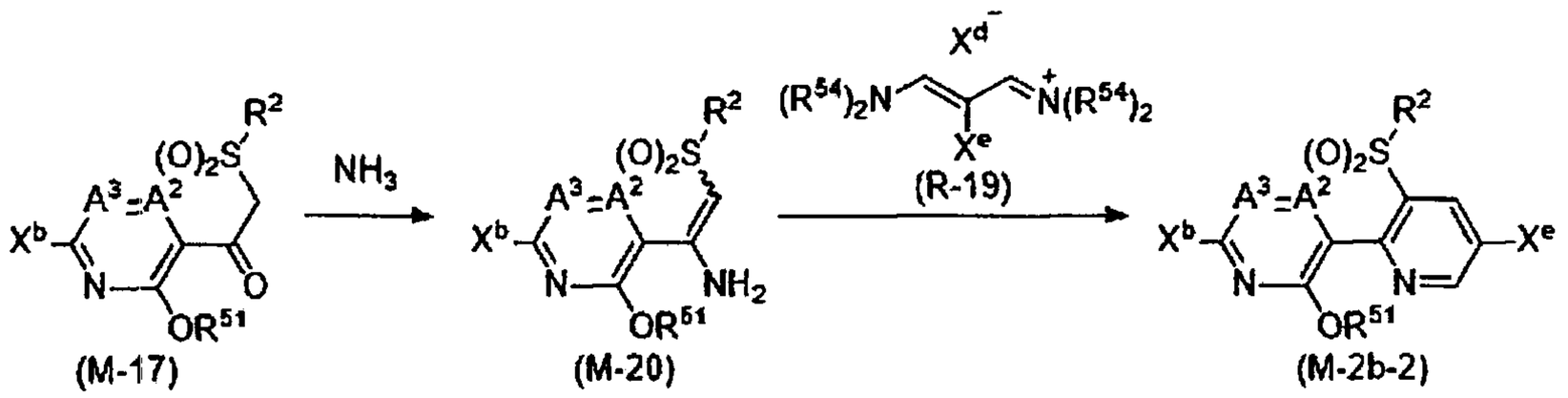
compound (M-2b-1).

The compound (R-18) may be prepared according to the method described in WO 2009/054742.

[0088]

Reference Process 22

A compound represented by formula (M-2b-2) (hereinafter, referred to Compound (M-2b-2)) may be prepared according to the following scheme.



[wherein X^e represents a chlorine atom, a bromine atom, an iodine atom, a methyl group, a nitro group, or a trifluoromethyl group, and the other symbols are the same as defined above.]

[0089]

A compound represented by formula (M-20) (hereinafter, referred to as Compound (M-20)) may be prepared by reacting the compound (M-17) with ammonia.

The reaction is usually carried out in the presence of a solvent. Examples of the solvents to be used in the reaction include ethers, aromatic hydrocarbons, nitriles, alcohols, aprotic polar solvents, water, and mixed solvents

thereof.

Ammonia to be used in the reaction may be used as ammonia gas, or may be used as an aqueous solution or an alcoholic solution thereof. Also, ammonium salts including ammonium carboxylate such as ammonium acetate; ammonium phosphate such as ammonium dihydrogen phosphate; ammonium carbonate; and ammonium chloride may be used.

In the reaction, ammonia is usually used within a range of 0.1 to 100 molar ratios, as opposed to 1 mole of the compound (M-17).

The reaction temperature of the reaction is usually within a range of 0 to 200°C. The reaction period of the reaction is usually within a range of 0.5 to 24 hours.

When the reaction is completed, water is added to reaction mixtures, and the reaction mixtures are extracted with organic solvent(s), and the organic layers are worked up (for example, drying and concentration) to give the compound (M-20).

[0090]

The compound (M-2b-2) may be prepared by reacting the compound (M-20) with a compound represented by formula (R-19) (hereinafter, referred to as Compound (R-19)).

The reaction is usually carried out in the presence of a solvent. Examples of the solvents to be used in the reaction include ethers, aromatic hydrocarbons, halogenated

hydrocarbons, alcohols, esters, nitriles, aprotic polar solvents, nitrogen-containing aromatic compounds, and mixed solvents thereof.

A base may be used in the reaction, and examples of the base include alkali metal carbonates, alkali metal hydrides, and organic bases.

When a base may be used in the reaction, the base is usually used within a range of 1 to 10 molar ratio(s), as opposed to 1 mole of the compound (M-20).

In the reaction, the compound (R-19) is usually used within a range of 1 to 10 molar ratio(s), as opposed to 1 mole of the compound (M-20).

The reaction temperature of the reaction is usually within a range of -50 to 200°C. The reaction period of the reaction is usually within a range of 0.1 to 24 hours.

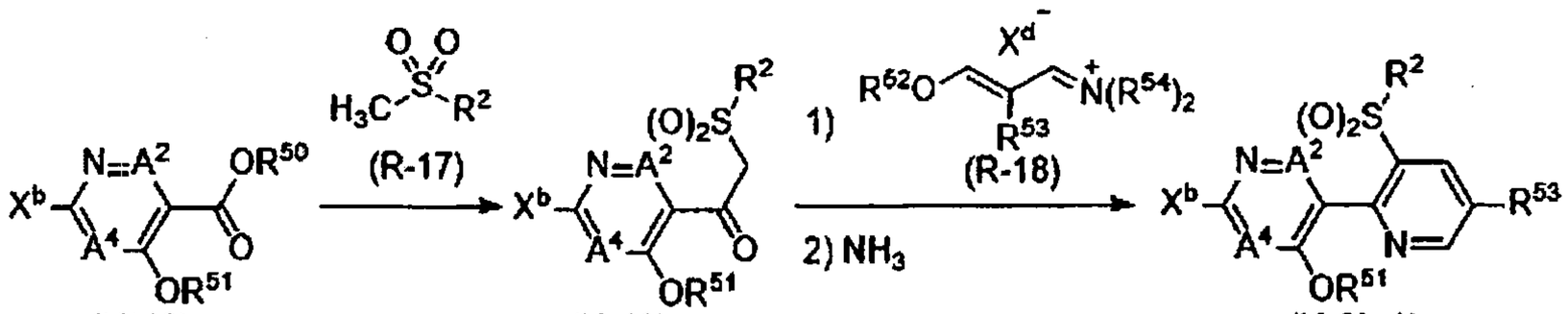
When the reaction is completed, water is added to reaction mixtures, and the reaction mixtures are extracted with organic solvent(s), and the organic layers are worked up (for example, drying and concentration) to give the compound (M-2b-2).

The compound (R-19) may be prepared according to the method described in Organic Process Research & Development, 2005, 9, 141., or The Journal of Organic Chemistry 2000, 65, 4571-4574.

[0091]

Reference process 23

A compound represented by formula (M-3b-1) (hereinafter, referred to as Compound (M-3b-1)) may be prepared according to the following scheme.



(M-18) (M-19) (M-3b-1)

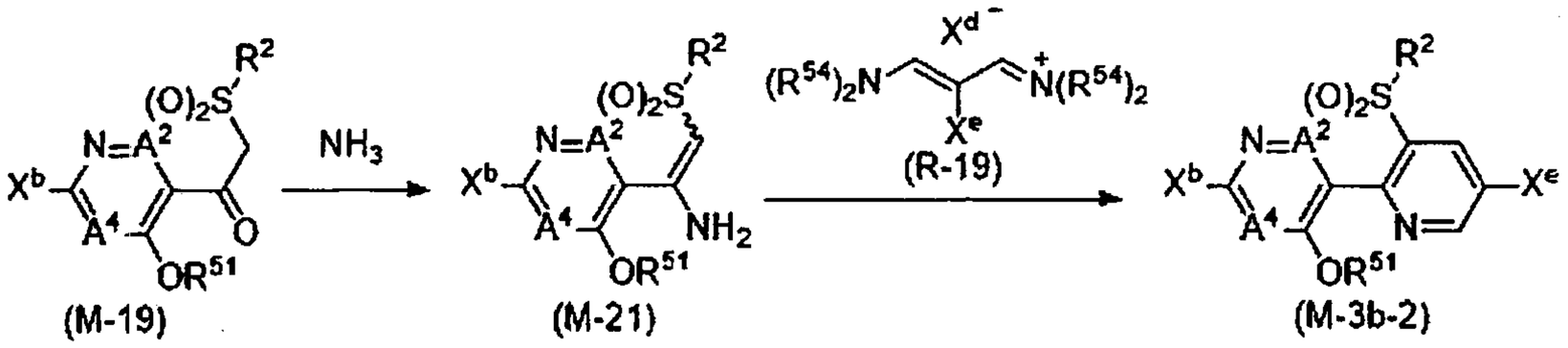
[wherein the symbols are the same as defined above.]

These reactions may be carried out by using the compound (M-18) in place of the compound (M-16) according to the methods described in Reference Process 21.

[0092]

Reference process 24

A compound represented by formula (M-3b-2) (hereinafter, referred to as Compound (M-3b-2)) may be prepared according to the following scheme.



(M-19) (M-21) (M-3b-2)

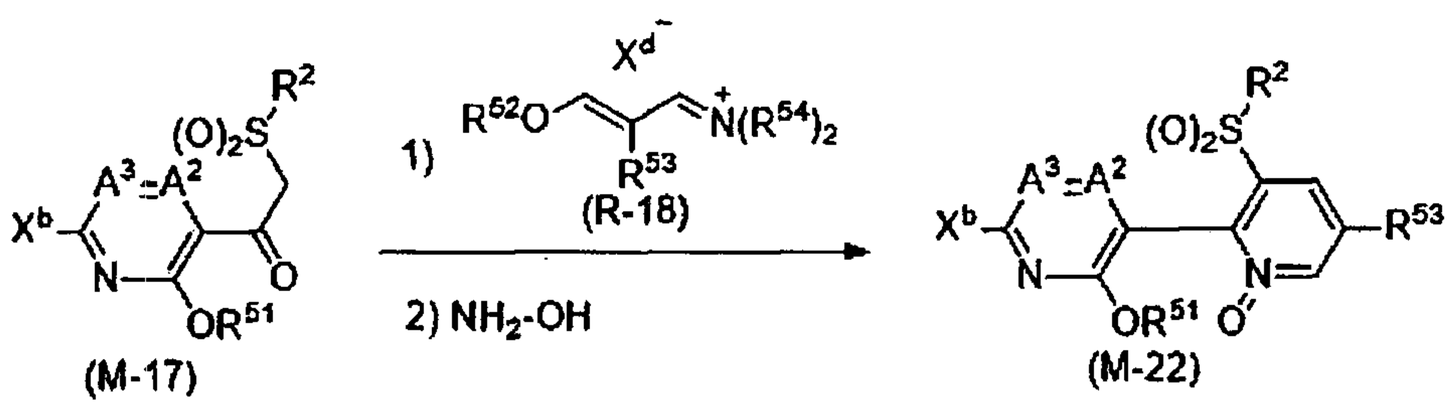
[wherein the symbols are the same as defined above.]

These reactions may be carried out by using the compound (M-19) in place of the compound (M-17) according to the methods described in Reference Process 22.

[0093]

Reference Process 25

A compound represented by formula (M-22) (hereinafter, referred to as Compound (M-22)) may be prepared by reacting the compound (M-17) with the compound (R-18), followed by reacting with hydroxyl amine.



[wherein the symbols are the same as defined above.]

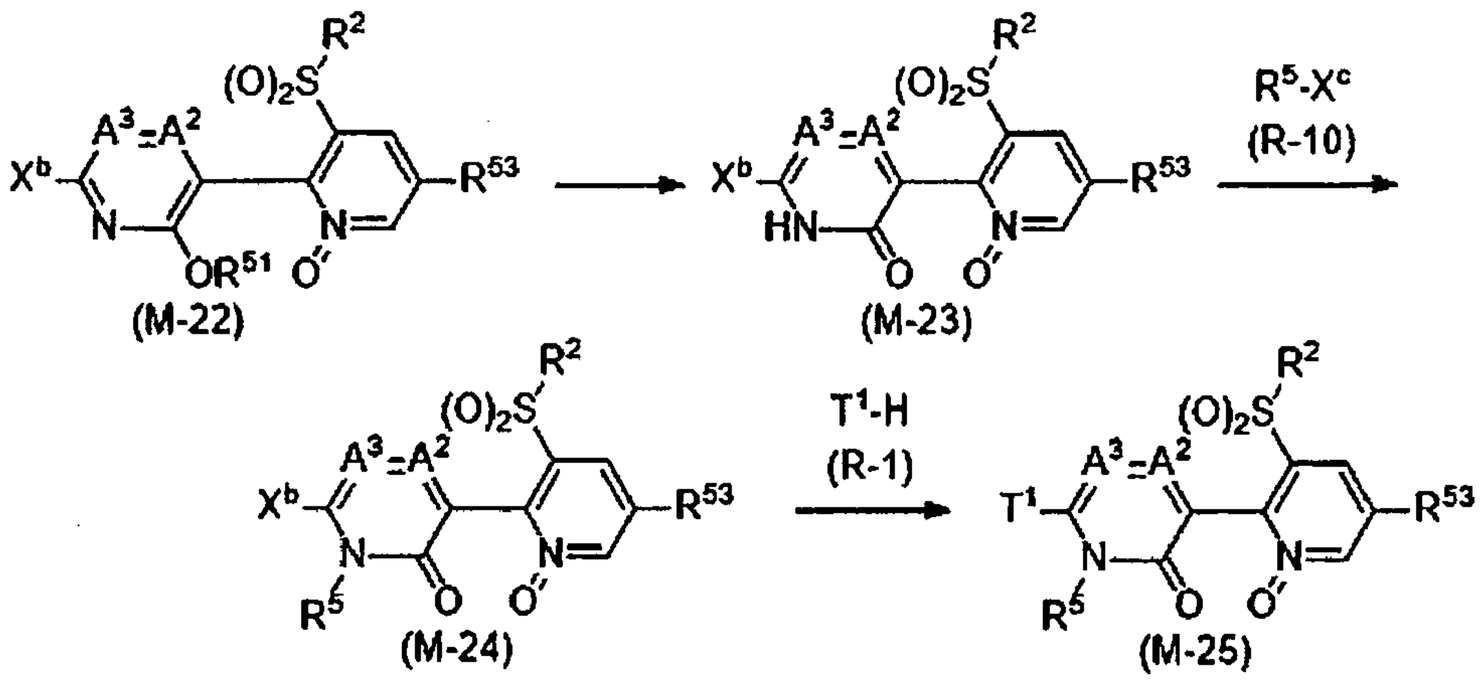
[0094]

The reaction may be carried out by using hydroxyl amine in place of ammonia according to the method described in Reference Process 21 for preparing the compound (M-2b-1) from the compound (M-17).

[0095]

Reference process 26

The compound (M-25) may be prepared according to the following scheme.



[wherein the symbols are the same as defined above.]

A compound represented by formula (M-23) (hereinafter, referred to as Compound (M-23)) may be prepared by using the compound (M-22) in place of the compound (M-2b) according to the method described in Reference Process 2.

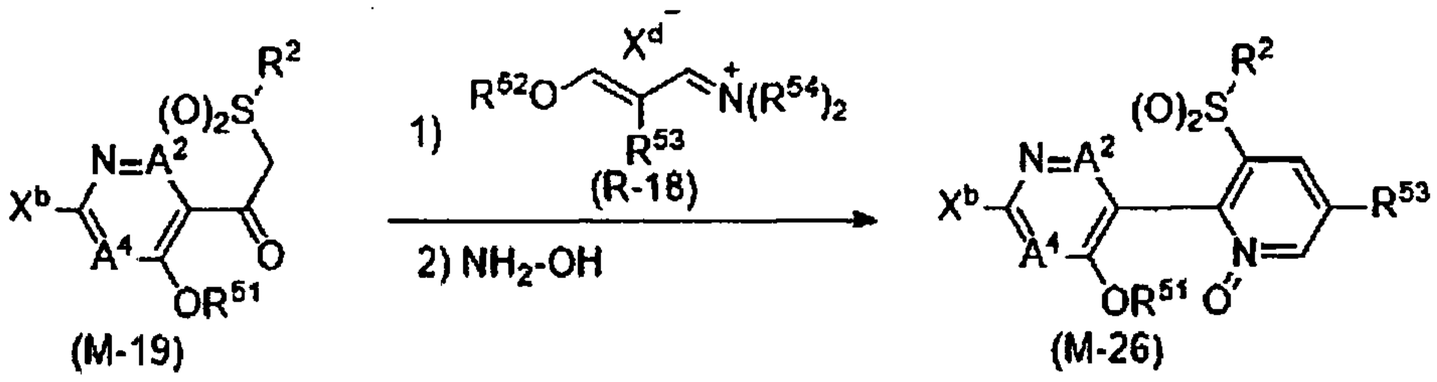
A compound represented by formula (M-24) (hereinafter, referred to as Compound (M-24)) may be prepared by using the compound (M-23) in place of the compound (M-2c) according to the method described in Reference Process 2.

The compound (M-25) may be prepared by using the compound (M-24) in place of the compound (M-2) according to the method described in Process 2.

[0096]

Reference Process 27

A compound represented by formula (M-26) (hereinafter, referred to as Compound (M-26)) may be prepared by reacting the compound (M-19) with the compound (M-18), followed by reacting with hydroxyl amine.



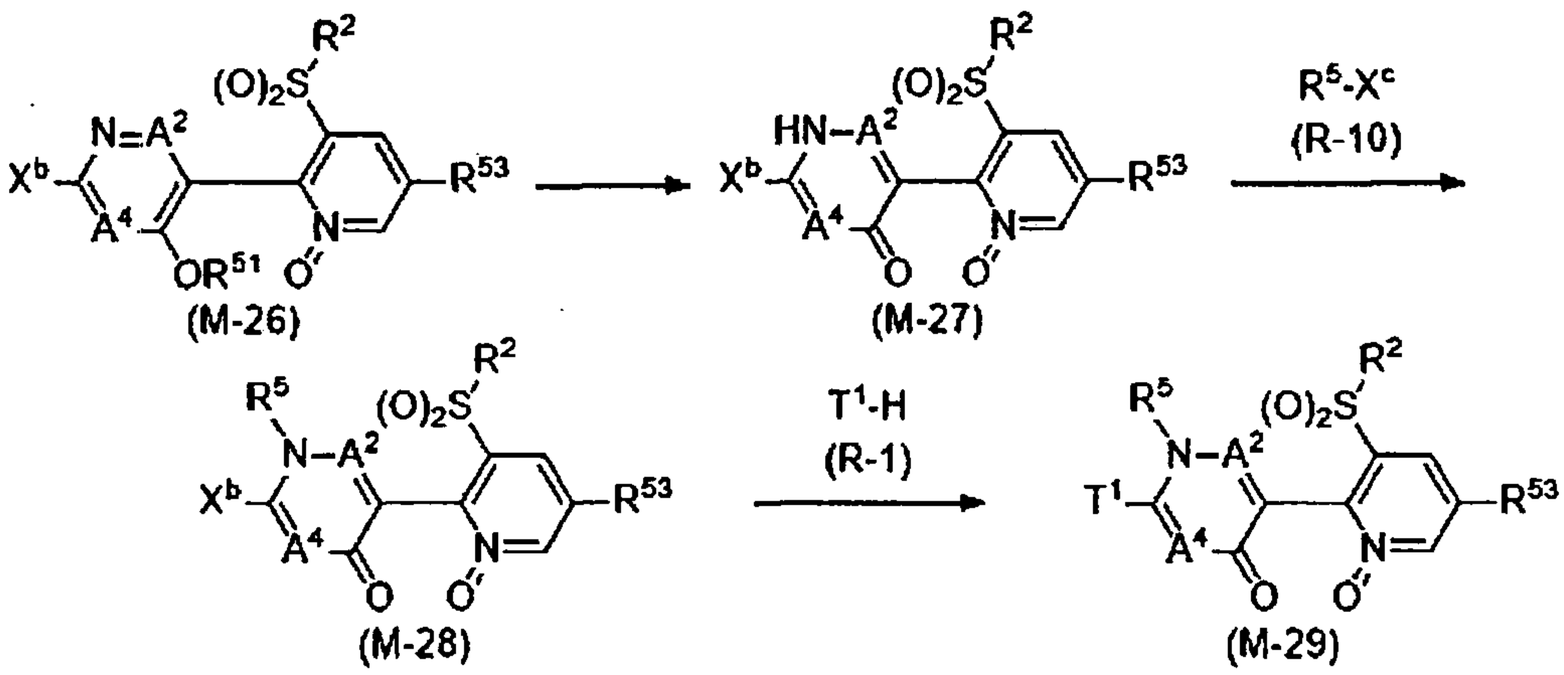
[wherein the symbols are the same as defined above.]

The reaction may be carried out by using the compound (M-19) in place of the compound (M-16) and using hydroxyl amine in place of ammonia, according to the method described in Reference Process 21 for preparing the compound (M-2b-1) from the compound (M-17).

[0097]

Reference Process 28

The compound (M-29) may be prepared according to the following scheme.



[wherein the symbols are the same as defined above.]

A compound represented by formula (M-27) (hereinafter, referred to as Compound (M-27)) may be prepared by using the compound (M-26) in place of the compound (M-2b) according to

the method described in Reference Process 2.

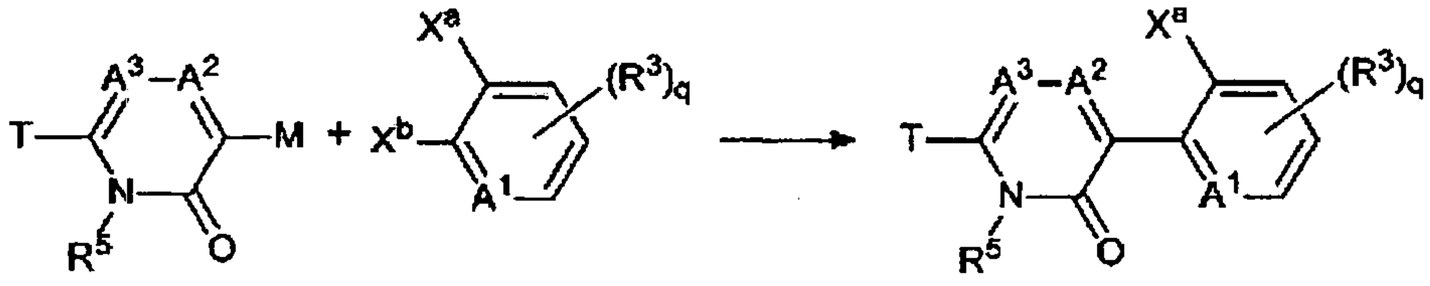
A compound represented by formula (M-28) (hereinafter, referred to as Compound (M-28)) may be prepared by using the compound (M-27) in place of the compound (M-2c) according to the method described in Reference Process 2.

A compound represented by formula (M-29) may be prepared by using the compound (M-28) in place of the compound (M-2) according to the method described in Process 2.

[0098]

Reference Process 29

Among the compound (M-30), a compound represented by formula (M-33) wherein Het represents a group represented by formula Het 1 can be prepared by reacting the compound (M-31) and the compound (R-15).



(M-31) (R-15) (M-33)

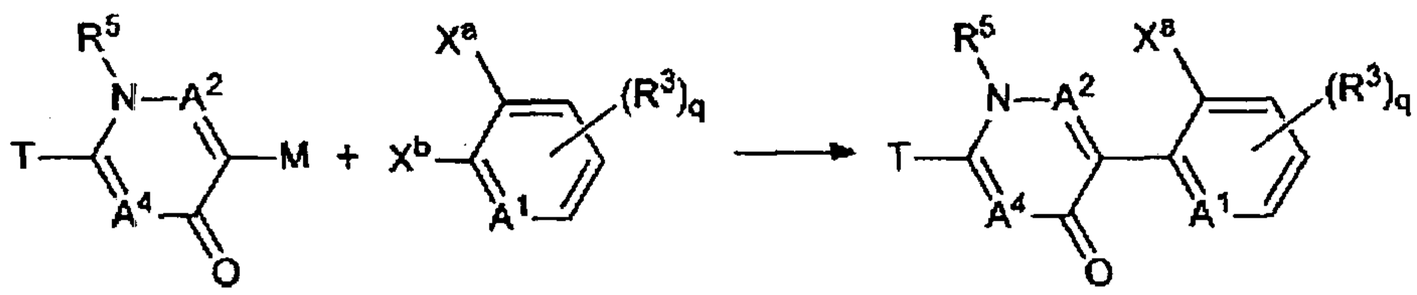
[wherein the symbols are the same as defined above.]

The reaction may be carried out by using the compound (M-31) in place of the compound (R-2) and using the compound (R-15) in place of the compound (M-2) according to the method described in the Process 4.

[0099]

Reference Process 30

Among the compound (M-30), a compound represented by formula (M-34) wherein Het represents a group represented by formula Het 2 can be prepared by reacting the compound (M-32) and the compound (R-15).



(M-32) (R-15) (M-34)

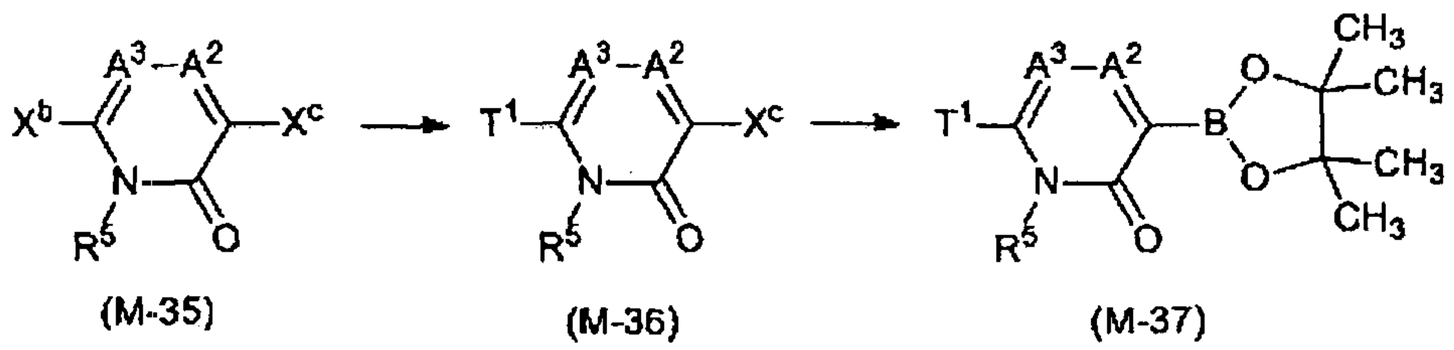
[wherein the symbols are the same as defined above.]

The reaction may be carried out by using the compound (M-32) in place of the compound (R-2) and using the compound (R-15) in place of the compound (M-2) according to the method described in the Process 4.

[0100]

Reference Process 31

A compound represented by formula (M-37) (hereinafter, referred to as Compound (M-37)) can be prepared according to the following scheme.



(M-35) (M-36) (M-37)

[wherein the symbols are the same as defined above.]

A compound represented by formula (M-36) (hereinafter, referred to as Compound (M-36)) can be prepared by reacting

a compound represented by formula (M-35) (hereinafter, referred to as Compound (M-35)) and the compound (R-1). The reaction can be carried out by using the compound (M-35) in place of the compound (M-2) according to the method described in the Process 2.

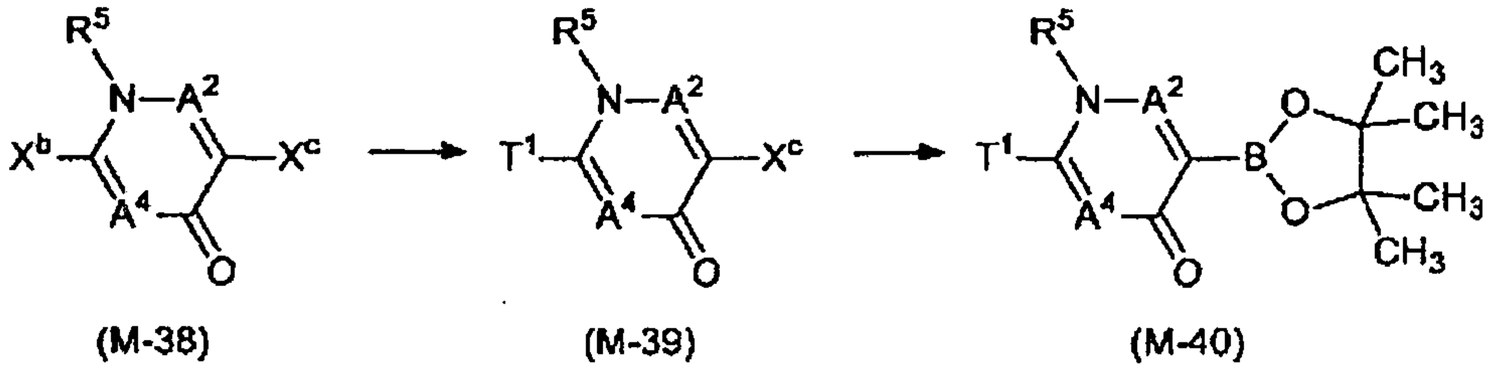
The compound (M-37) can be prepared by reacting the compound (M-36) and bis(pinacolato)diboron in the presence of a palladium catalyst and a base. The reaction can be carried out, for example, according the method described in Journal of Organic Chemistry, 1995, (60), 7508-7510.

The compound (M-35) is a commercially available compound, or can be prepared by using a known method.

[0101]

Reference Process 32

A compound represented by formula (M-40) (hereinafter, referred to as Compound (M-40)) can be prepared according to the following scheme.



[wherein the symbols are the same as defined above.]

A compound represented by formula (M-39) (hereinafter, referred to as Compound (M-39)) can be prepared by reacting a compound represented by formula (M-38) (hereinafter,

referred to as Compound (M-38)) and the compound (R-1). The reaction can be carried out by using the compound (M-38) in place of the compound (M-2) according to the method described in the Process 2.

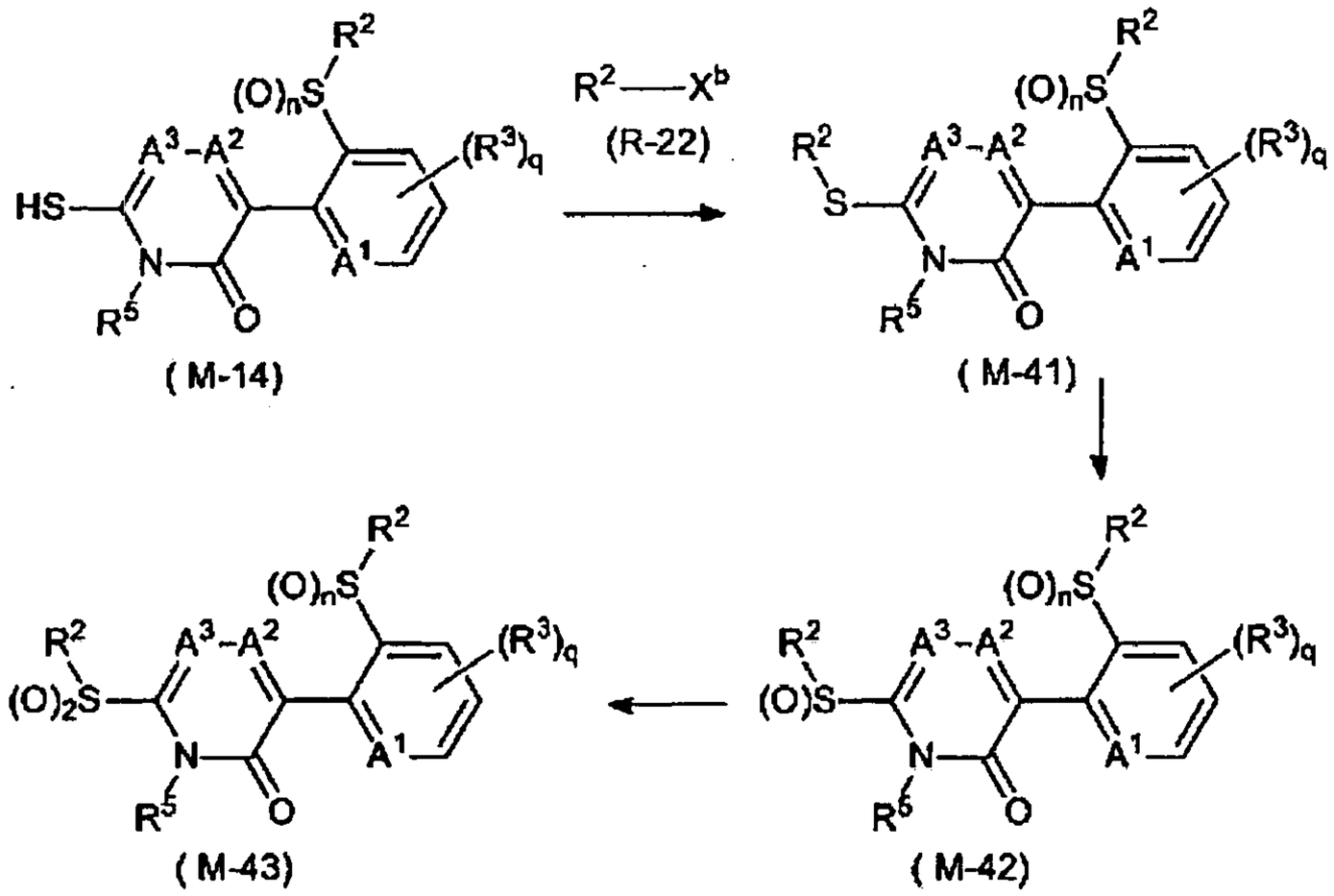
The compound (M-40) can be prepared by reacting the compound (M-39) and bis(pinacolato)diboron in the presence of a palladium catalyst and a base. The reaction can be carried out, for example, according the method described in Journal of Organic Chemistry, 1995, (60), 7508-7510.

The compound (M-38) is a commercially available compound, or can be prepared by using a known method.

[0102]

Reference Process 33

A compound represented by formula (M-41) (hereinafter, referred to as Compound (M-41)), a compound represented by formula (M-42) (hereinafter, referred to as Compound (M-42)), and the compound (M-43) can be prepared according to the following scheme.



[wherein the symbols are the same as defined above.]

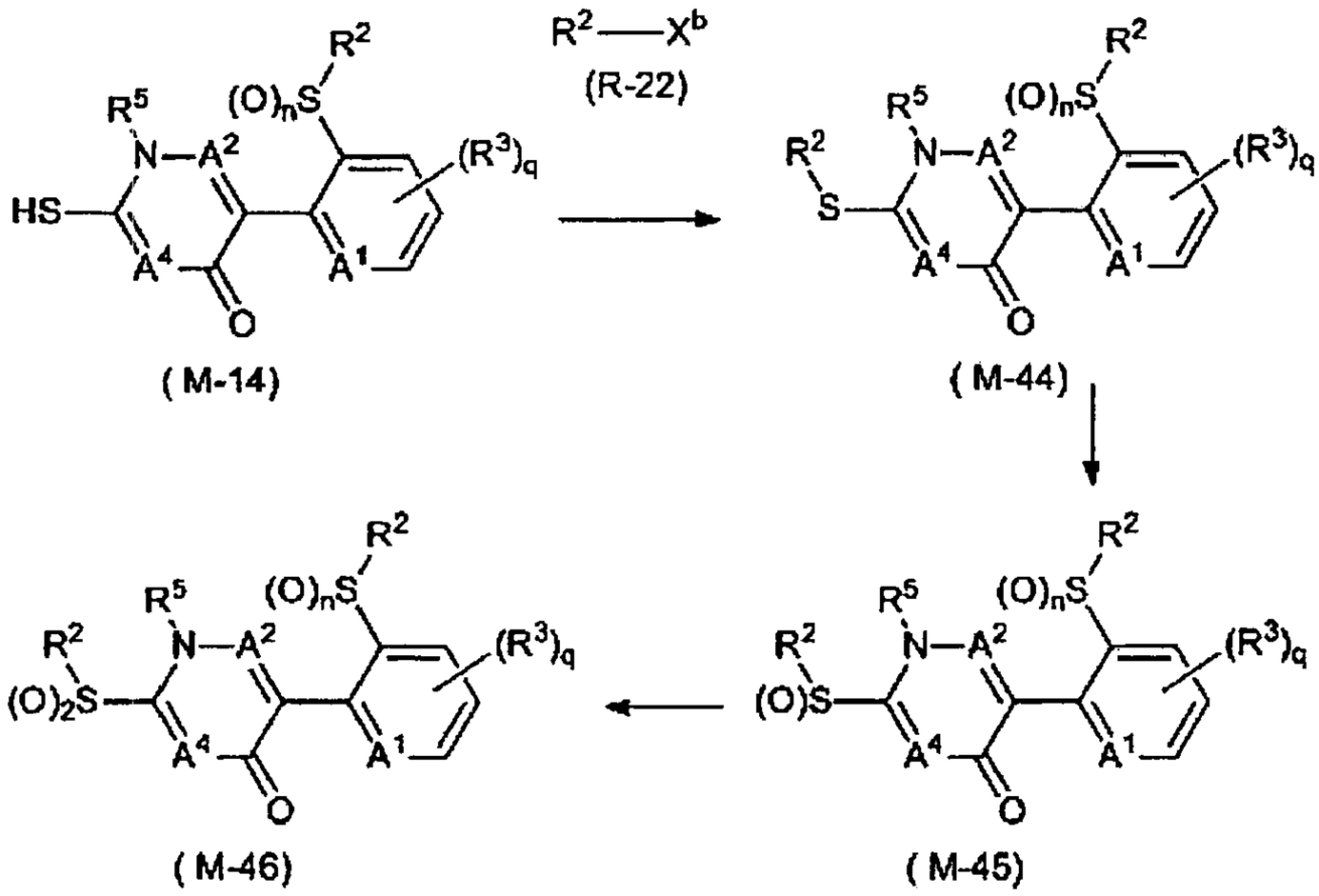
The reaction can be carried out according to the method described in the Process 20.

The compound (R-22) is a commercially available compound, or can be prepared by using a known method.

[0103]

Reference Process 34

A compound represented by formula (M-44) (hereinafter, referred to as Compound (M-44)), a compound represented by formula (M-45) (hereinafter, referred to as Compound (M-45)), and the compound (M-46) can be prepared according to the following scheme.



[wherein the symbols are the same as defined above.]

The reaction can be carried out according to the method described in the Process 20.

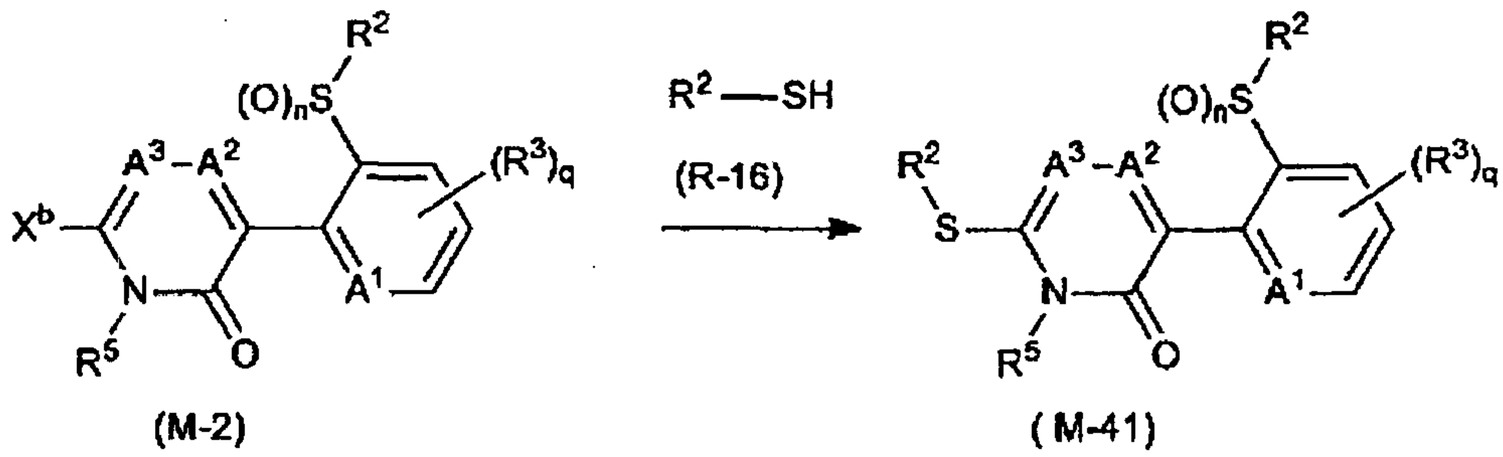
[0104]

Examples of the embodiment of the compound (M-36) include the following compounds.

[0105]

Reference Process 35

The compound (M-41) can be prepared by reacting the compound (M-2) and the compound (R-16) in the presence of a base.



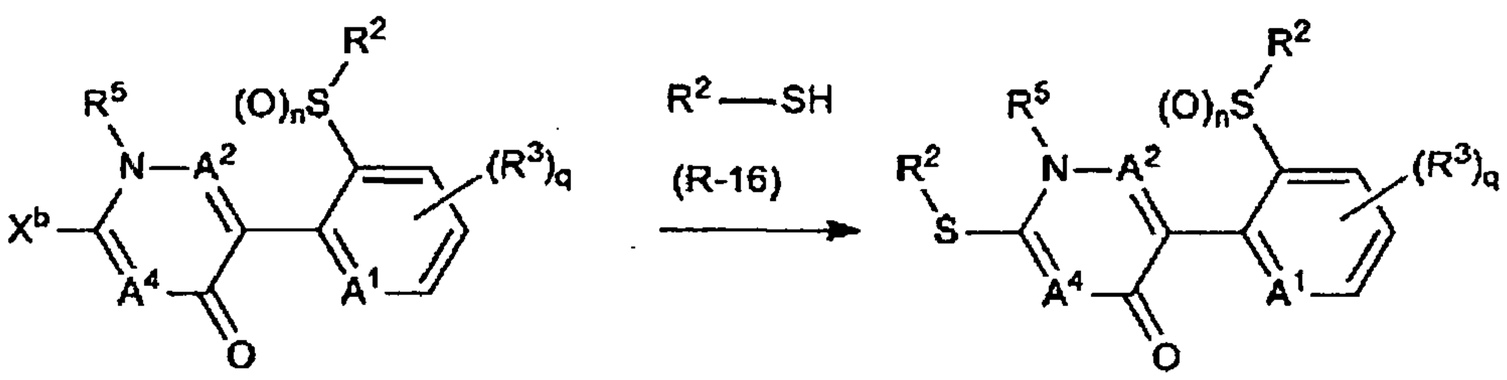
[wherein the symbols are the same as defined above.]

The reaction can be carried out by using the compound (R-16) in place of the compound (R-1) according to the method described in the process 2.

[0106]

Reference Process 36

The compound (M-44) can be prepared by reacting the compound (M-3) and the compound (R-16) in the presence of a base.



[wherein the symbols are the same as defined above.]

The reaction can be carried out by using the compound (R-16) in place of the compound (R-1) according to the method described in the process 2.

[0107]

[Embodiment M1] The compound (M-36) wherein A^2

represents a nitrogen atom or CH, A^3 represents a nitrogen atom or CH, R^5 represents a C1-C3 alky group, and T^1 represents a C2-C6 alkoxy group having one or more halogen atoms.

[Embodiment M2] The compound according to the embodiment M1 wherein A^2 represents CH, and A^3 represents CH.

[Embodiment M3] The compound according to the embodiment M1 wherein A^2 represents CH, and A^3 represents a nitrogen atom.

[0108]

Examples of the embodiment of the compound (M-39) include the following compounds.

[0109]

[Embodiment M4] The compound (M-39) wherein A^2 represents a nitrogen atom or CH, A^4 represents a nitrogen atom or CH, R^5 represents a C1-C3 alkyl group, and T^1 represents a C2-C6 alkoxy group having one or more halogen atoms.

[Embodiment M5] The compound according to the embodiment M4 wherein A^2 represents CH, and A^4 represents CH.

[Embodiment M6] The compound according to the embodiment M4 wherein A^2 represents CH, and A^4 represents a nitrogen atom.

[0110]

Examples of the embodiment of the compound (M-31) includes the following compounds.

[0111]

[Embodiment M7] The compound (M-31) wherein A^2 represents a nitrogen atom or CH, A^3 represents a nitrogen atom or CH, R^5 represents a C1-C3 alkyl group, and T represents a C2-C6 alkoxy group having one or more halogen atoms.

[Embodiment M8] The compound according to the embodiment M7 wherein A^2 represents CH, and A^3 represents CH.

[Embodiment M9] The compound according to the embodiment M7 wherein A^2 represents CH, and A^3 represents a nitrogen atom.

[Embodiment M10] The compound according to the embodiment M7 wherein M represents a 9-borabicyclo[3.3.1]nonan-9-yl, a borono group, a 4,4,5,5,-tetramethyl-1,3,2-dioxaborolan-2-yl, or a tributylstannyl group.

[0112]

Examples of the embodiment of the compound (M-32) include the following compounds.

[0113]

[Embodiment M11] The compound (M-32) wherein A^2 represents a nitrogen atom or CH, A^4 represents a nitrogen atom or CH, R^5 represents a C1-C3 alkyl group, and T represents a C2-C6 alkoxy group having one or more halogen atoms.

[Embodiment M12] The compound according to the embodiment M11 wherein A^2 represents CH, and A^4 represents CH.

[Embodiment M13] The compound according to the embodiment M11 wherein A^2 represents CH, and A^4 represents a nitrogen atom.

[Embodiment M14] The compound according to the embodiment M11 wherein M represents a 9-borabiclo[3.3.1]nonan-9-yl, a borono group, a 4,4,5,5,-tetramethyl-1,3,2-dioxaborolan-2-yl, or a tributylstannyl group.

[0114]

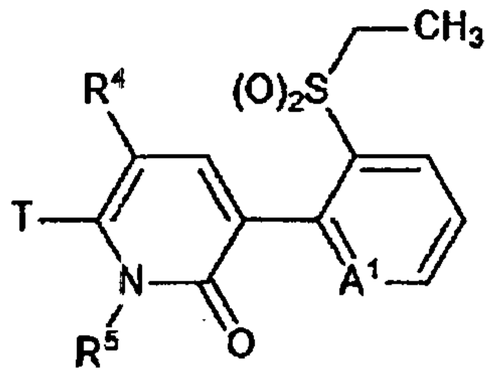
Next, specific examples of the compound Z of the present invention are indicated below.

Herein, Me represents a methyl group, Et represents an ethyl group, Pr represents a propyl group, i-Pr represents an isopropyl group, Bu represents a butyl group, c-Pr represents a cyclopropyl group, 1-CN-c-Pr represents a 1-cyano-cyclopropyl group, Ph represents a phenyl group, Py2 represents a 2-pyridyl group, Py3 represents a 3-pyridyl group, Py4 represents a 4-pyridyl group, and Bn represents

a benzyl group. When the Ph, Py2, Py3, and Py4 have any substituent(s), the substituent(s) is described together with a substitution position before the symbol. For example, 4-CF_3-Py2 represents a 4-(trifluoromethyl)-2-pyridyl group, and 3,5-$(CF_3)_2$-Ph represents a 3,5-bis(trifluoromethyl)phenyl group.

[0115]

A compound represented by formula (L-1):



(L-1)

(hereinafter, referred to as Compound (L-1)) wherein A^1 represents CH, R^4 represents a hydrogen atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_1).

[0116]

Table 1

CF_3
CHF_2
CH_2CF_3
CF_2CF_3
$CH_2CF_2CF_3$
$CF_2CF_2CF_3$
$CF_2CF_2CF_2CF_3$
$CF_2CF_2CF_2CF_2CF_3$
OCF_3
$OCHF_2$
OCH_2CF_3

Table 2

SCF_3
SCH_2CF_3
SCF_2CF_3
$SCH_2CF_2CF_3$
$SCF_2CF_2CF_3$
$SCH_2CF_2CF_2CF_3$
$SCF_2CF_2CF_2CF_3$
$S(O)CF_3$
$S(O)CH_2CF_3$
$S(O)CF_2CF_3$
$S(O)CH_2CF_2CF_3$

Table 3

$NHCH_2CF_3$
$NHCH_2CF_2CF_3$
$NHCH_2CF_2CF_2CF_3$
$NMeCH_2CF_3$
$NMeCH_2CF_2CF_3$
$NMeCH_2CF_2CF_2CF_3$
$NEtCH_2CF_3$
$NEtCH_2CF_2CF_3$
$NEtCH_2CF_2CF_2CF_3$
$OS(O)_2CF_3$
$OS(O)_2CF_2CF_3$

OCH_2CHF_2	$S(O)CF_2CF_2CF_3$	$OS(O)_2CF_2CF_2CF_3$
OCF_2CF_3	$S(O)CH_2CF_2CF_2CF_3$	CH_2OCF_3
$OCH(CH_3)CF_3$	$S(O)CF_2CF_2CF_2CF_3$	$CH_2OCH_2CF_3$
$OCH_2CF_2CHF_2$	$S(O)_2CF_3$	$CH_2OCF_2CF_3$
$OCH_2CF_2CF_3$	$S(O)_2CH_2CF_3$	$C(O)CF_3$
$OCF_2CF_2CF_3$	$S(O)_2CF_2CF_3$	$C(O)CF_2CF_3$
$OCH_2CF_2CHFCF_3$	$S(O)_2CH_2CF_2CF_3$	$C(O)CF_2CF_2CF_3$
$OCH_2CF_2CF_2CF_3$	$S(O)_2CF_2CF_2CF_3$	$C(O)NMeCH_2CF_3$
$OCF_2CF_2CF_2CF_3$	$S(O)_2CH_2CF_2CF_2CF_3$	$NMeC(O)CF_3$
$OCH_2CF_2CF_2CF_2CF_3$	$S(O)_2CF_2CF_2CF_2CF_3$	$N=CEtCH_2CF_3$
OCH_2CMe_2CN	OCH_2(1-CN-c-Pr)	OCH_2(1-CN-c-Bu)

[0117]

Table 4

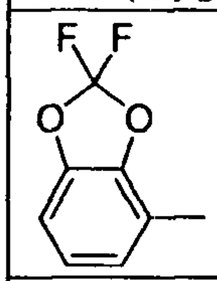
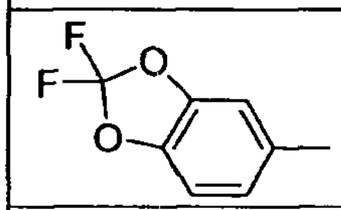
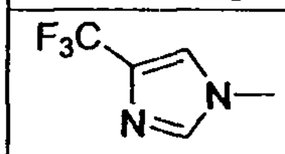
3-CF_3-Ph
4-CF_3-Ph
3,5-$(CF_3)_2$-Ph
3-SCF_3-Ph
3-S(O)CF_3-Ph
3-$S(O)_2CF_3$-Ph
4-SCF_3-Ph
4-S(O)CF_3-Ph
4-$S(O)_2CF_3$-Ph




Table 5

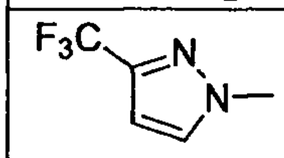
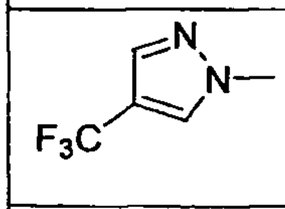
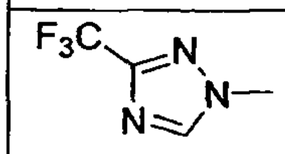
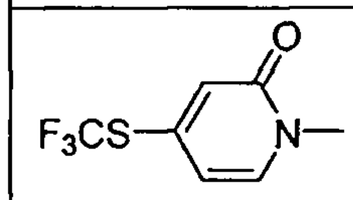
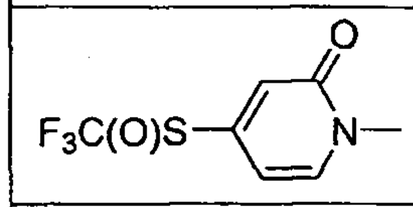
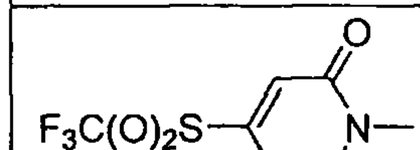
4-CF_3-Py2
5-CF_3-Py2
4-SCF_3-Py2
4-S(O)CF_3-Py2
4-$S(O)_2CF_3$-Py2
5-SCF_3-Py2
5-S(O)CF_3-Py2
5-$S(O)_2CF_3$-Py2
5-$NMeCH_2CF_3$-Py2




Table 6

5-CF_3-Py3
6-CF_3-Py3
5-SCF_3-Py3
5-S(O)CF_3-Py3
5-$S(O)_2CF_3$-Py3
6-SCF_3-Py3
6-S(O)CF_3-Py3
6-$S(O)_2CF_3$-Py3
6-$NMeCH_2CF_3$-Py3




[0118]

A compound (L-1) wherein A^1 represents CH, R^4 represents a hydrogen atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_2).

A compound (L-1) wherein A^1 represents a nitrogen atom,

R^4 represents a hydrogen atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_3).

A compound (L-1) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_4).

A compound (L-1) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_5).

A compound (L-1) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_6).

A compound (L-1) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_7).

A compound (L-1) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_8).

A compound (L-1) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_9).

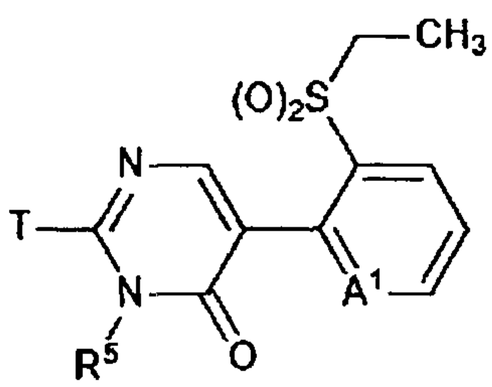
A compound (L-1) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{10}).

A compound (L-1) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{11}).

A compound (L-1) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{12}).

[0119]

A compound represented by formula (L-2):



(L-2)

(hereinafter, referred to as Compound (L-2)) wherein A^1

represents CH, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{13}).

A compound (L-2) wherein A^1 represents CH, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{14}).

A compound (L-2) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{15}).

A compound (L-2) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{16}).

A compound (L-2) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{17}).

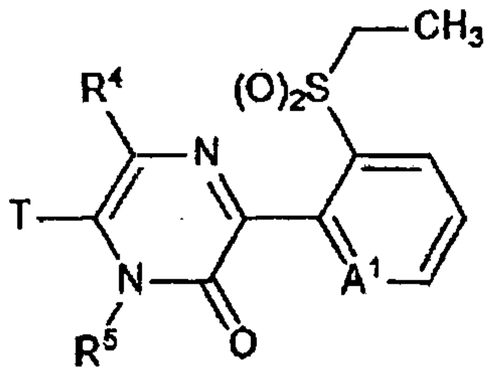
A compound (L-2) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{18}).

A compound (L-2) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, and T represents any

substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{19}).

[0120]

A compound represented by formula (L-3):



(L-3)

(hereinafter, referred to as Compound (L-3)) wherein A^1 represents CH, R^4 represents a hydrogen atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{20}).

A compound (L-3) wherein A^1 represents CH, R^4 represents a hydrogen atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{21}).

A compound (L-3) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{22}).

A compound (L-3) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{23}).

A compound (L-3) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{24}).

A compound (L-3) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{25}).

A compound (L-3) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{26}).

A compound (L-3) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{27}).

A compound (L-3) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{28}).

A compound (L-3) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to

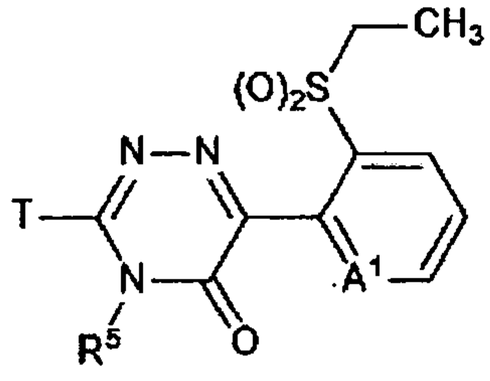
Table 6 (hereinafter, referred to as Compound Class SX_{29}).

A compound (L-3) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{30}).

A compound (L-3) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{31}).

[0121]

A compound represented by formula (L-4):



(L-4)

(hereinafter, referred to as Compound (L-4)) wherein A^1 represents CH, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{32}).

A compound (L-4) wherein A^1 represents CH, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{33}).

A compound (L-4) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{34}).

A compound (L-4) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{35}).

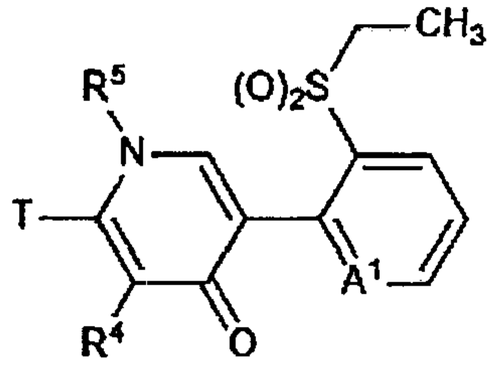
A compound (L-4) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{36}).

A compound (L-4) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{37}).

A compound (L-4) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{38}).

[0122]

A compound represented by formula (L-5):



(L-5)

(hereinafter, referred to as Compound (L-5)) wherein A^1 represents CH, R^4 represents a hydrogen atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{39}).

A compound (L-5) wherein A^1 represents CH, R^4 represents a hydrogen atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{40}).

A compound (L-5) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{41}).

A compound (L-5) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{42}).

A compound (L-5) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{43}).

A compound (L-5) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{44}).

A compound (L-5) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{45}).

A compound (L-5) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{46}).

A compound (L-5) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{47}).

A compound (L-5) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{48}).

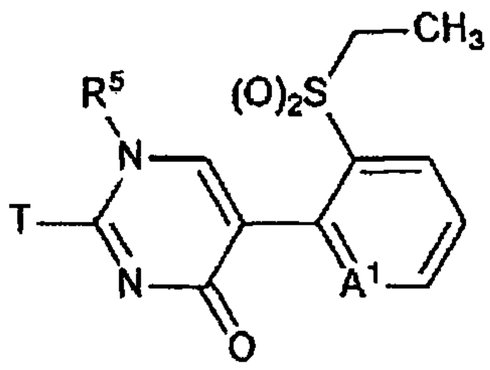
A compound (L-5) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents an isopropyl group, and T represents any substituents indicated in Table

1 to Table 6 (hereinafter, referred to as Compound Class SX_{49}).

A compound (L-5) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{50}).

[0123]

A compound represented by formula (L-6):



(L-6)

(hereinafter, referred to as Compound (L-6)) wherein A^1 represents CH, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{51}).

A compound (L-6) wherein A^1 represents CH, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{52}).

A compound (L-6) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{53}).

A compound (L-6) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{54}).

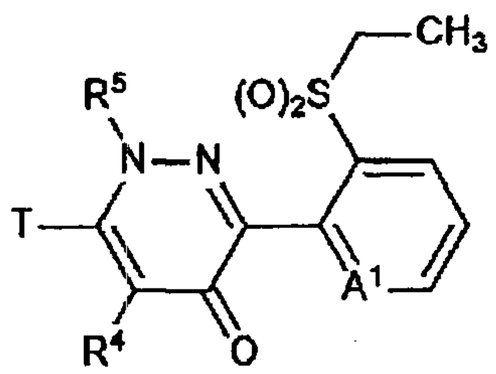
A compound (L-6) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{55}).

A compound (L-6) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{56}).

A compound (L-6) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{57}).

[0124]

A compound represented by formula (L-7):



(L-7)

(hereinafter, referred to as Compound (L-7)) wherein A^1 represents CH, R^4 represents a hydrogen atom, R^5 represents a methyl group, and T represents any substituents indicated

in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{58}).

A compound (L-7) wherein A^1 represents CH, R^4 represents a hydrogen atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{59}).

A compound (L-7) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{60}).

A compound (L-7) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{61}).

A compound (L-7) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{62}).

A compound (L-7) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{63}).

A compound (L-7) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents a cyclopropyl

group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{64}).

A compound (L-7) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{65}).

A compound (L-7) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{66}).

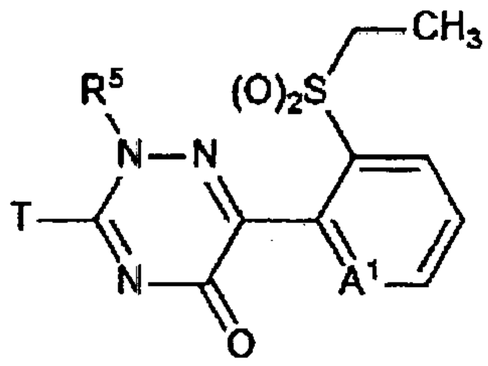
A compound (L-7) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{67}).

A compound (L-7) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{68}).

A compound (L-7) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{69}).

[0125]

A compound represented by formula (L-8):



(L-8)

(hereinafter, referred to as Compound (L-8)) wherein A^1 represents CH, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{70}).

A compound (L-8) wherein A^1 represents CH, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{71}).

A compound (L-8) wherein A^1 represents a nitrogen atom , R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{72}).

A compound (L-8) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{73}).

A compound (L-8) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter,

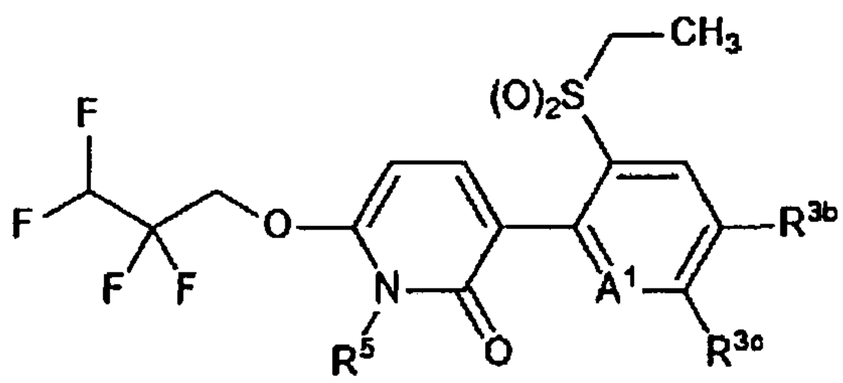
referred to as Compound Class SX_{74}).

A compound (L-8) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{75}).

A compound (L-8) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{76}).

[0126]

A compound represented by formula (L-9):



(L-9)

(hereinafter, referred to as Compound (L-9)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{77}).

[0127]

Table 7

F
Cl
Br
Me
Et
Pr

Table 8

Ph
3-F-Ph
4-F-Ph
3-Cl-Ph
4-Cl-Ph
3-CF_3-Ph

Table 9

Py2
4-F-Py2
5-F-Py2
4-Cl-Py2
5-Cl-Py2
4-CF_3-Py2

i-Pr	4-CF_3-Ph	5-CF_3-Py2
c-Pr	3-NMe_2-Ph	3-Me-Py2
1-CN-c-Pr	4-NMe_2-Ph	4-Me-Py2
OMe	3-CN-Ph	5-Me-Py2
OEt	4-CN-Ph	6-Me-Py2
OPr	4-C(O)NMe_2-Ph	5-CN-Py2
Oi-Pr	4-NHC(O)Me-Ph	5-$OCH_2CF_2CF_3$-Py2
CF_3	3,4-F_2-Ph	3,5-F_2-Py2
NH_2	3,5-F_2-Ph	Py3
$NHCH_2CF_3$	2,4-F_2-Ph	6-CF_3-Py3
CN	3,4,5-F_3-Ph	5-CF_3-Py3
C(O)OEt	3,4-Cl_2-Ph	6-F-Py3
NHC(O)c-Pr	3,5-Cl_2-Ph	6-Cl-Py3
NMeC(O)c-Pr	3,5-Cl_2-4-F-Ph	Py4
CH=N-OH	OPh	OPy2
CH=N-OMe	O-2-F-Ph	OPy3

[0128]

Table 10

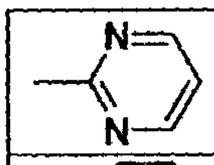
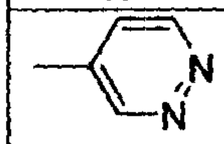
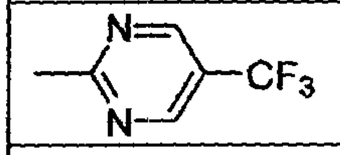
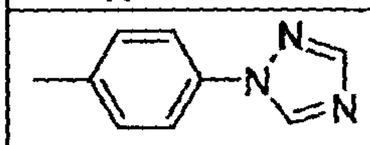
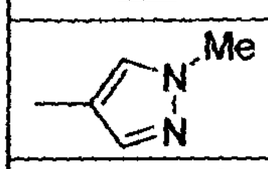
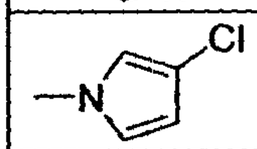
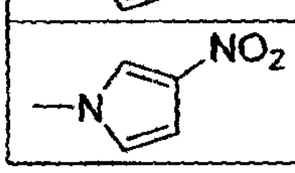








Table 11

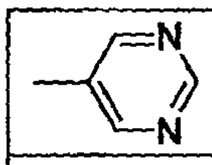
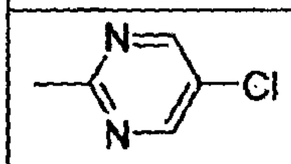
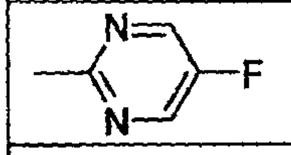
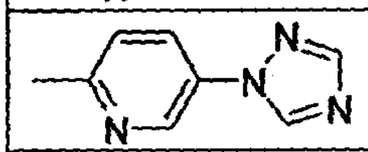
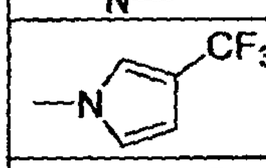
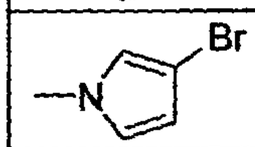
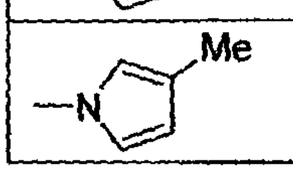
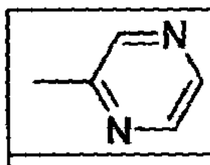
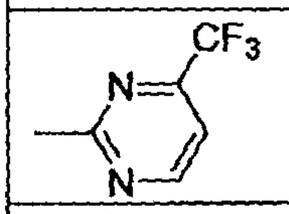
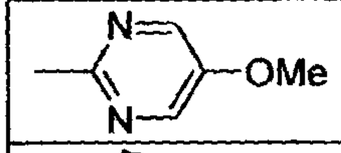
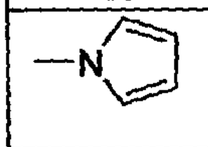
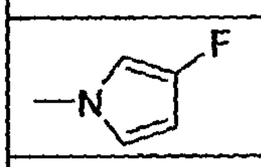
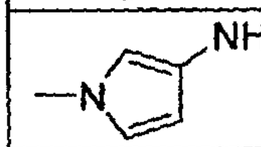
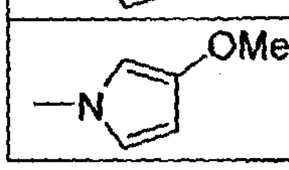








Table 12

[0129]

Table 13

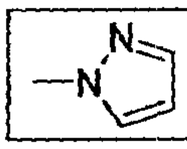


Table 14

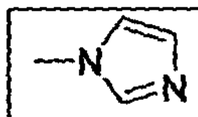
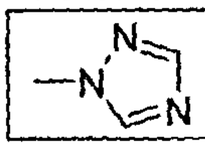
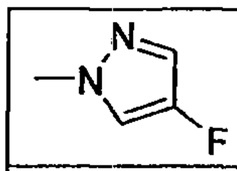
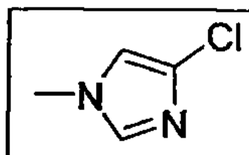
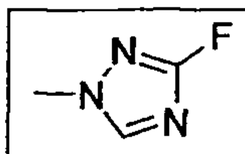
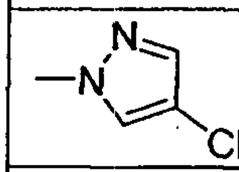
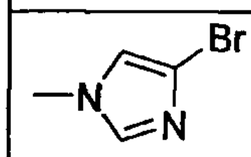
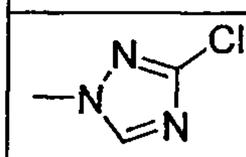
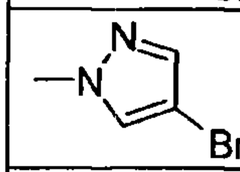
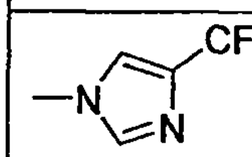
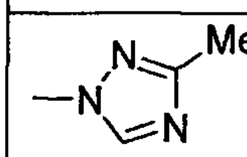
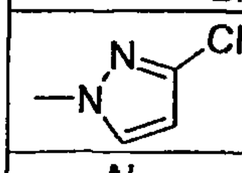
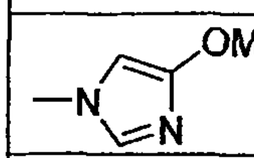
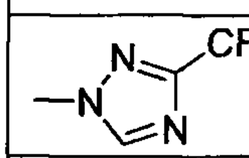
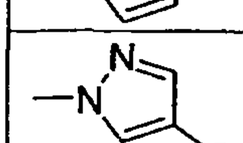
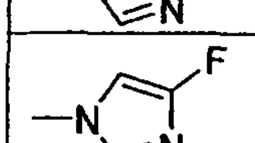
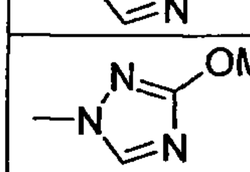
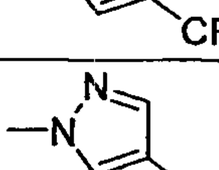
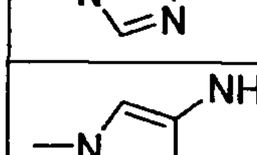
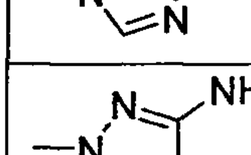
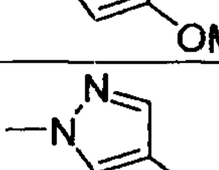
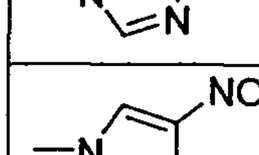
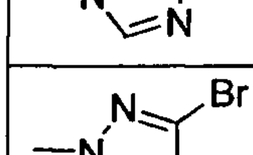
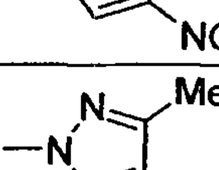
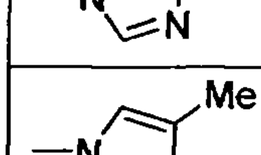
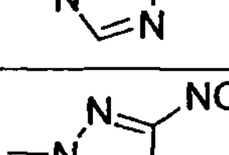
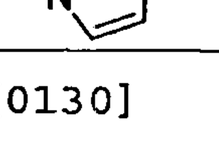
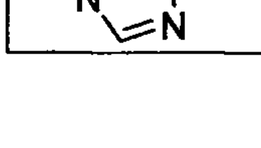
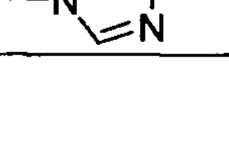


Table 15



[0130]

A compound (L-9) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{78}).

A compound (L-9) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{79}).

A compound (L-9) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to

Table 15 (hereinafter, referred to as Compound Class SX_{80}).

A compound (L-9) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{81}).

A compound (L-9) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{82}).

A compound (L-9) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{83}).

A compound (L-9) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{84}).

A compound (L-9) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{85}).

A compound (L-9) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom,

and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{86}).

A compound (L-9) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{87}).

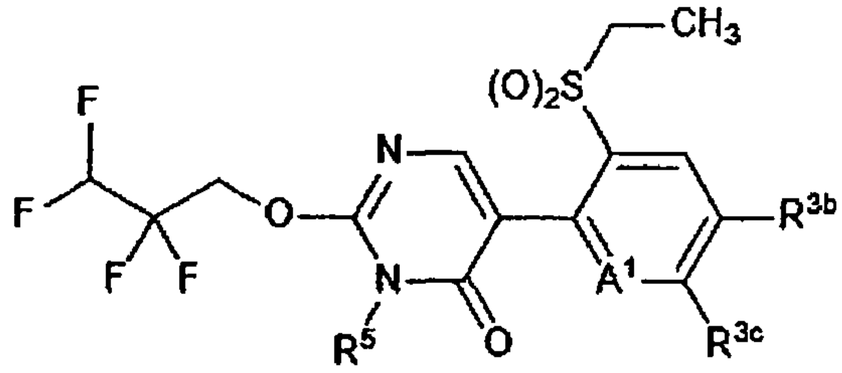
A compound (L-9) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{88}).

A compound (L-9) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{89}).

A compound (L-9) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{90}).

[0131]

A compound represented by formula (L-10):



(L-10)

(hereinafter, referred to as Compound (L-10)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{91}).

A compound (L-10) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{92}).

A compound (L-10) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{93}).

A compound (L-10) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{94}).

A compound (L-10) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{95}).

A compound (L-10) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{96}).

A compound (L-10) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{97}).

A compound (L-10) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{98}).

A compound (L-10) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{99}).

A compound (L-10) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{100}).

A compound (L-10) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to

Table 15 (hereinafter, referred to as Compound Class SX_{101}).

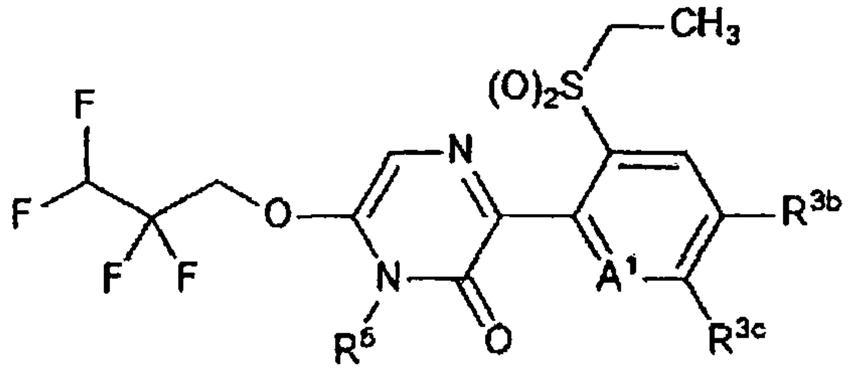
A compound (L-10) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{102}).

A compound (L-10) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{103}).

A compound (L-10) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{104}).

[0132]

A compound represented by formula (L-11):



(L-11)

(hereinafter, referred to as Compound (L-11)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to

as Compound Class SX_{105}).

A compound (L-11) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{106}).

A compound (L-11) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{107}).

A compound (L-11) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{108}).

A compound (L-11) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{109}).

A compound (L-11) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{110}).

A compound (L-11) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table

7 to Table 15 (hereinafter, referred to as Compound Class SX_{111}).

A compound (L-11) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{112}).

A compound (L-11) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{113}).

A compound (L-11) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{114}).

A compound (L-11) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{115}).

A compound (L-11) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{116}).

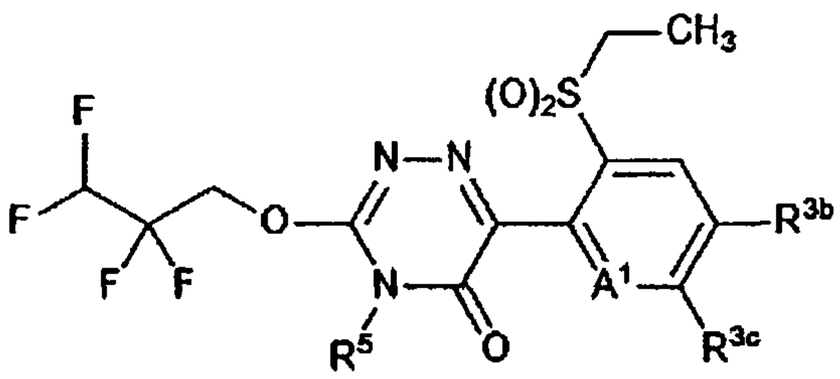
A compound (L-11) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table

7 to Table 15 (hereinafter, referred to as Compound Class SX_{117}).

A compound (L-11) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{118}).

[0133]

A compound represented by formula (L-12):



(L-12)

(hereinafter, referred to as Compound (L-12)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{119}).

A compound (L-12) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{120}).

A compound (L-12) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to

Table 15 (hereinafter, referred to as Compound Class SX_{121}).

A compound (L-12) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{122}).

A compound (L-12) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{123}).

A compound (L-12) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{124}).

A compound (L-12) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{125}).

A compound (L-12) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{126}).

A compound (L-12) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom,

and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{127}).

A compound (L-12) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{128}).

A compound (L-12) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{129}).

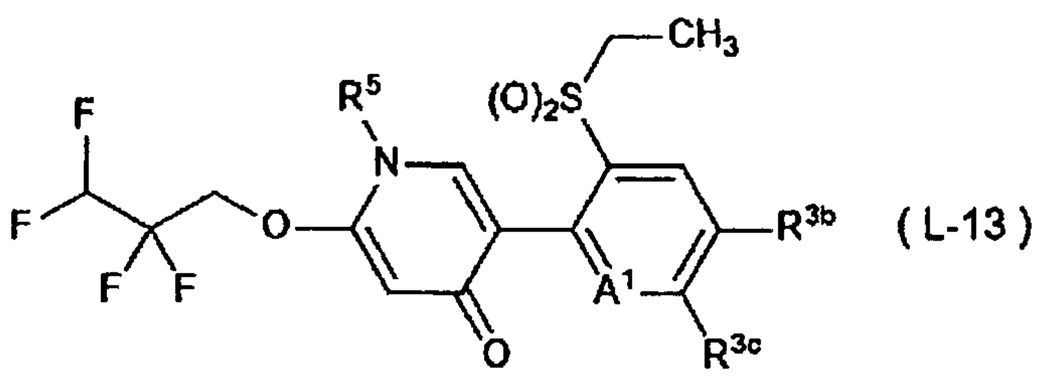
A compound (L-12) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{130}).

A compound (L-12) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{131}).

A compound (L-12) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{132}).

[0134]

A compound represented by formula (L-13):



(L-13)

(hereinafter, referred to as Compound (L-13)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{133}).

A compound (L-13) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{134}).

A compound (L-13) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{135}).

A compound (L-13) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{136}).

A compound (L-13) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to

Table 15 (hereinafter, referred to as Compound Class SX_{137}).

A compound (L-13) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{138}).

A compound (L-13) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{139}).

A compound (L-13) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{140}).

A compound (L-13) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{141}).

A compound (L-13) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{142}).

A compound (L-13) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom,

and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{143}).

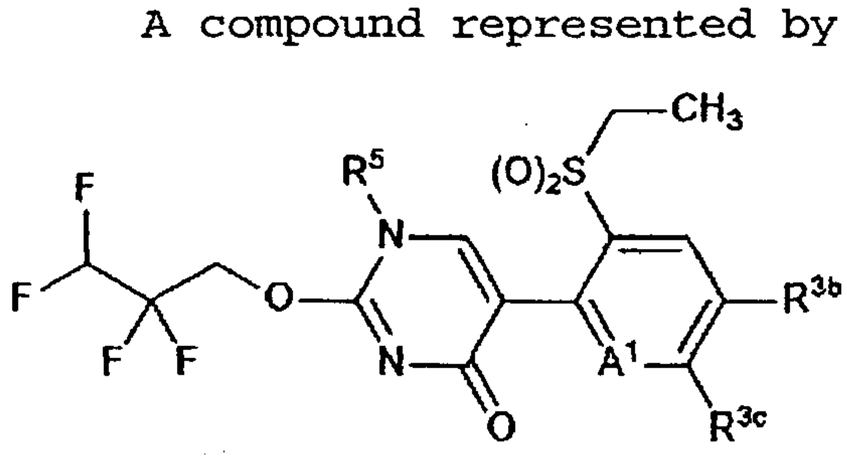
A compound (L-13) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{144}).

A compound (L-13) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{145}).

A compound (L-13) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{146}).

[0135]

A compound represented by formula (L-14):



(L-14)

(hereinafter, referred to as Compound (L-14)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents

indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{147}).

A compound (L-14) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{148}).

A compound (L-14) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{149}).

A compound (L-14) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{150}).

A compound (L-14) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{151}).

A compound (L-14) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{152}).

A compound (L-14) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen

atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{153}).

A compound (L-14) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{154}).

A compound (L-14) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{155}).

A compound (L-14) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{156}).

A compound (L-14) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{157}).

A compound (L-14) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{158}).

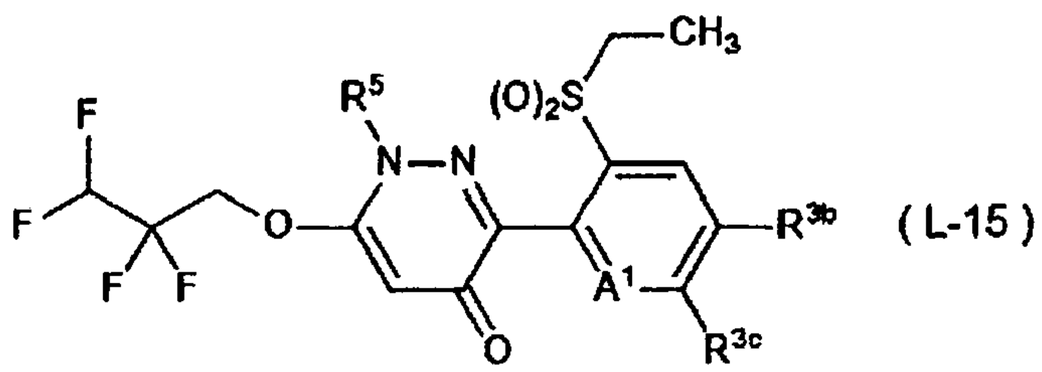
A compound (L-14) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen

atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{159}).

A compound (L-14) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{160}).

[0136]

A compound represented by formula (L-15):



(L-15)

(hereinafter, referred to as Compound (L-15)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{161}).

A compound (L-15) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{162}).

A compound (L-15) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom,

and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{163}).

A compound (L-15) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{164}).

A compound (L-15) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{165}).

A compound (L-15) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{166}).

A compound (L-15) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{167}).

A compound (L-15) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{168}).

A compound (L-15) wherein A^1 represents CH, R^5

represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{169}).

A compound (L-15) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{170}).

A compound (L-15) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{171}).

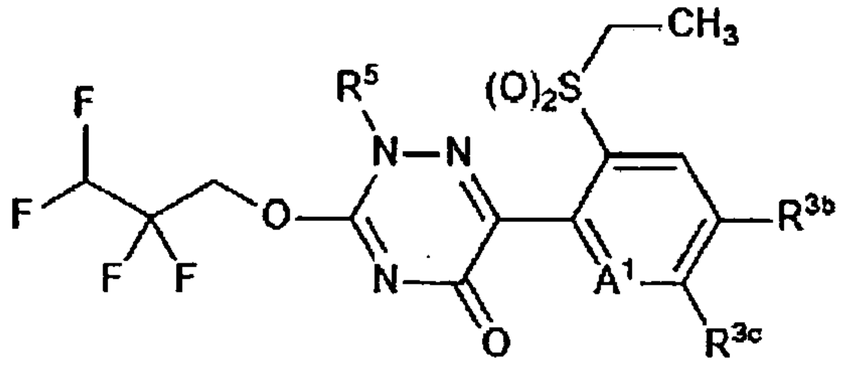
A compound (L-15) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{172}).

A compound (L-15) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{173}).

A compound (L-15) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{174}).

[0137]

A compound represented by formula (L-16):



(L-16)

(hereinafter, referred to as Compound (L-16)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{175}).

A compound (L-16) wherein A^1 represents a CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{176}).

A compound (L-16) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{177}).

A compound (L-16) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{178}).

A compound (L-16) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom,

and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{179}).

A compound (L-16) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{180}).

A compound (L-16) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{181}).

A compound (L-16) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{182}).

A compound (L-16) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{183}).

A compound (L-16) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{184}).

A compound (L-16) wherein A^1 represents a nitrogen atom,

R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{185}).

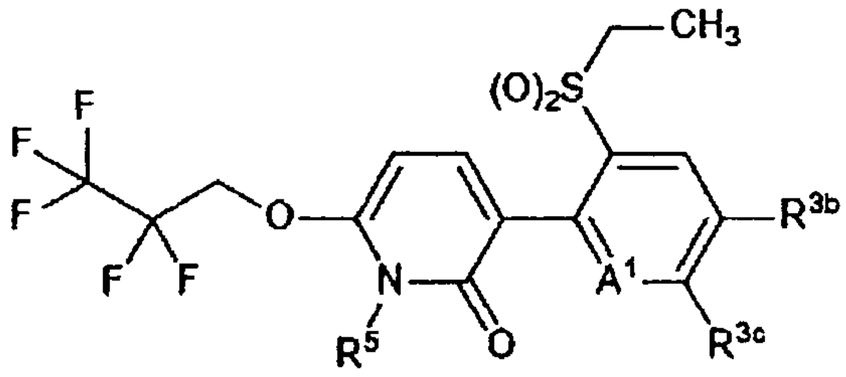
A compound (L-16) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{186}).

A compound (L-16) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{187}).

A compound (L-16) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{188}).

[0138]

A compound represented by formula (L-17):



(L-17)

(hereinafter, referred to as Compound (L-17)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents

a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{189}).

A compound (L-17) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{190}).

A compound (L-17) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{191}).

A compound (L-17) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{192}).

A compound (L-17) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{193}).

A compound (L-17) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{194}).

A compound (L-17) wherein A^1 represents a nitrogen atom,

R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{195}).

A compound (L-17) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{196}).

A compound (L-17) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{197}).

A compound (L-17) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{198}).

A compound (L-17) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{199}).

A compound (L-17) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{200}).

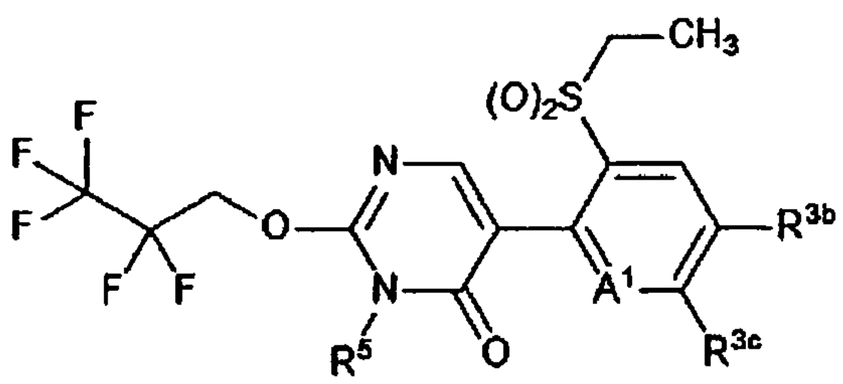
A compound (L-17) wherein A^1 represents a nitrogen atom,

R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{201}).

A compound (L-17) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{202}).

[0139]

A compound represented by formula (L-18):



(L-18)

(hereinafter, referred to as Compound (L-18)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{203}).

A compound (L-18) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{204}).

A compound (L-18) wherein A^1 represents a nitrogen atom,

R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{205}).

A compound (L-18) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{206}).

A compound (L-18) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{207}).

A compound (L-18) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{208}).

A compound (L-18) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{209}).

A compound (L-18) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{210}).

A compound (L-18) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{211}).

A compound (L-18) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{212}).

A compound (L-18) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{213}).

A compound (L-18) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{214}).

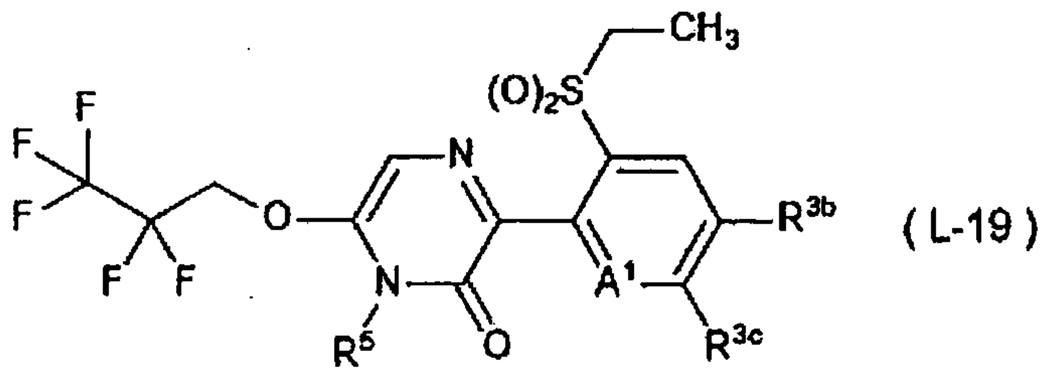
A compound (L-18) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{215}).

A compound (L-18) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class

SX_{216}).

[0140]

A compound represented by formula (L-19):



(L-19)

(hereinafter, referred to as Compound (L-19)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{217}).

A compound (L-19) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{218}).

A compound (L-19) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{219}).

A compound (L-19) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{220}).

A compound (L-19) wherein A^1 represents a nitrogen atom,

R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{221}).

A compound (L-19) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{222}).

A compound (L-19) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{223}).

A compound (L-19) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{224}).

A compound (L-19) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{225}).

A compound (L-19) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{226}).

A compound (L-19) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{227}).

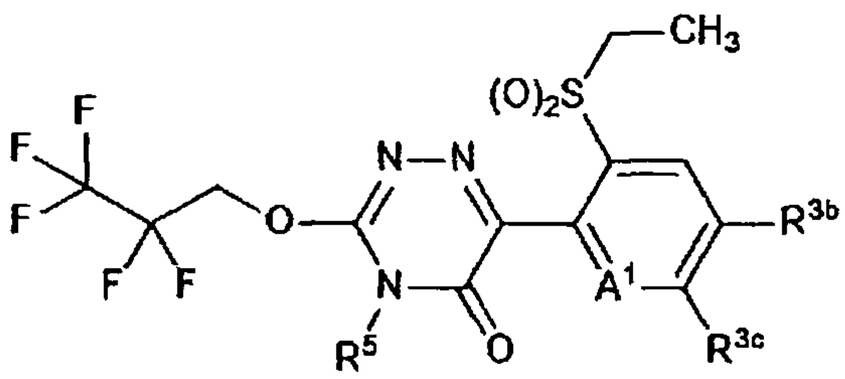
A compound (L-19) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{228}).

A compound (L-19) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{229}).

A compound (L-19) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{230}).

[0141]

A compound represented by formula (L-20):



(L-20)

(hereinafter, referred to as Compound (L-20)) wherein A^1

represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{231}).

A compound (L-20) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{232}).

A compound (L-20) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{233}).

A compound (L-20) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{234}).

A compound (L-20) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{235}).

A compound (L-20) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{236}).

A compound (L-20) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{237}).

A compound (L-20) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{238}).

A compound (L-20) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{239}).

A compound (L-20) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{240}).

A compound (L-20) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{241}).

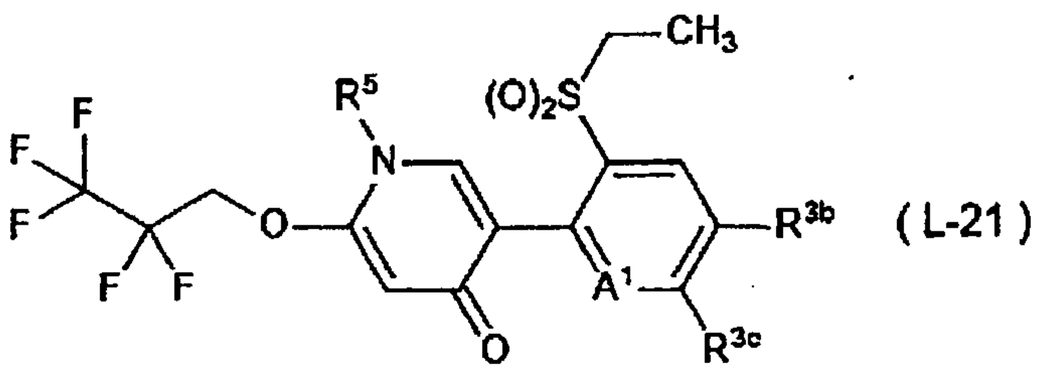
A compound (L-20) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{242}).

A compound (L-20) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{243}).

A compound (L-20) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{244}).

[0142]

A compound represented by formula (L-21):



(L-21)

(hereinafter, referred to as Compound (L-21)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{245}).

A compound (L-21) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{246}).

A compound (L-21) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{247}).

A compound (L-21) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{248}).

A compound (L-21) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{249}).

A compound (L-21) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{250}).

A compound (L-21) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{251}).

A compound (L-21) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to

Table 15 (hereinafter, referred to as Compound Class SX_{252}).

A compound (L-21) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{253}).

A compound (L-21) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{254}).

A compound (L-21) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{255}).

A compound (L-21) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{256}).

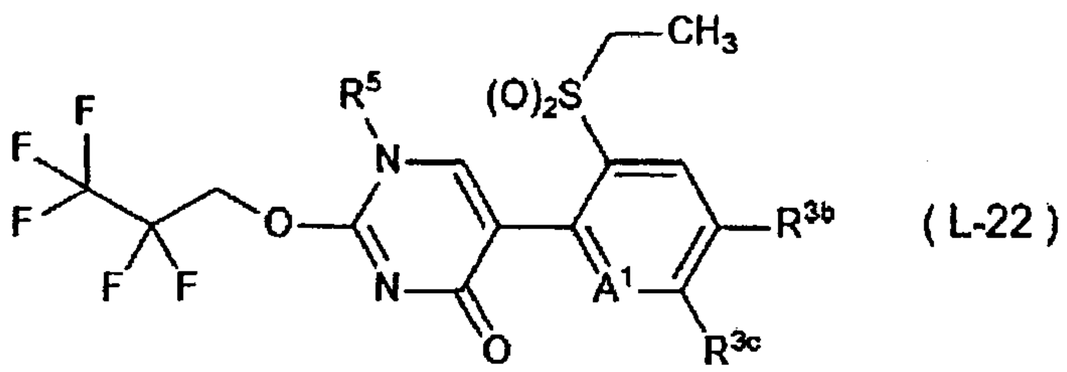
A compound (L-21) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{257}).

A compound (L-21) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table

7 to Table 15 (hereinafter, referred to as Compound Class SX_{258}).

[0143]

A compound represented by formula (L-22):



(L-22)

(hereinafter, referred to as Compound (L-22)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{259}).

A compound (L-22) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{260}).

A compound (L-22) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{261}).

A compound (L-22) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{262}).

A compound (L-22) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{263}).

A compound (L-22) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{264}).

A compound (L-22) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{265}).

A compound (L-22) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{266}).

A compound (L-22) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{267}).

A compound (L-22) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to

Table 15 (hereinafter, referred to as Compound Class SX_{268}).

A compound (L-22) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{269}).

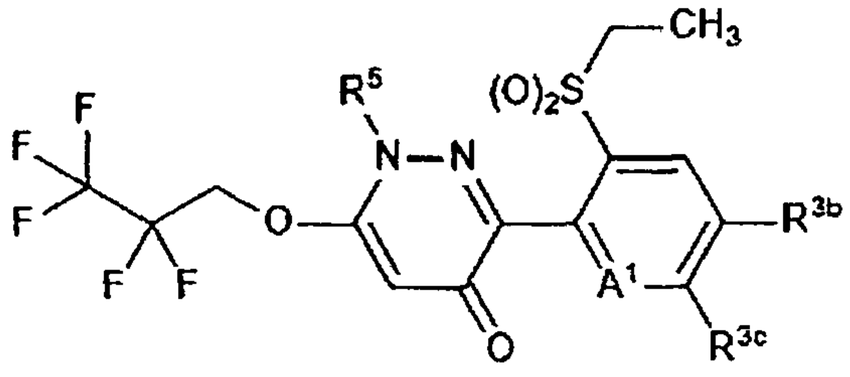
A compound (L-22) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{270}).

A compound (L-22) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{271}).

A compound (L-22) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{272}).

[0144]

A compound represented by formula (L-23):



(L-23)

(hereinafter, referred to as Compound (L-23)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{273}).

A compound (L-23) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{274}).

A compound (L-23) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{275}).

A compound (L-23) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{276}).

A compound (L-23) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{277}).

A compound (L-23) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class

SX_{278}).

A compound (L-23) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{279}).

A compound (L-23) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{280}).

A compound (L-23) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{281}).

A compound (L-23) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{282}).

A compound (L-23) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{283}).

A compound (L-23) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to

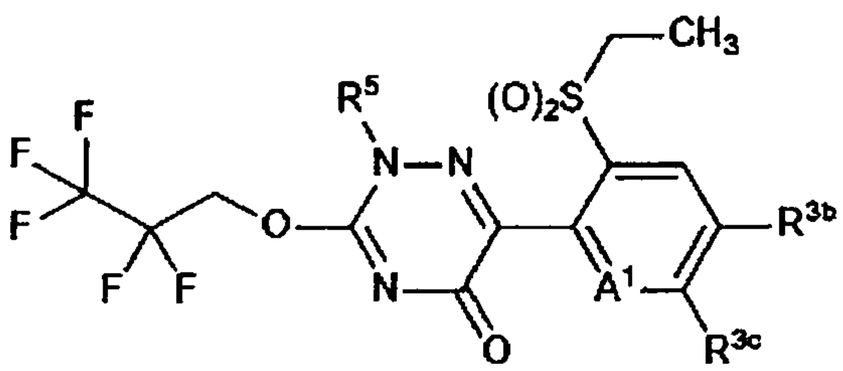
Table 15 (hereinafter, referred to as Compound Class SX_{284}).

A compound (L-23) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{285}).

A compound (L-23) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{286}).

[0145]

A compound represented by formula (L-24):



(L-24)

(hereinafter, referred to as Compound (L-24)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{287}).

A compound (L-24) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to

Table 15 (hereinafter, referred to as Compound Class SX_{288}).

A compound (L-24) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{289}).

A compound (L-24) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{290}).

A compound (L-24) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{291}).

A compound (L-24) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{292}).

A compound (L-24) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{293}).

A compound (L-24) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom,

and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{294}).

A compound (L-24) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{295}).

A compound (L-24) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{296}).

A compound (L-24) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{297}).

A compound (L-24) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{298}).

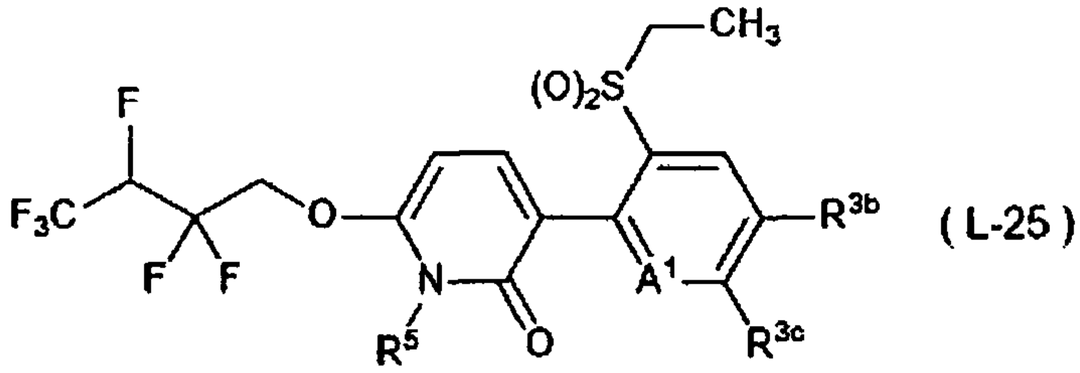
A compound (L-24) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{299}).

A compound (L-24) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen

atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{300}).

[0146]

A compound represented by formula (L-25):



(L-25)

(hereinafter, referred to as Compound (L-24)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{301}).

A compound (L-25) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{302}).

A compound (L-25) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{303}).

A compound (L-25) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to

Table 15 (hereinafter, referred to as Compound Class SX_{304}).

A compound (L-25) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{305}).

A compound (L-25) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{306}).

A compound (L-25) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{307}).

A compound (L-25) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{308}).

A compound (L-25) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{309}).

A compound (L-25) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom,

and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{310}).

A compound (L-25) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{311}).

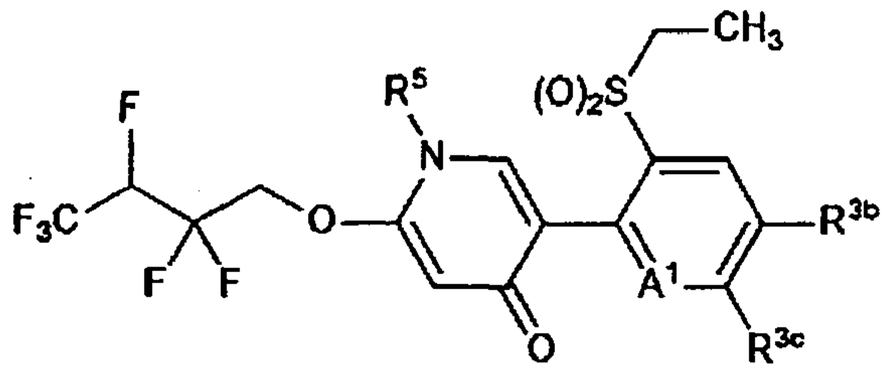
A compound (L-25) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{312}).

A compound (L-25) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{313}).

A compound (L-25) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{314}).

[0147]

A compound represented by formula (L-26):



(L-26)

(hereinafter, referred to as Compound (L-26)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{315}).

A compound (L-26) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{316}).

A compound (L-26) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{317}).

A compound (L-26) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{318}).

A compound (L-26) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{319}).

A compound (L-26) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{320}).

A compound (L-26) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{321}).

A compound (L-26) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{322}).

A compound (L-26) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{323}).

A compound (L-26) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{324}).

A compound (L-26) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to

Table 15 (hereinafter, referred to as Compound Class SX_{325}).

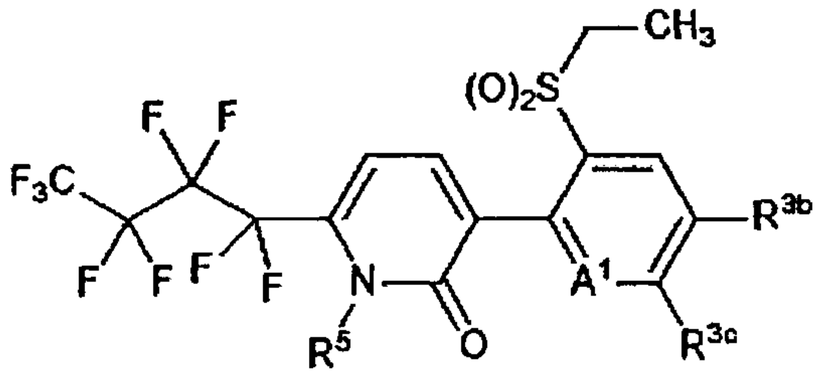
A compound (L-26) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{326}).

A compound (L-26) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{327}).

A compound (L-26) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{328}).

[0148]

A compound represented by formula (L-27):



(L-27)

(hereinafter, referred to as Compound (L-27)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to

as Compound Class SX_{329}).

A compound (L-27) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{330}).

A compound (L-27) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{331}).

A compound (L-27) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{332}).

A compound (L-27) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{333}).

A compound (L-27) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{334}).

A compound (L-27) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table

7 to Table 15 (hereinafter, referred to as Compound Class SX_{335}).

A compound (L-27) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{336}).

A compound (L-27) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{337}).

A compound (L-27) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{338}).

A compound (L-27) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{339}).

A compound (L-27) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{340}).

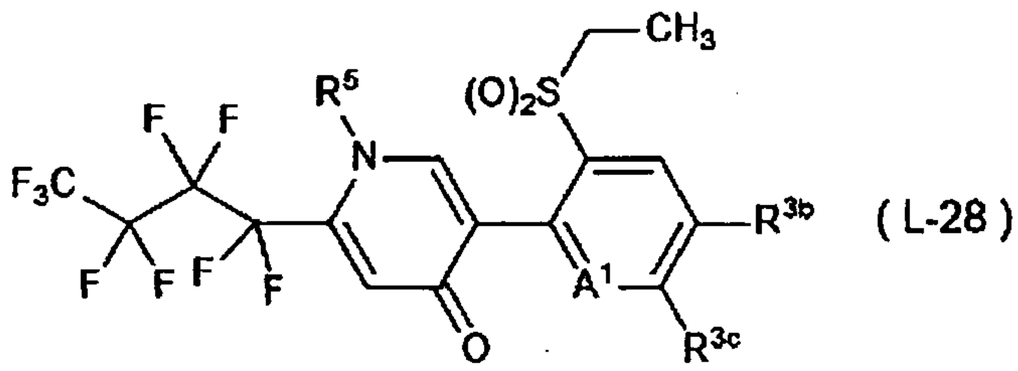
A compound (L-27) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table

7 to Table 15 (hereinafter, referred to as Compound Class SX_{341}).

A compound (L-27) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{342}).

[0149]

A compound represented by formula (L-28):



(L-28)

(hereinafter, referred to as Compound (L-28)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{343}).

A compound (L-28) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{344}).

A compound (L-28) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to

Table 15 (hereinafter, referred to as Compound Class SX_{345}).

A compound (L-28) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{346}).

A compound (L-28) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{347}).

A compound (L-28) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{348}).

A compound (L-28) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{349}).

A compound (L-28) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{350}).

A compound (L-28) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom,

and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{351}).

A compound (L-28) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{352}).

A compound (L-28) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{353}).

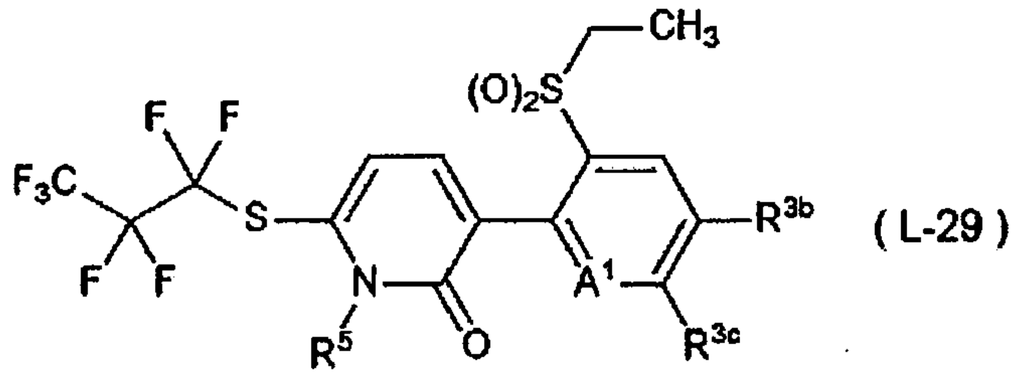
A compound (L-28) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{354}).

A compound (L-28) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{355}).

A compound (L-28) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{356}).

[0150]

A compound represented by formula (L-29):



(L-29)

(hereinafter, referred to as Compound (L-29)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{357}).

A compound (L-29) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{358}).

A compound (L-29) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{359}).

A compound (L-29) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{360}).

A compound (L-29) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to

Table 15 (hereinafter, referred to as Compound Class SX_{361}).

A compound (L-29) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{362}).

A compound (L-29) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{363}).

A compound (L-29) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{364}).

A compound (L-29) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{365}).

A compound (L-29) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{366}).

A compound (L-29) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom,

and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{367}).

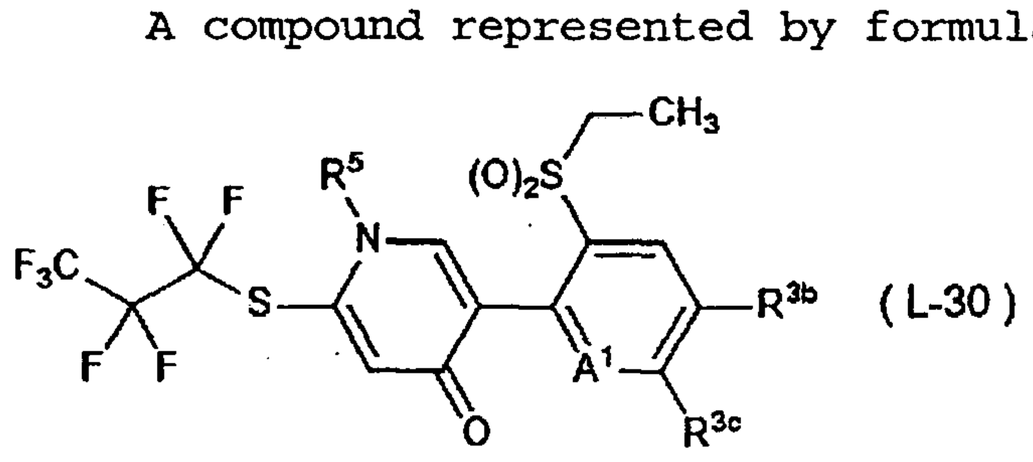
A compound (L-29) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{368}).

A compound (L-29) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{369}).

A compound (L-29) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{370}).

[0151]

A compound represented by formula (L-30):



(L-30)

(hereinafter, referred to as Compound (L-30)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents

indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{371}).

A compound (L-30) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{372}).

A compound (L-30) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{373}).

A compound (L-30) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{374}).

A compound (L-30) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{375}).

A compound (L-30) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{376}).

A compound (L-30) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen

atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{377}).

A compound (L-30) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{378}).

A compound (L-30) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{379}).

A compound (L-30) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{380}).

A compound (L-30) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{381}).

A compound (L-30) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{382}).

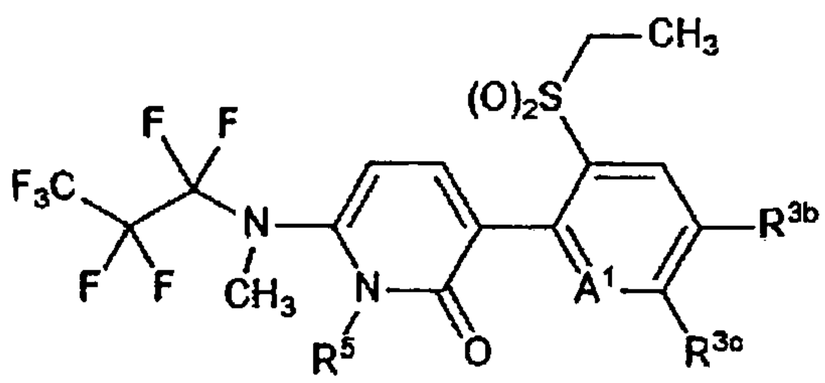
A compound (L-30) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen

atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{383}).

A compound (L-30) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{384}).

[0152]

A compound represented by formula (L-31):



(L-31)

(hereinafter, referred to as Compound (L-31)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{385}).

A compound (L-31) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{386}).

A compound (L-31) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{387}).

A compound (L-31) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{388}).

A compound (L-31) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom,

and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{389}).

A compound (L-31) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{390}).

A compound (L-31) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{391}).

A compound (L-31) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{392}).

A compound (L-31) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{393}).

A compound (L-31) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{394}).

A compound (L-31) wherein A^1 represents a nitrogen atom,

R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{395}).

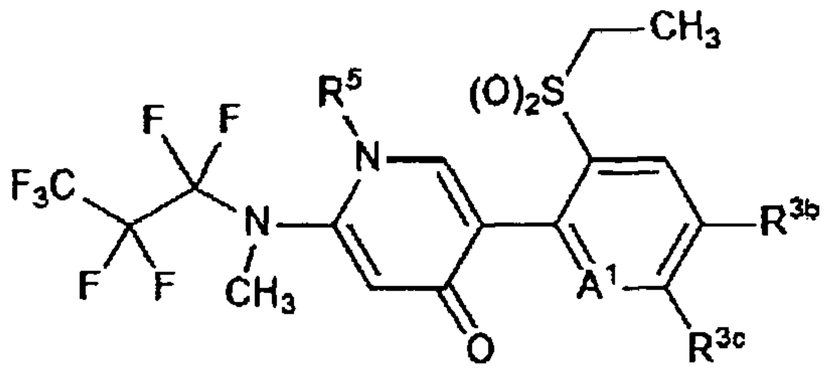
A compound (L-31) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{396}).

A compound (L-31) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{397}).

A compound (L-31) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{398}).

[0153]

A compound represented by formula (L-32):



(L-32)

(hereinafter, referred to as Compound (L-32)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents

a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{399}).

A compound (L-32) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{400}).

A compound (L-32) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{401}).

A compound (L-32) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{402}).

A compound (L-32) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{403}).

A compound (L-32) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{404}).

A compound (L-32) wherein A^1 represents a nitrogen atom,

R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{405}).

A compound (L-32) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{406}).

A compound (L-32) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{407}).

A compound (L-32) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{408}).

A compound (L-32) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{409}).

A compound (L-32) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{410}).

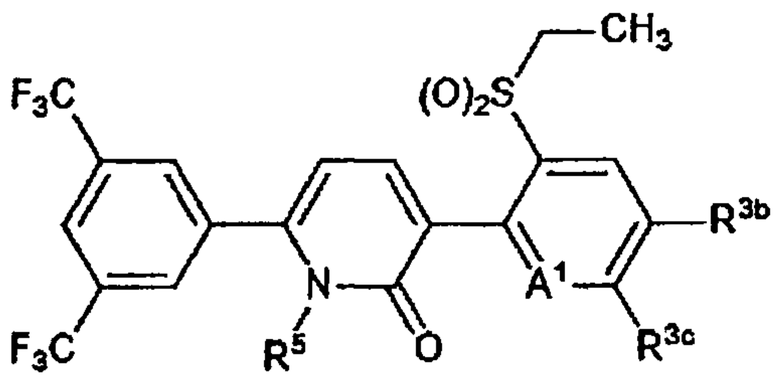
A compound (L-32) wherein A^1 represents a nitrogen atom,

R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{411}).

A compound (L-32) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{412}).

[0154]

A compound represented by formula (L-33):



(L-33)

(hereinafter, referred to as Compound (L-33)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{413}).

A compound (L-33) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{414}).

A compound (L-33) wherein A^1 represents a nitrogen atom,

R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{415}).

A compound (L-33) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{416}).

A compound (L-33) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{417}).

A compound (L-33) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{418}).

A compound (L-33) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{419}).

A compound (L-33) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{420}).

A compound (L-33) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{421}).

A compound (L-33) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{422}).

A compound (L-33) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{423}).

A compound (L-33) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{424}).

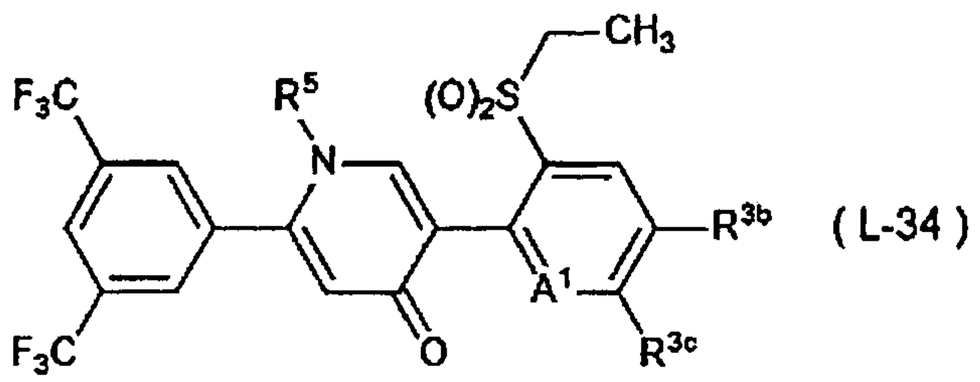
A compound (L-33) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{425}).

A compound (L-33) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class

SX_{426}).

[0155]

A compound represented by formula (L-34):



(L-34)

(hereinafter, referred to as Compound (L-34)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{427}).

A compound (L-34) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{428}).

A compound (L-34) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{429}).

A compound (L-34) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{430}).

A compound (L-34) wherein A^1 represents a nitrogen atom,

R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{431}).

A compound (L-34) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{432}).

A compound (L-34) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{433}).

A compound (L-34) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{434}).

A compound (L-34) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{435}).

A compound (L-34) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{436}).

A compound (L-34) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{437}).

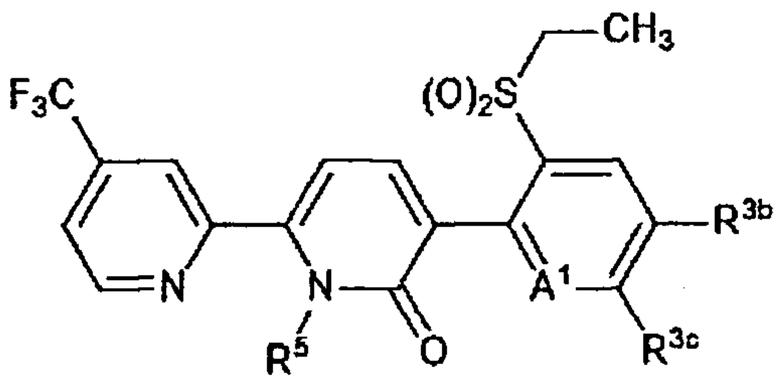
A compound (L-34) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{438}).

A compound (L-34) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{439}).

A compound (L-34) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{440}).

[0156]

A compound represented by formula (L-35):



(L-35)

(hereinafter, referred to as Compound (L-35)) wherein A^1

represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{441}).

A compound (L-35) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{442}).

A compound (L-35) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{443}).

A compound (L-35) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{444}).

A compound (L-35) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{445}).

A compound (L-35) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{446}).

A compound (L-35) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{447}).

A compound (L-35) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{448}).

A compound (L-35) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{449}).

A compound (L-35) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{450}).

A compound (L-35) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{451}).

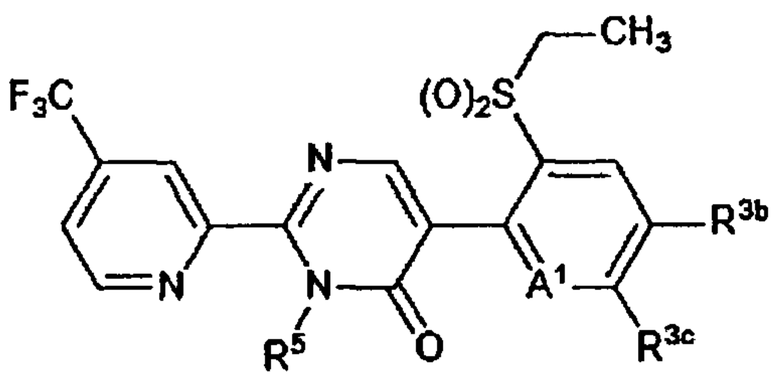
A compound (L-35) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{452}).

A compound (L-35) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{453}).

A compound (L-35) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{454}).

[0157]

A compound represented by formula (L-36):



(L-36)

(hereinafter, referred to as Compound (L-36)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{455}).

A compound (L-36) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{456}).

A compound (L-36) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{457}).

A compound (L-36) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{458}).

A compound (L-36) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{459}).

A compound (L-36) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{460}).

A compound (L-36) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{461}).

A compound (L-36) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to

Table 15 (hereinafter, referred to as Compound Class SX_{462}).

A compound (L-36) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{463}).

A compound (L-36) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{464}).

A compound (L-36) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{465}).

A compound (L-36) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{466}).

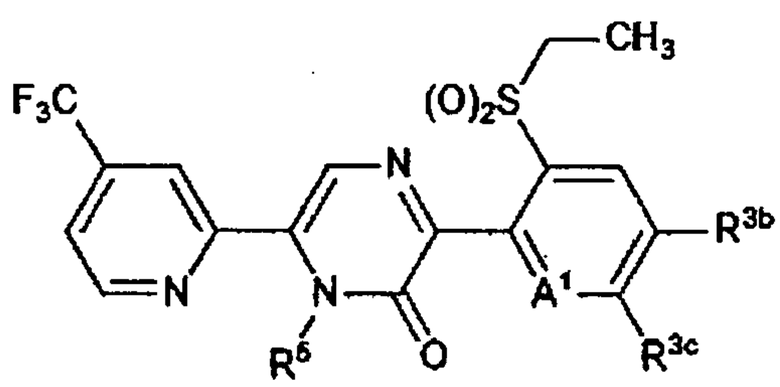
A compound (L-36) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{467}).

A compound (L-36) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table

7 to Table 15 (hereinafter, referred to as Compound Class SX_{468}).

[0158]

A compound represented by formula (L-37):



(L-37)

(hereinafter, referred to as Compound (L-37)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{469}).

A compound (L-37) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{470}).

A compound (L-37) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{471}).

A compound (L-37) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{472}).

A compound (L-37) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{473}).

A compound (L-37) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{474}).

A compound (L-37) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{475}).

A compound (L-37) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{476}).

A compound (L-37) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{477}).

A compound (L-37) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to

Table 15 (hereinafter, referred to as Compound Class SX_{478}).

A compound (L-37) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{479}).

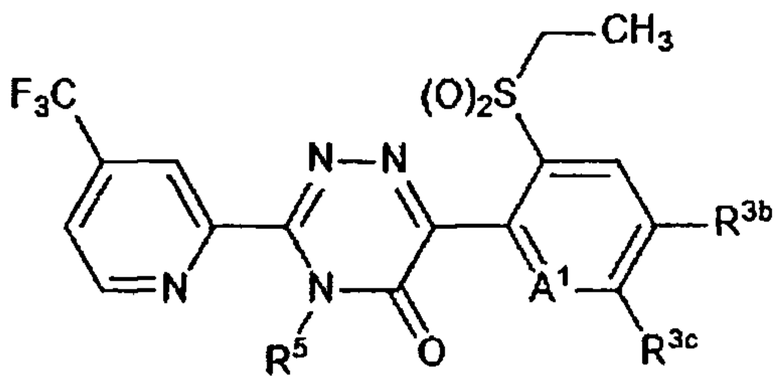
A compound (L-37) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{480}).

A compound (L-37) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{481}).

A compound (L-37) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{482}).

[0159]

A compound represented by formula (L-38):



(L-38)

(hereinafter, referred to as Compound (L-38)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{483}).

A compound (L-38) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{484}).

A compound (L-38) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{485}).

A compound (L-38) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{486}).

A compound (L-38) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{487}).

A compound (L-38) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class

SX_{488}).

A compound (L-38) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{489}).

A compound (L-38) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{490}).

A compound (L-38) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{491}).

A compound (L-38) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{492}).

A compound (L-38) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{493}).

A compound (L-38) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to

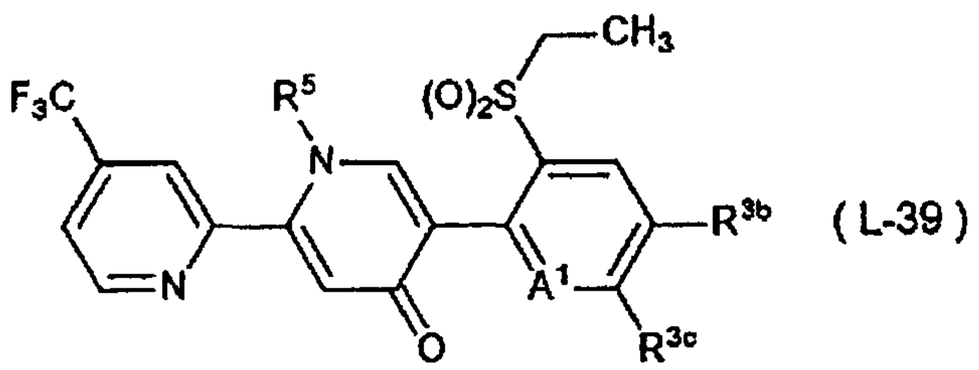
Table 15 (hereinafter, referred to as Compound Class SX_{494}).

A compound (L-38) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{495}).

A compound (L-38) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{496}).

[01360]

A compound represented by formula (L-39):



(L-39)

(hereinafter, referred to as Compound (L-39)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{497}).

A compound (L-39) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to

Table 15 (hereinafter, referred to as Compound Class SX_{498}).

A compound (L-39) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{499}).

A compound (L-39) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{500}).

A compound (L-39) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{501}).

A compound (L-39) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{502}).

A compound (L-39) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{503}).

A compound (L-39) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom,

and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{504}).

A compound (L-39) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{505}).

A compound (L-39) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{506}).

A compound (L-39) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{507}).

A compound (L-39) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{508}).

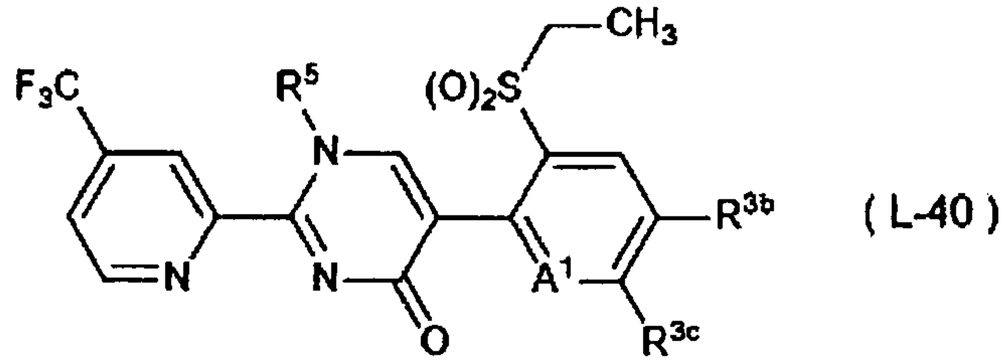
A compound (L-39) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{509}).

A compound (L-39) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen

atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{510}).

[0161]

A compound represented by formula (L-40):



(L-40)

(hereinafter, referred to as Compound (L-40)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{511}).

A compound (L-40) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{512}).

A compound (L-40) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{513}).

A compound (L-40) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to

Table 15 (hereinafter, referred to as Compound Class SX_{514}).

A compound (L-40) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{515}).

A compound (L-40) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{516}).

A compound (L-40) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{517}).

A compound (L-40) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{518}).

A compound (L-40) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{519}).

A compound (L-40) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom,

and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{520}).

A compound (L-40) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{521}).

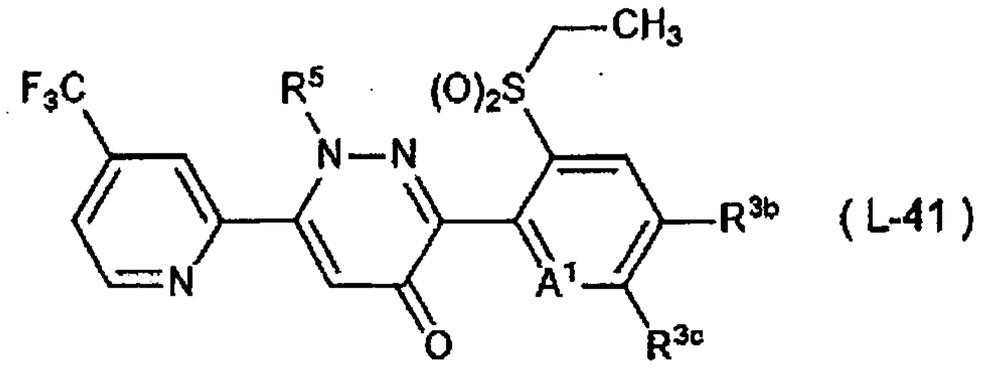
A compound (L-40) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{522}).

A compound (L-40) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{523}).

A compound (L-40) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{524}).

[0162]

A compound represented by formula (L-41):



(L-41)

(hereinafter, referred to as Compound (L-41)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{525}).

A compound (L-41) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{526}).

A compound (L-41) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{527}).

A compound (L-41) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{528}).

A compound (L-41) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{529}).

A compound (L-41) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{530}).

A compound (L-41) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{531}).

A compound (L-41) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{532}).

A compound (L-41) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{533}).

A compound (L-41) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{534}).

A compound (L-41) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to

Table 15 (hereinafter, referred to as Compound Class SX_{535}).

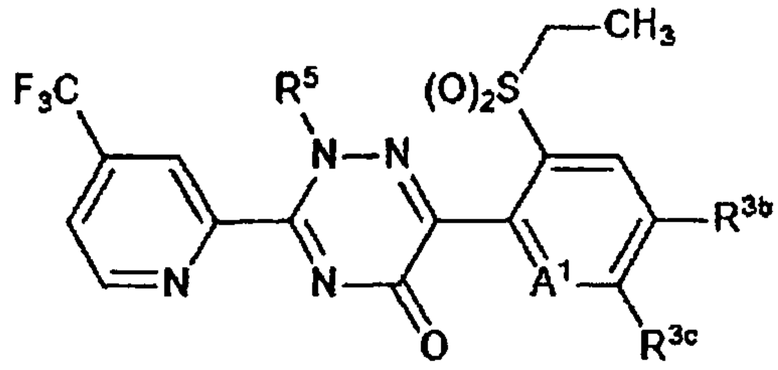
A compound (L-41) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{536}).

A compound (L-41) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{537}).

A compound (L-41) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{538}).

[0163]

A compound represented by formula (L-42):



(L-42)

(hereinafter, referred to as Compound (L-42)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to

as Compound Class SX_{539}).

A compound (L-42) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{540}).

A compound (L-42) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{541}).

A compound (L-42) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{542}).

A compound (L-42) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{543}).

A compound (L-42) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{544}).

A compound (L-42) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table

7 to Table 15 (hereinafter, referred to as Compound Class SX_{545}).

A compound (L-42) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{546}).

A compound (L-42) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{547}).

A compound (L-42) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{548}).

A compound (L-42) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{549}).

A compound (L-42) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{550}).

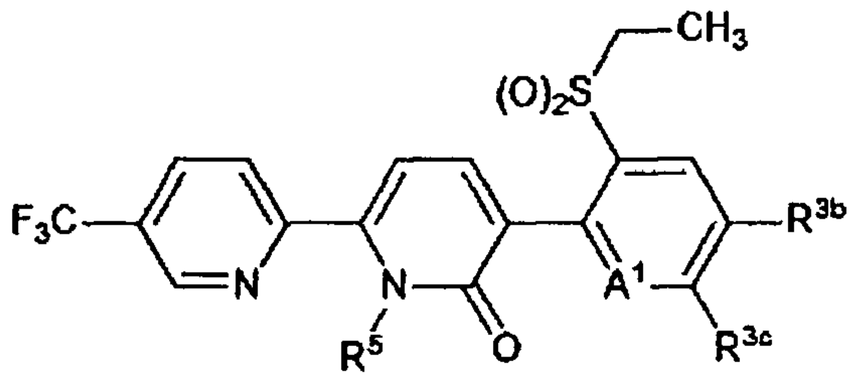
A compound (L-42) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table

7 to Table 15 (hereinafter, referred to as Compound Class SX_{551}).

A compound (L-42) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{552}).

[0164]

A compound represented by formula (L-43):



(L-43)

(hereinafter, referred to as Compound (L-43)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{553}).

A compound (L-43) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{554}).

A compound (L-43) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to

Table 15 (hereinafter, referred to as Compound Class SX_{555}).

A compound (L-43) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{556}).

A compound (L-43) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{557}).

A compound (L-43) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{558}).

A compound (L-43) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{559}).

A compound (L-43) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{560}).

A compound (L-43) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom,

and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{561}).

A compound (L-43) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{562}).

A compound (L-43) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{563}).

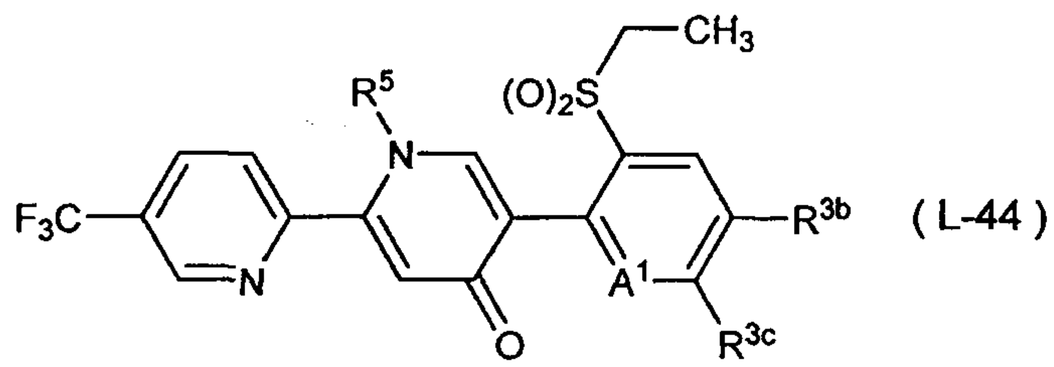
A compound (L-43) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{564}).

A compound (L-43) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{565}).

A compound (L-43) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{566}).

[0165]

A compound represented by formula (L-44):



(L-44)

(hereinafter, referred to as Compound (L-44)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{567}).

A compound (L-44) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{568}).

A compound (L-44) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{569}).

A compound (L-44) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{570}).

A compound (L-44) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to

Table 15 (hereinafter, referred to as Compound Class SX_{571}).

A compound (L-44) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{572}).

A compound (L-44) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{573}).

A compound (L-44) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{574}).

A compound (L-44) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{575}).

A compound (L-44) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{576}).

A compound (L-44) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom,

and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{577}).

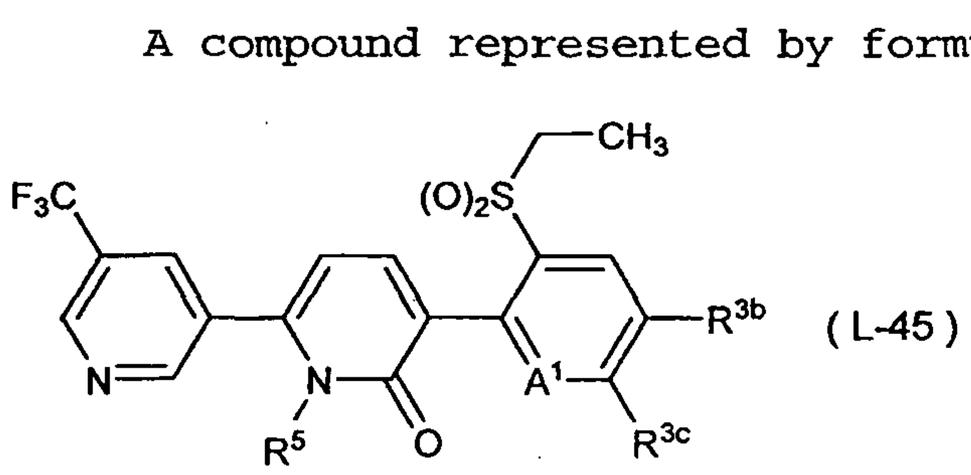
A compound (L-44) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{578}).

A compound (L-44) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{579}).

A compound (L-44) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{580}).

[0166]

A compound represented by formula (L-45):



(L-45)

(hereinafter, referred to as Compound (L-45)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents

indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{581}).

A compound (L-45) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{582}).

A compound (L-45) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{583}).

A compound (L-45) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{584}).

A compound (L-45) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{585}).

A compound (L-45) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{586}).

A compound (L-45) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen

atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{587}).

A compound (L-45) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{588}).

A compound (L-45) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{589}).

A compound (L-45) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{590}).

A compound (L-45) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{591}).

A compound (L-45) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{592}).

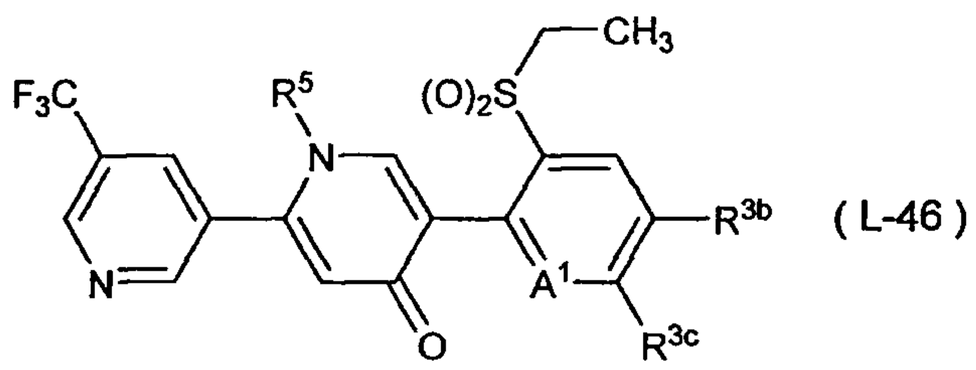
A compound (L-45) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen

atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{593}).

A compound (L-45) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{594}).

[0167]

A compound represented by formula (L-46):



(L-46)

(hereinafter, referred to as Compound (L-46)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{595}).

A compound (L-46) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{596}).

A compound (L-46) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom,

and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{597}).

A compound (L-46) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{598}).

A compound (L-46) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{599}).

A compound (L-46) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{600}).

A compound (L-46) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{601}).

A compound (L-46) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{602}).

A compound (L-46) wherein A^1 represents CH, R^5

represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{603}).

A compound (L-46) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{604}).

A compound (L-46) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{605}).

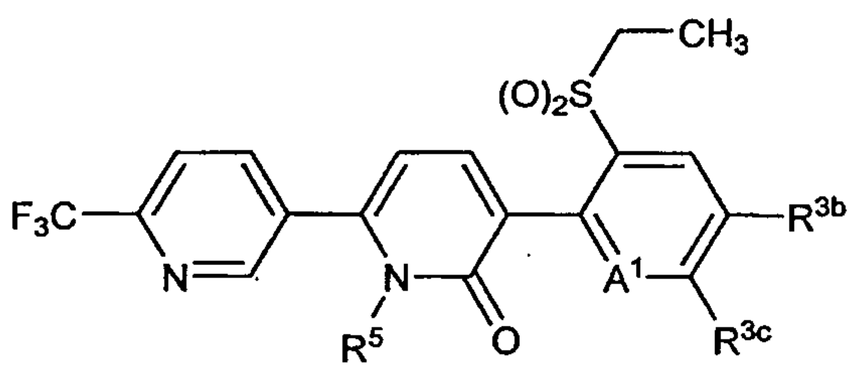
A compound (L-46) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{606}).

A compound (L-46) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{607}).

A compound (L-46) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{608}).

[0168]

A compound represented by formula (L-47):



(L-47)

(hereinafter, referred to as Compound (L-47)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{609}).

A compound (L-47) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{610}).

A compound (L-47) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{611}).

A compound (L-47) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{612}).

A compound (L-47) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom,

and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{613}).

A compound (L-47) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{614}).

A compound (L-47) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{615}).

A compound (L-47) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{616}).

A compound (L-47) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{617}).

A compound (L-47) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{618}).

A compound (L-47) wherein A^1 represents a nitrogen atom,

R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{619}).

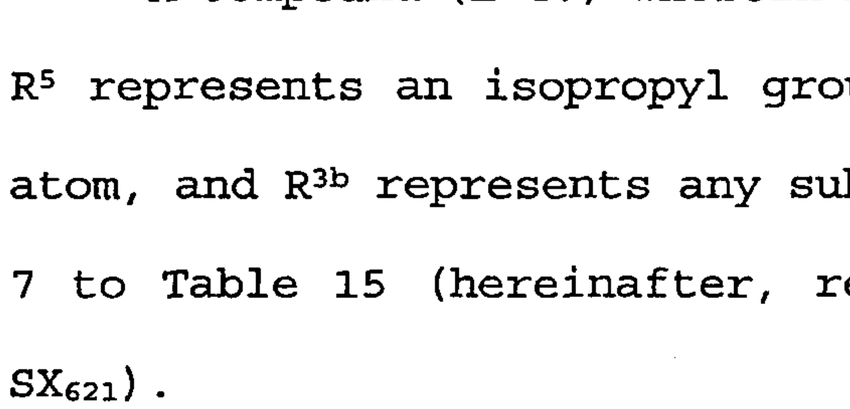
A compound (L-47) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{620}).

A compound (L-47) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{621}).

A compound (L-47) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{622}).

[0169]

A compound represented by formula (L-48):



(L-48)

(hereinafter, referred to as Compound (L-48)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents

a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{623}).

A compound (L-48) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{624}).

A compound (L-48) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{625}).

A compound (L-48) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{626}).

A compound (L-48) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{627}).

A compound (L-48) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{628}).

A compound (L-48) wherein A^1 represents a nitrogen atom,

R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{629}).

A compound (L-48) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{630}).

A compound (L-48) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{631}).

A compound (L-48) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{632}).

A compound (L-48) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{633}).

A compound (L-48) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{634}).

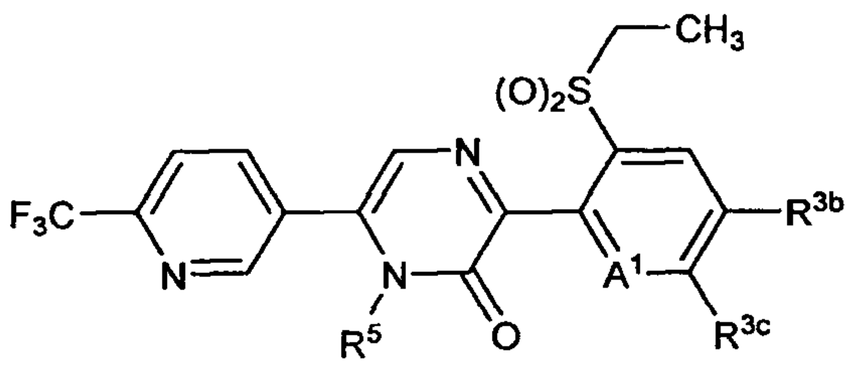
A compound (L-48) wherein A^1 represents a nitrogen atom,

R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{635}).

A compound (L-48) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{636}).

[0170]

A compound represented by formula (L-49):



(L-49)

(hereinafter, referred to as Compound (L-49)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{637}).

A compound (L-49) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{638}).

A compound (L-49) wherein A^1 represents a nitrogen atom,

R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{639}).

A compound (L-49) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{640}).

A compound (L-49) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{641}).

A compound (L-49) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{642}).

A compound (L-49) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{643}).

A compound (L-49) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{644}).

A compound (L-49) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{645}).

A compound (L-49) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{646}).

A compound (L-49) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{647}).

A compound (L-49) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{648}).

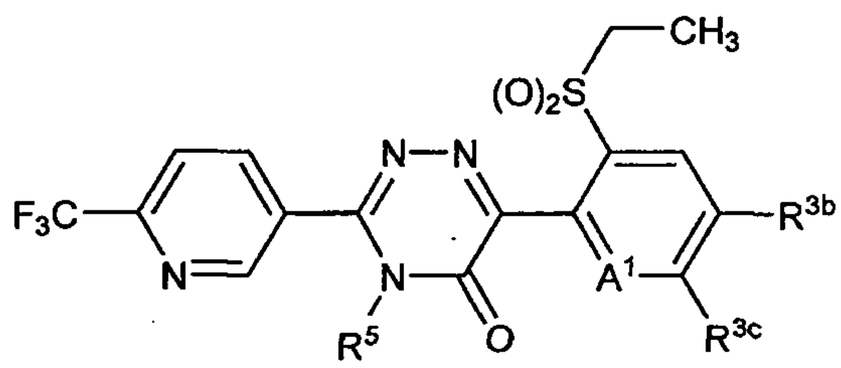
A compound (L-49) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{649}).

A compound (L-49) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class

SX_{650}).

[0171]

A compound represented by formula (L-50):



(L-50)

(hereinafter, referred to as Compound (L-50)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{651}).

A compound (L-50) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{652}).

A compound (L-50) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{653}).

A compound (L-50) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{654}).

A compound (L-50) wherein A^1 represents a nitrogen atom,

R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{655}).

A compound (L-50) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{656}).

A compound (L-50) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{657}).

A compound (L-50) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{658}).

A compound (L-50) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{659}).

A compound (L-50) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{660}).

A compound (L-50) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{661}).

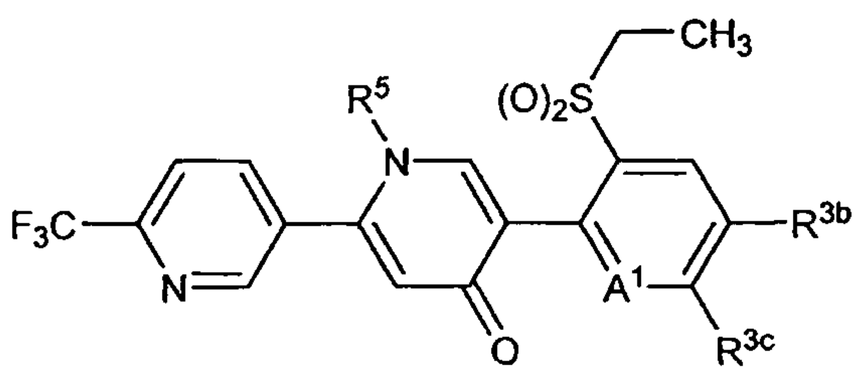
A compound (L-50) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{662}).

A compound (L-50) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{663}).

A compound (L-50) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{664}).

[0172]

A compound represented by formula (L-51):



(L-51)

(hereinafter, referred to as Compound (L-51)) wherein A^1

represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{665}).

A compound (L-51) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{666}).

A compound (L-51) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{667}).

A compound (L-51) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{668}).

A compound (L-51) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{669}).

A compound (L-51) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{670}).

A compound (L-51) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{671}).

A compound (L-51) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{672}).

A compound (L-51) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{673}).

A compound (L-51) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{674}).

A compound (L-51) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{675}).

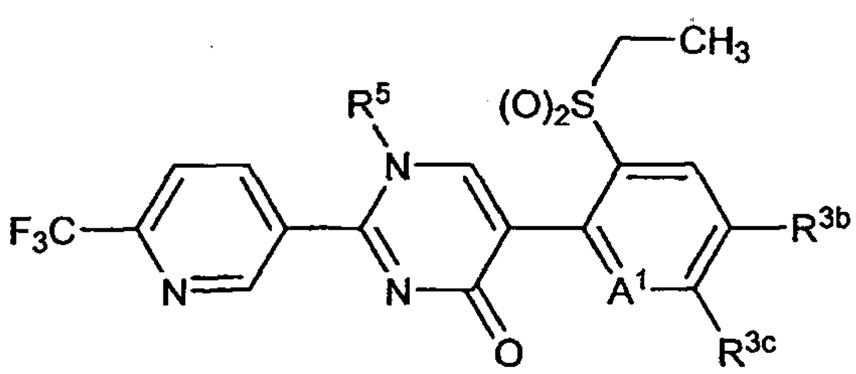
A compound (L-51) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{676}).

A compound (L-51) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{677}).

A compound (L-51) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{678}).

[0173]

A compound represented by formula (L-52):



(L-52)

(hereinafter, referred to as Compound (L-52)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{679}).

A compound (L-52) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{680}).

A compound (L-52) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{681}).

A compound (L-52) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{682}).

A compound (L-52) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{683}).

A compound (L-52) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{684}).

A compound (L-52) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{685}).

A compound (L-52) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to

Table 15 (hereinafter, referred to as Compound Class SX_{686}).

A compound (L-52) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{687}).

A compound (L-52) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{688}).

A compound (L-52) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{689}).

A compound (L-52) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{690}).

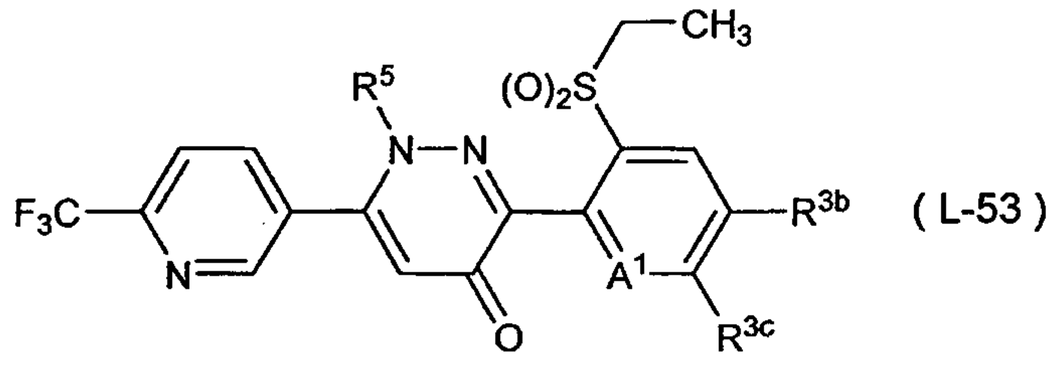
A compound (L-52) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{691}).

A compound (L-52) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table

7 to Table 15 (hereinafter, referred to as Compound Class SX_{692}).

[0174]

A compound represented by formula (L-53):



(L-53)

(hereinafter, referred to as Compound (L-53)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{693}).

A compound (L-53) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{694}).

A compound (L-53) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{695}).

A compound (L-53) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{696}).

A compound (L-53) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{697}).

A compound (L-53) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{698}).

A compound (L-53) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{699}).

A compound (L-53) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{700}).

A compound (L-53) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{701}).

A compound (L-53) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to

Table 15 (hereinafter, referred to as Compound Class SX_{702}).

A compound (L-53) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{703}).

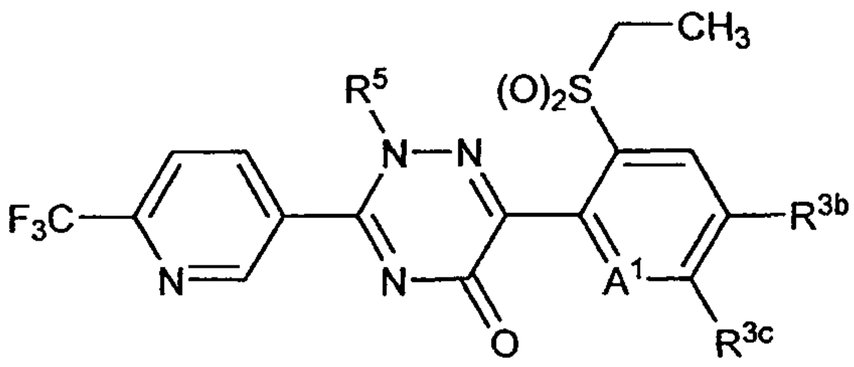
A compound (L-53) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{704}).

A compound (L-53) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{705}).

A compound (L-53) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{706}).

[0175]

A compound represented by formula (L-54):



(L-54)

(hereinafter, referred to as Compound (L-54)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{707}).

A compound (L-54) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{708}).

A compound (L-54) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{709}).

A compound (L-54) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{710}).

A compound (L-54) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{711}).

A compound (L-54) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class

SX_{712}).

A compound (L-54) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{713}).

A compound (L-54) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{714}).

A compound (L-54) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{715}).

A compound (L-54) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{716}).

A compound (L-54) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{717}).

A compound (L-54) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to

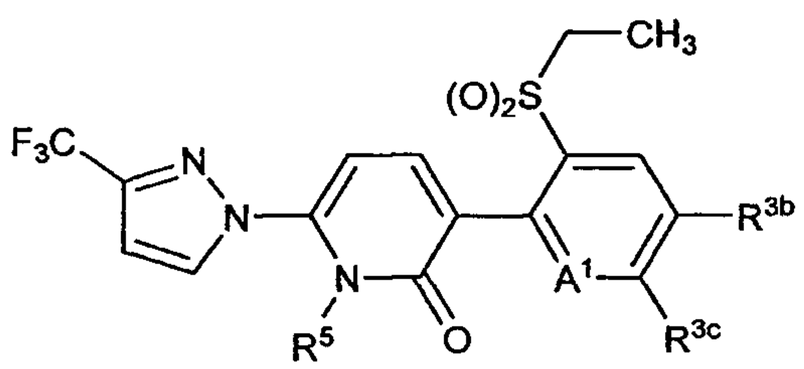
Table 15 (hereinafter, referred to as Compound Class SX_{718}).

A compound (L-54) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{719}).

A compound (L-54) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{720}).

[0176]

A compound represented by formula (L-55):



(L-55)

(hereinafter, referred to as Compound (L-55)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{721}).

A compound (L-55) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to

Table 15 (hereinafter, referred to as Compound Class SX_{722}).

A compound (L-55) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{723}).

A compound (L-55) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{724}).

A compound (L-55) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{725}).

A compound (L-55) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{726}).

A compound (L-55) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{727}).

A compound (L-55) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom,

and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{728}).

A compound (L-55) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{729}).

A compound (L-55) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{730}).

A compound (L-55) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{731}).

A compound (L-55) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{732}).

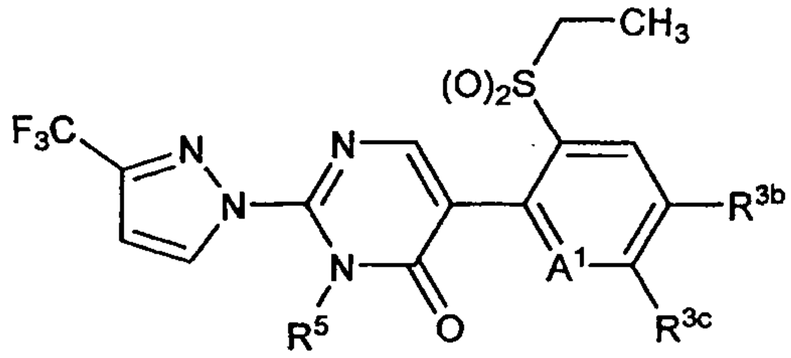
A compound (L-55) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{733}).

A compound (L-55) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen

atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{734}).

[0177]

A compound represented by formula (L-56):



(L-56)

(hereinafter, referred to as Compound (L-56)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{735}).

A compound (L-56) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{736}).

A compound (L-56) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{737}).

A compound (L-56) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to

Table 15 (hereinafter, referred to as Compound Class SX_{738}).

A compound (L-56) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{739}).

A compound (L-56) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{740}).

A compound (L-56) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{741}).

A compound (L-56) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{742}).

A compound (L-56) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{743}).

A compound (L-56) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom,

and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{744}).

A compound (L-56) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{745}).

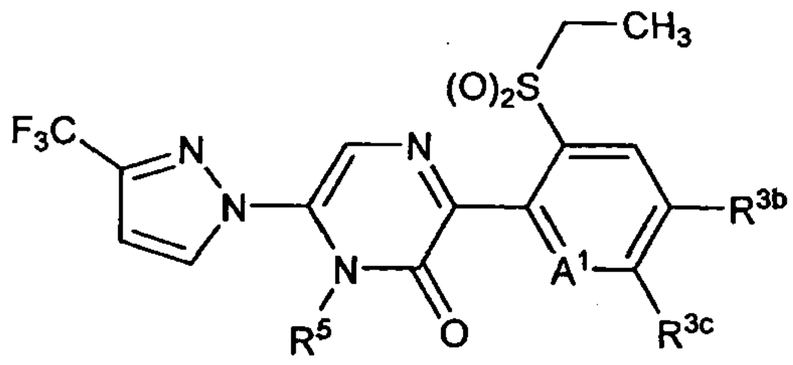
A compound (L-56) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{746}).

A compound (L-56) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{747}).

A compound (L-56) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{748}).

[0178]

A compound represented by formula (L-57):



(L-57)

(hereinafter, referred to as Compound (L-57)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{749}).

A compound (L-57) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{750}).

A compound (L-57) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{751}).

A compound (L-57) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{752}).

A compound (L-57) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{753}).

A compound (L-57) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{754}).

A compound (L-57) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{755}).

A compound (L-57) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{756}).

A compound (L-57) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{757}).

A compound (L-57) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{758}).

A compound (L-57) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to

Table 15 (hereinafter, referred to as Compound Class SX_{759}).

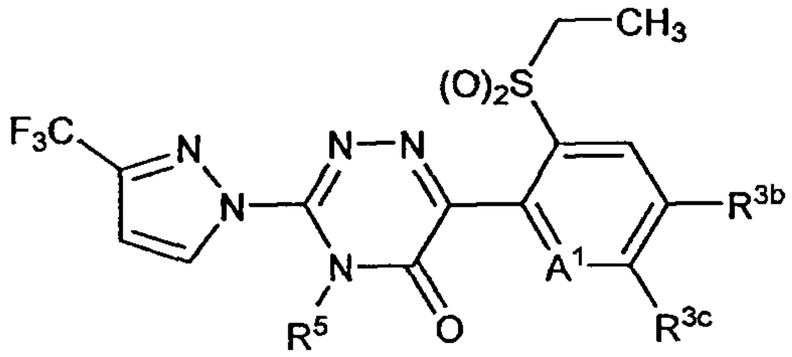
A compound (L-57) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{760}).

A compound (L-57) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{761}).

A compound (L-57) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{762}).

[0179]

A compound represented by formula (L-58):



(L-58)

(hereinafter, referred to as Compound (L-58)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to

as Compound Class SX_{763}).

A compound (L-58) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{764}).

A compound (L-58) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{765}).

A compound (L-58) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{766}).

A compound (L-58) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{767}).

A compound (L-58) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{768}).

A compound (L-58) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table

7 to Table 15 (hereinafter, referred to as Compound Class SX_{769}).

A compound (L-58) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{770}).

A compound (L-58) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{771}).

A compound (L-58) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{772}).

A compound (L-58) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{773}).

A compound (L-58) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{774}).

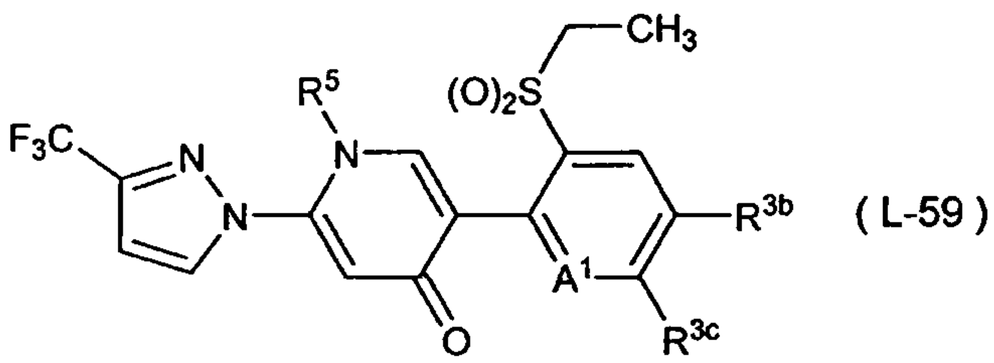
A compound (L-58) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table

7 to Table 15 (hereinafter, referred to as Compound Class SX_{775}).

A compound (L-58) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{776}).

[0180]

A compound represented by formula (L-59):



(L-59)

(hereinafter, referred to as Compound (L-59)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{777}).

A compound (L-59) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{778}).

A compound (L-59) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to

Table 15 (hereinafter, referred to as Compound Class SX_{779}).

A compound (L-59) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{780}).

A compound (L-59) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{781}).

A compound (L-59) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{782}).

A compound (L-59) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{783}).

A compound (L-59) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{784}).

A compound (L-59) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom,

and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{785}).

A compound (L-59) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{786}).

A compound (L-59) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{787}).

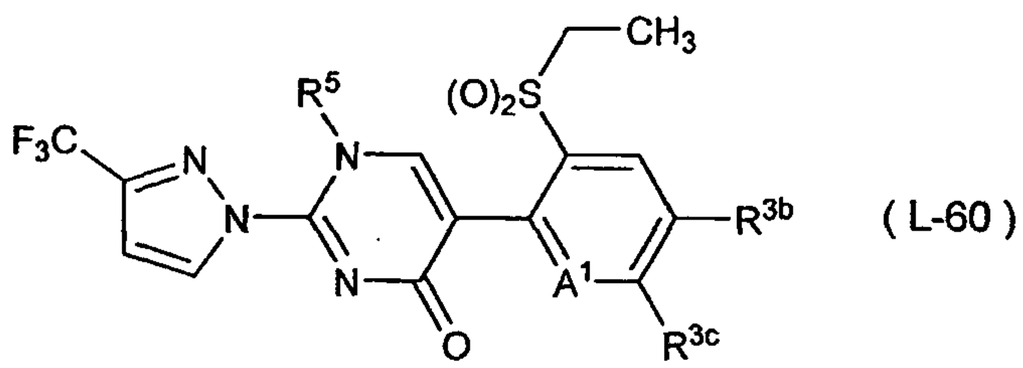
A compound (L-59) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{788}).

A compound (L-59) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{789}).

A compound (L-59) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{790}).

[0181]

A compound represented by formula (L-60):



(L-60)

(hereinafter, referred to as Compound (L-60)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{791}).

A compound (L-60) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{792}).

A compound (L-60) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{793}).

A compound (L-60) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{794}).

A compound (L-60) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to

Table 15 (hereinafter, referred to as Compound Class SX_{795}).

A compound (L-60) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{796}).

A compound (L-60) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{797}).

A compound (L-60) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{798}).

A compound (L-60) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{799}).

A compound (L-60) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{800}).

A compound (L-60) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom,

and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{801}).

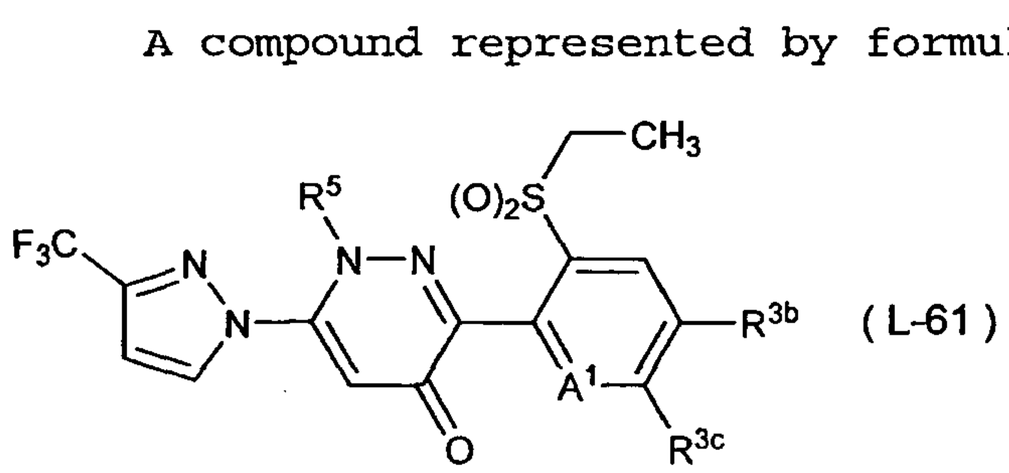
A compound (L-60) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{802}).

A compound (L-60) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{803}).

A compound (L-60) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{804}).

[0182]

A compound represented by formula (L-61):



(L-61)

(hereinafter, referred to as Compound (L-61)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents

indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{805}).

A compound (L-61) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{806}).

A compound (L-61) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{807}).

A compound (L-61) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{808}).

A compound (L-61) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{809}).

A compound (L-61) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{810}).

A compound (L-61) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen

atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{811}).

A compound (L-61) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{812}).

A compound (L-61) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{813}).

A compound (L-61) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{814}).

A compound (L-61) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{815}).

A compound (L-61) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{816}).

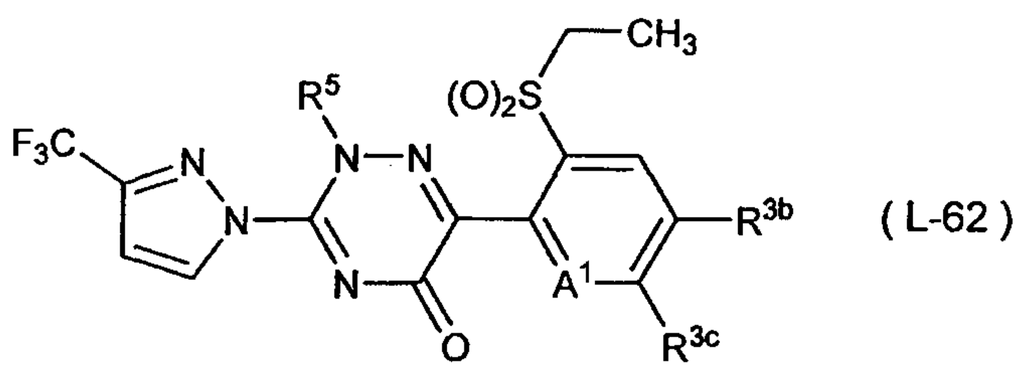
A compound (L-61) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen

atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{817}).

A compound (L-61) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{818}).

[0183]

A compound represented by formula (L-62):



(L-62)

(hereinafter, referred to as Compound (L-62)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{819}).

A compound (L-62) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{820}).

A compound (L-62) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom,

and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{821}).

A compound (L-62) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{822}).

A compound (L-62) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{823}).

A compound (L-62) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{824}).

A compound (L-62) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{825}).

A compound (L-62) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{826}).

A compound (L-62) wherein A^1 represents CH, R^5

represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{827}).

A compound (L-62) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{828}).

A compound (L-62) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{829}).

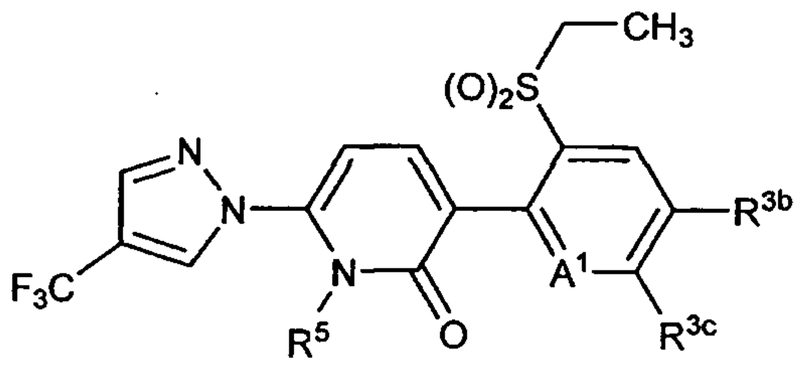
A compound (L-62) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{830}).

A compound (L-62) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{831}).

A compound (L-62) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{832}).

[0184]

A compound represented by formula (L-63):



(L-63)

(hereinafter, referred to as Compound (L-63)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{833}).

A compound (L-63) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{834}).

A compound (L-63) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{835}).

A compound (L-63) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{836}).

A compound (L-63) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom,

and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{837}).

A compound (L-63) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{838}).

A compound (L-63) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{839}).

A compound (L-63) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{840}).

A compound (L-63) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{841}).

A compound (L-63) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{842}).

A compound (L-63) wherein A^1 represents a nitrogen atom,

R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{843}).

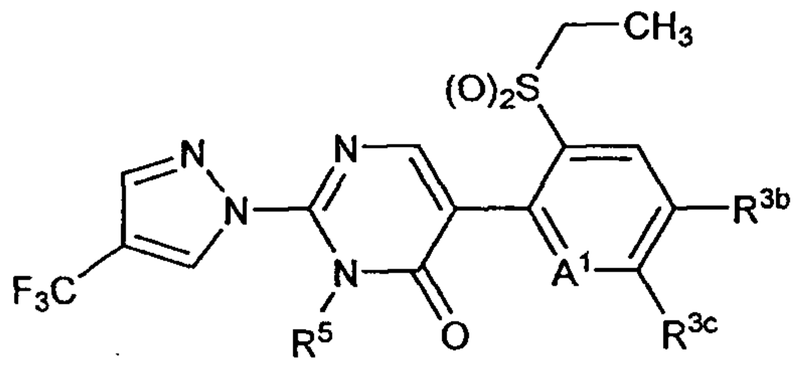
A compound (L-63) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{844}).

A compound (L-63) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{845}).

A compound (L-63) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{846}).

[0185]

A compound represented by formula (L-64):



(L-64)

(hereinafter, referred to as Compound (L-64)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents

a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{847}).

A compound (L-64) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{848}).

A compound (L-64) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{849}).

A compound (L-64) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{850}).

A compound (L-64) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{851}).

A compound (L-64) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{852}).

A compound (L-64) wherein A^1 represents a nitrogen atom,

R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{853}).

A compound (L-64) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{854}).

A compound (L-64) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{855}).

A compound (L-64) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{856}).

A compound (L-64) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{857}).

A compound (L-64) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{858}).

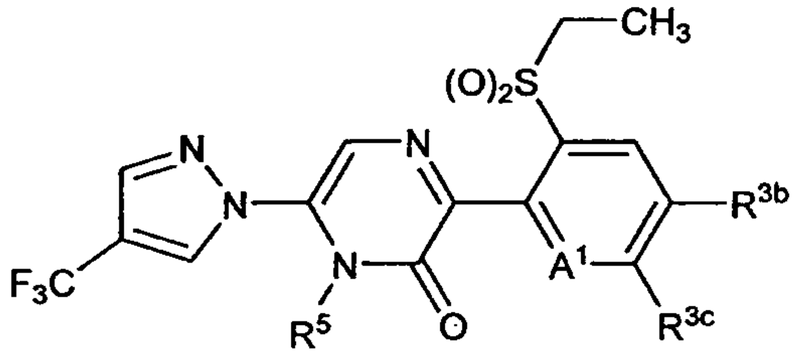
A compound (L-64) wherein A^1 represents a nitrogen atom,

R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{859}).

A compound (L-64) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{860}).

[0186]

A compound represented by formula (L-65):



(L-65)

(hereinafter, referred to as Compound (L-65)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{861}).

A compound (L-65) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{862}).

A compound (L-65) wherein A^1 represents a nitrogen atom,

R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{863}).

A compound (L-65) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{864}).

A compound (L-65) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{865}).

A compound (L-65) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{866}).

A compound (L-65) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{867}).

A compound (L-65) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{868}).

A compound (L-65) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{869}).

A compound (L-65) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{870}).

A compound (L-65) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{871}).

A compound (L-65) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{872}).

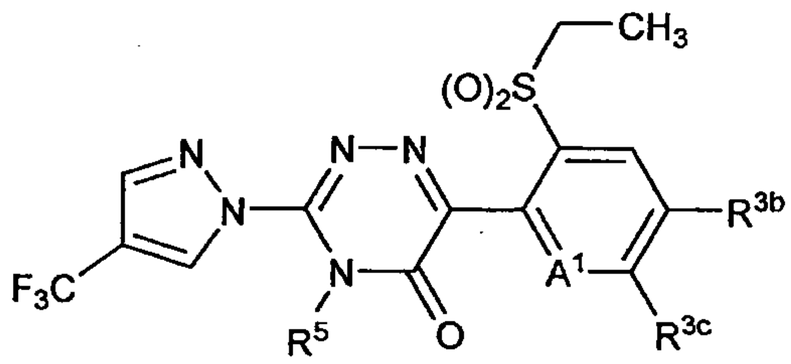
A compound (L-65) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{873}).

A compound (L-65) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class

SX_{874}).

[0187]

A compound represented by formula (L-66):



(L-66)

(hereinafter, referred to as Compound (L-66)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{875}).

A compound (L-66) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{876}).

A compound (L-66) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{877}).

A compound (L-66) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{878}).

A compound (L-66) wherein A^1 represents a nitrogen atom,

R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{879}).

A compound (L-66) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{880}).

A compound (L-66) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{881}).

A compound (L-66) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{882}).

A compound (L-66) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{883}).

A compound (L-66) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{884}).

A compound (L-66) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{885}).

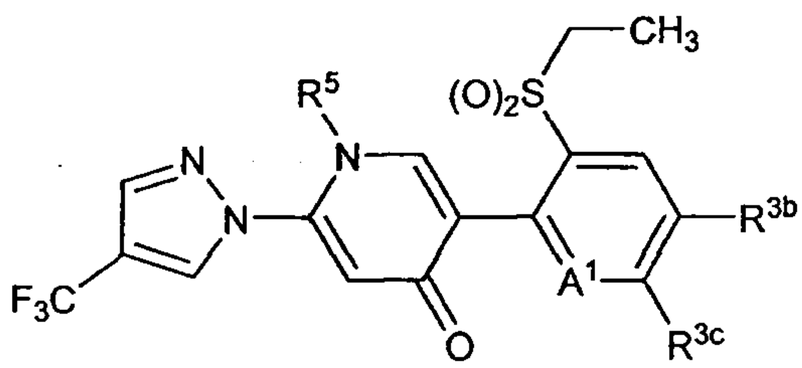
A compound (L-66) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{886}).

A compound (L-66) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{887}).

A compound (L-66) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{888}).

[0188]

A compound represented by formula (L-67):



(L-67)

(hereinafter, referred to as Compound (L-67)) wherein A^1

represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{889}).

A compound (L-67) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{890}).

A compound (L-67) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{891}).

A compound (L-67) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{892}).

A compound (L-67) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{893}).

A compound (L-67) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{894}).

A compound (L-67) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{895}).

A compound (L-67) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{896}).

A compound (L-67) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{897}).

A compound (L-67) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{898}).

A compound (L-67) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{899}).

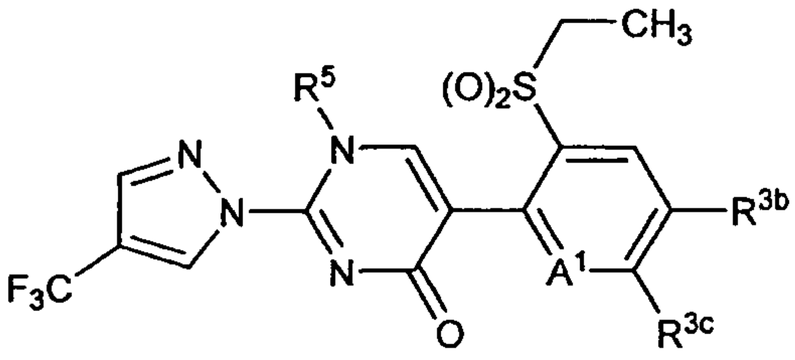
A compound (L-67) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{900}).

A compound (L-67) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{901}).

A compound (L-67) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{902}).

[0189]

A compound represented by formula (L-68):



(L-68)

(hereinafter, referred to as Compound (L-68)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{903}).

A compound (L-68) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{904}).

A compound (L-68) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{905}).

A compound (L-68) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{906}).

A compound (L-68) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{907}).

A compound (L-68) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{908}).

A compound (L-68) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{909}).

A compound (L-68) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to

Table 15 (hereinafter, referred to as Compound Class SX_{910}).

A compound (L-68) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{911}).

A compound (L-68) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{912}).

A compound (L-68) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{913}).

A compound (L-68) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{914}).

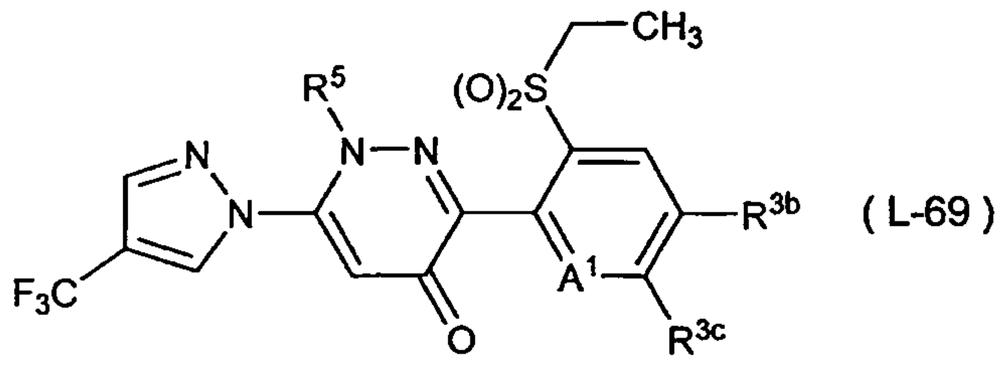
A compound (L-68) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{915}).

A compound (L-68) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table

7 to Table 15 (hereinafter, referred to as Compound Class SX_{916}).

[0190]

A compound represented by formula (L-69):



(L-69)

(hereinafter, referred to as Compound (L-69)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{917}).

A compound (L-69) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{918}).

A compound (L-69) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{919}).

A compound (L-69) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{920}).

A compound (L-69) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{921}).

A compound (L-69) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{922}).

A compound (L-69) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{923}).

A compound (L-69) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{924}).

A compound (L-69) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{925}).

A compound (L-69) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to

Table 15 (hereinafter, referred to as Compound Class SX_{926}).

A compound (L-69) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{927}).

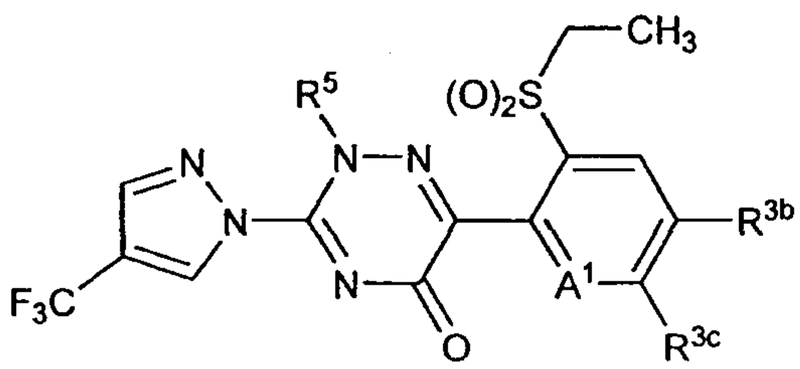
A compound (L-69) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{928}).

A compound (L-69) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{929}).

A compound (L-69) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{930}).

[0191]

A compound represented by formula (L-70):



(L-70)

(hereinafter, referred to as Compound (L-70)) wherein A^1 represents CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{931}).

A compound (L-70) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{932}).

A compound (L-70) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{933}).

A compound (L-70) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{934}).

A compound (L-70) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{935}).

A compound (L-70) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class

SX_{936}).

A compound (L-70) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{937}).

A compound (L-70) wherein A^1 represents CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{938}).

A compound (L-70) wherein A^1 represents CH, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{939}).

A compound (L-70) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{940}).

A compound (L-70) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{941}).

A compound (L-70) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to

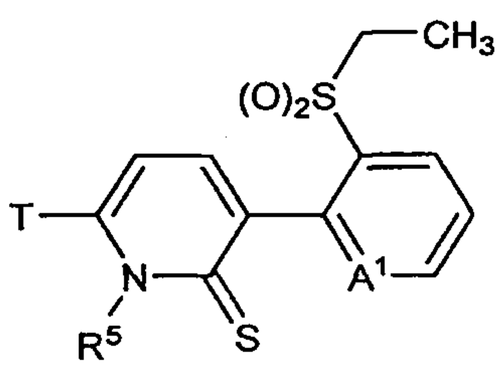
Table 15 (hereinafter, referred to as Compound Class SX_{942}).

A compound (L-70) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{943}).

A compound (L-70) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15 (hereinafter, referred to as Compound Class SX_{944}).

[0192]

A compound represented by formula (L-71):



(L-71)

(hereinafter, referred to as Compound (L-71)) wherein A^1 represents CH, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{945}).

A compound (L-71) wherein A^1 represents CH, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{946}).

A compound (L-71) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{947}).

A compound (L-71) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{948}).

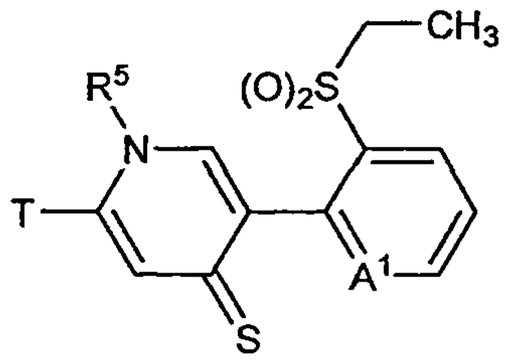
A compound (L-71) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{949}).

A compound (L-71) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{950}).

A compound (L-71) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{951}).

[0193]

A compound represented by formula (L-72):



(L-72)

(hereinafter, referred to as Compound (L-72)) wherein A^1 represents CH, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{952}).

A compound (L-72) wherein A^1 represents CH, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{953}).

A compound (L-72) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{954}).

A compound (L-72) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{955}).

A compound (L-72) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{956}).

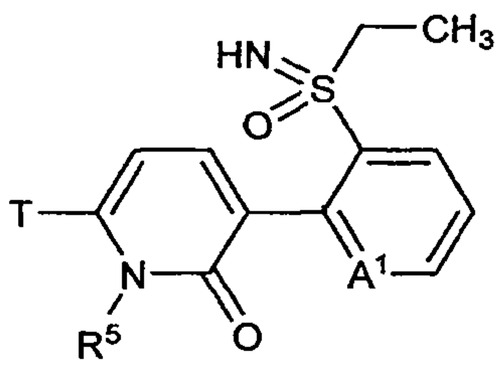
A compound (L-72) wherein A^1 represents a nitrogen atom,

R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{957}).

A compound (L-72) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{958}).

[0194]

A compound represented by formula (L-73):



(L-73)

(hereinafter, referred to as Compound (L-73)) wherein A^1 represents CH, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{959}).

A compound (L-73) wherein A^1 represents CH, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{960}).

A compound (L-73) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{961}).

A compound (L-73) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{962}).

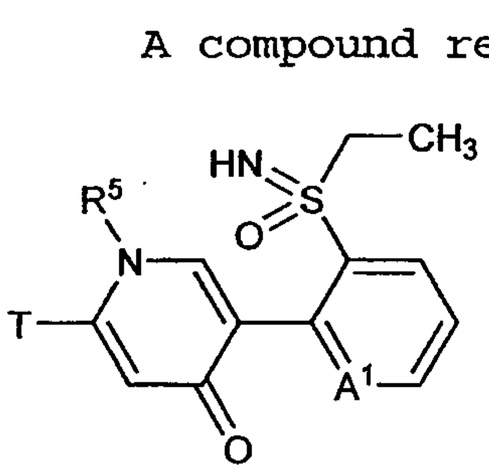
A compound (L-73) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{963}).

A compound (L-73) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{964}).

A compound (L-73) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{965}).

[0195]

A compound represented by formula (L-74):



(L-74)

(hereinafter, referred to as Compound (L-74)) wherein A^1 represents CH, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter,

referred to as Compound Class SX_{966}).

A compound (L-74) wherein A^1 represents CH, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{967}).

A compound (L-74) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{968}).

A compound (L-74) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{969}).

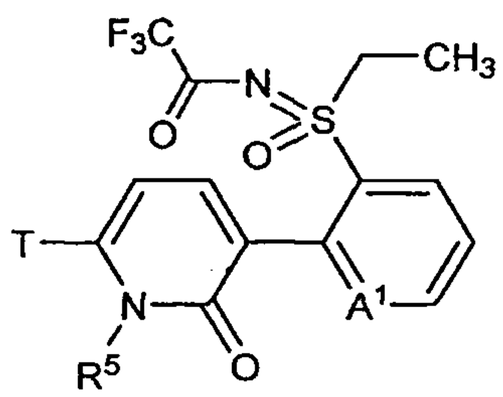
A compound (L-74) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{970}).

A compound (L-74) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{971}).

A compound (L-74) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{972}).

[0196]

A compound represented by formula (L-75):



(L-75)

(hereinafter, referred to Compound (L-75)) wherein A^1 represents CH, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{973}).

A compound (L-75) wherein A^1 represents CH, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{974}).

A compound (L-75) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{975}).

A compound (L-75) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{976}).

A compound (L-75) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter,

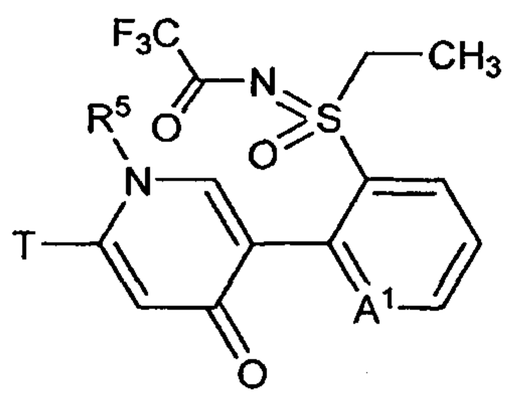
referred to as Compound Class SX_{977}).

A compound (L-75) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{978}).

A compound (L-75) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{979}).

[0197]

A compound represented by formula (L-76):



(L-76)

(hereinafter, referred to as Compound (L-76)) wherein A^1 represents CH, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{980}).

A compound (L-76) wherein A^1 represents CH, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{981}).

A compound (L-76) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, and T represents any

substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{982}).

A compound (L-76) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{983}).

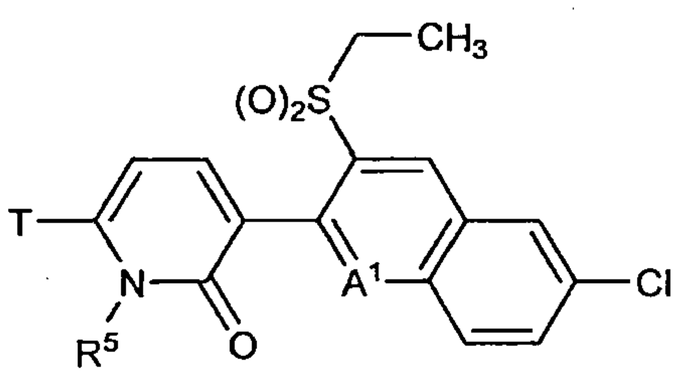
A compound (L-76) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{984}).

A compound (L-76) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{985}).

A compound (L-76) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{986}).

[0198]

A compound represented by formula (L-77):



(L-77)

(hereinafter, referred to as Compound (L-77)) wherein A^1

represents CH, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{987}).

A compound (L-77) wherein A^1 represents CH, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{988}).

A compound (L-77) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{989}).

A compound (L-77) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{990}).

A compound (L-77) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{991}).

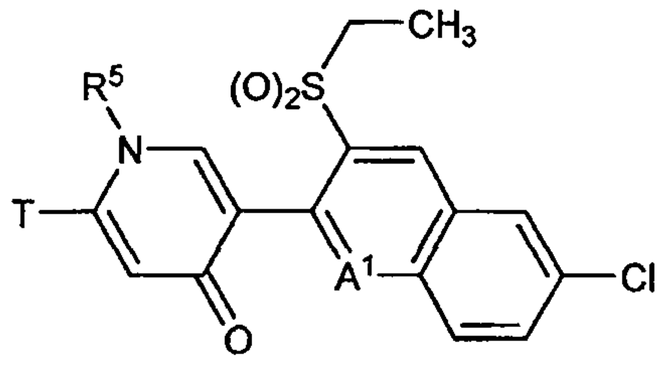
A compound (L-77) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{992}).

A compound (L-77) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, and T represents any

substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{993}).

[0199]

A compound represented by formula (L-78):



(L-78)

(hereinafter, referred to as Compound (L-78)) wherein A^1 represents CH, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{994}).

A compound (L-78) wherein A^1 represents CH, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{995}).

A compound (L-78) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{996}).

A compound (L-78) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{997}).

A compound (L-78) wherein A^1 represents a nitrogen atom,

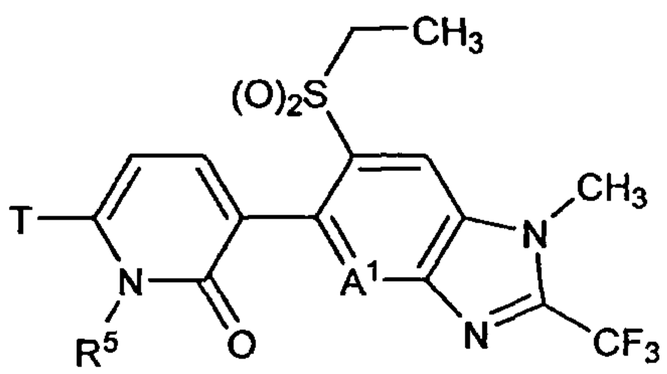
R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{998}).

A compound (L-78) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{999}).

A compound (L-78) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1000}).

[0200]

A compound represented by formula (L-79):



(L-79)

(hereinafter, referred to as Compound (L-79)) wherein A^1 represents CH, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1001}).

A compound (L-79) wherein A^1 represents CH, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1002}).

A compound (L-79) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1003}).

A compound (L-79) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1004}).

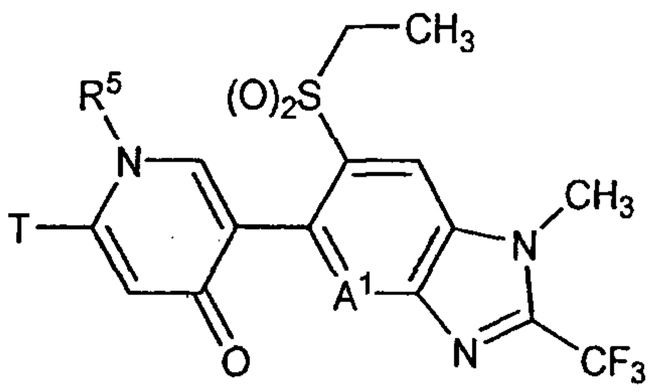
A compound (L-79) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1005}).

A compound (L-79) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1006}).

A compound (L-79) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1007}).

[0201]

A compound represented by formula (L-80):



(L-80)

(hereinafter, referred to as Compound (L-80)) wherein A^1 represents CH, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1008}).

A compound (L-80) wherein A^1 represents CH, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1009}).

A compound (L-80) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1010}).

A compound (L-80) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1011}).

A compound (L-80) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1012}).

A compound (L-80) wherein A^1 represents a nitrogen atom,

R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1013}).

A compound (L-80) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1014}).

[0202]

A compound (L-1) wherein A^1 represents a nitrogen atom, R^4 represents a methyl group, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1015}).

A compound (L-1) wherein A^1 represents a nitrogen atom, R^4 represents a methyl group, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1016}).

A compound (L-1) wherein A^1 represents a nitrogen atom, R^4 represents a methyl group, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1017}).

A compound (L-1) wherein A^1 represents a nitrogen atom, R^4 represents a methyl group, R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1018}).

A compound (L-1) wherein A^1 represents a nitrogen atom, R^4 represents a methyl group, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1019}).

A compound (L-3) wherein A^1 represents a nitrogen atom, R^4 represents a methyl group, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1020}).

A compound (L-3) wherein A^1 represents a nitrogen atom, R^4 represents a methyl group, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1021}).

A compound (L-3) wherein A^1 represents a nitrogen atom, R^4 represents a methyl group, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1022}).

A compound (L-3) wherein A^1 represents a nitrogen atom, R^4 represents a methyl group, R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1023}).

A compound (L-3) wherein A^1 represents a nitrogen atom, R^4 represents a methyl group, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table

1 to Table 6 (hereinafter, referred to as Compound Class SX_{1024}).

A compound (L-5) wherein A^1 represents a nitrogen atom, R^4 represents a methyl group, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1025}).

A compound (L-5) wherein A^1 represents a nitrogen atom, R^4 represents a methyl group, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1026}).

A compound (L-5) wherein A^1 represents a nitrogen atom, R^4 represents a methyl group, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1027}).

A compound (L-5) wherein A^1 represents a nitrogen atom, R^4 represents a methyl group, R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1028}).

A compound (L-5) wherein A^1 represents a nitrogen atom, R^4 represents a methyl group, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1029}).

A compound (L-7) wherein A^1 represents a nitrogen atom,

R^4 represents a methyl group, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1030}).

A compound (L-7) wherein A^1 represents a nitrogen atom, R^4 represents a methyl group, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1031}).

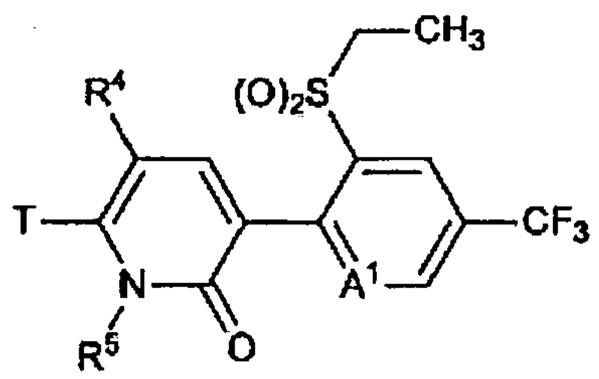
A compound (L-7) wherein A^1 represents a nitrogen atom, R^4 represents a methyl group, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1032}).

A compound (L-7) wherein A^1 represents a nitrogen atom, R^4 represents a methyl group, R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1033}).

A compound (L-7) wherein A^1 represents a nitrogen atom, R^4 represents a methyl group, R^5 represents an cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1034}).

[0203]

A compound represented by formula (L-81):



(L-81)

(hereinafter, referred to as Compound (L-81)) wherein A^1 represents CH, R^4 represents a hydrogen atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1035}).

A compound (L-81) wherein A^1 represents CH, R^4 represents a hydrogen atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1036}).

A compound (L-81) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1037}).

A compound (L-81) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1038}).

A compound (L-81) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to

Table 6 (hereinafter, referred to as Compound Class SX_{1039}).

A compound (L-81) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1040}).

A compound (L-81) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1041}).

A compound (L-81) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1042}).

A compound (L-81) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1043}).

A compound (L-81) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1044}).

A compound (L-81) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents an isopropyl

group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1045}).

A compound (L-81) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1046}).

A compound (L-81) wherein A^1 represents a nitrogen atom, R^4 represents a methyl group, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1047}).

A compound (L-81) wherein A^1 represents a nitrogen atom, R^4 represents a methyl group, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1048}).

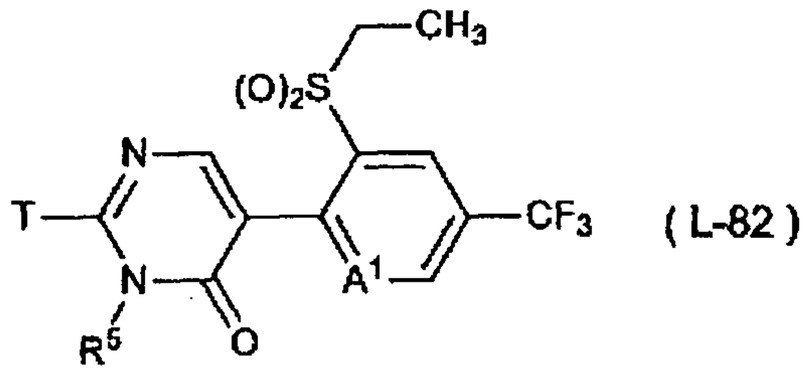
A compound (L-81) wherein A^1 represents a nitrogen atom, R^4 represents a methyl group, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1049}).

A compound (L-81) wherein A^1 represents a nitrogen atom, R^4 represents a methyl group, R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1050}).

A compound (L-81) wherein A^1 represents a nitrogen atom, R^4 represents a methyl group, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1051}).

[0204]

A compound represented by formula (L-82):



(L-82)

(hereinafter, referred to as Compound (L-82)) wherein A^1 represents CH, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1052}).

A compound (L-82) wherein A^1 represents CH, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1053}).

A compound (L-82) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1054}).

A compound (L-82) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, and T represents any

substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1055}).

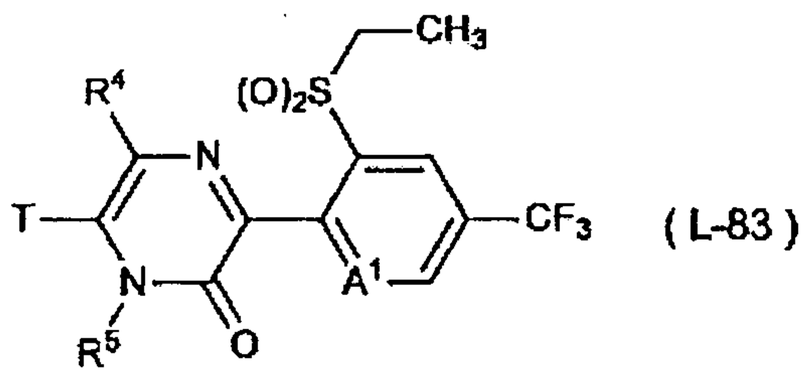
A compound (L-82) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1056}).

A compound (L-82) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1057}).

A compound (L-82) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1058}).

[0205]

A compound represented by formula (L-83):



(L-83)

(hereinafter, referred to as Compound (L-83)) wherein A^1 represents CH, R^4 represents a hydrogen atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1059}).

A compound (L-83) wherein A^1 represents CH, R^4 represents a hydrogen atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1060}).

A compound (L-83) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1061}).

A compound (L-83) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1062}).

A compound (L-83) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1063}).

A compound (L-83) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1064}).

A compound (L-83) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class

SX_{1065}).

A compound (L-83) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1066}).

A compound (L-83) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1067}).

A compound (L-83) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1068}).

A compound (L-83) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1069}).

A compound (L-83) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1070}).

A compound (L-83) wherein A^1 represents a nitrogen atom, R^4 represents a methyl group, R^5 represents a methyl group,

and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1071}).

A compound (L-83) wherein A^1 represents a nitrogen atom, R^4 represents a methyl group, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1072}).

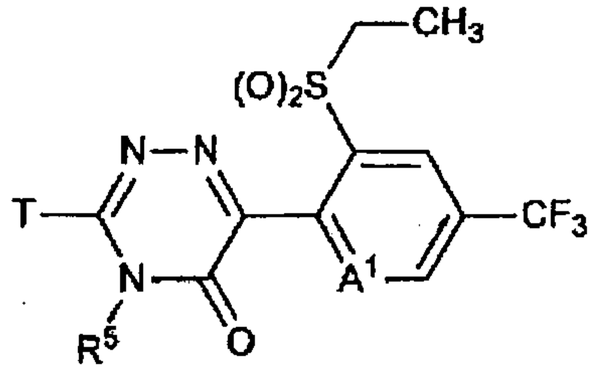
A compound (L-83) wherein A^1 represents a nitrogen atom, R^4 represents a methyl group, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1073}).

A compound (L-83) wherein A^1 represents a nitrogen atom, R^4 represents a methyl group, R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1074}).

A compound (L-83) wherein A^1 represents a nitrogen atom, R^4 represents a methyl group, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1075}).

[0206]

A compound represented by formula (L-84):



(L-84)

(hereinafter, referred to as Compound (L-84)) wherein A^1 represents CH, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1076}).

A compound (L-84) wherein A^1 represents CH, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1077}).

A compound (L-84) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1078}).

A compound (L-84) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1079}).

A compound (L-84) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1080}).

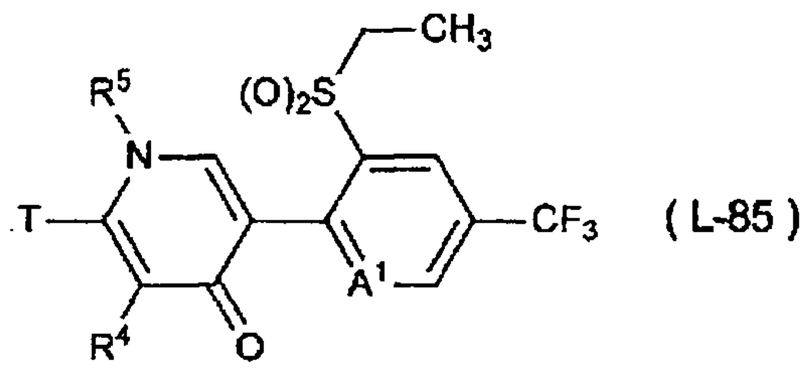
A compound (L-84) wherein A^1 represents a nitrogen atom,

R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1081}).

A compound (L-84) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1082}).

[0207]

A compound represented by formula (L-85):



(L-85)

(hereinafter, referred to as Compound (L-85)) wherein A^1 represents CH, R^4 represents a hydrogen atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1083}).

A compound (L-85) wherein A^1 represents CH, R^4 represents a hydrogen atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1084}).

A compound (L-85) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to

Table 6 (hereinafter, referred to as Compound Class SX_{1085}).

A compound (L-85) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1086}).

A compound (L-85) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1087}).

A compound (L-85) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1088}).

A compound (L-85) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1089}).

A compound (L-85) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1090}).

A compound (L-85) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents an ethyl group,

and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1091}).

A compound (L-85) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1092}).

A compound (L-85) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1093}).

A compound (L-85) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1094}).

A compound (L-85) wherein A^1 represents a nitrogen atom, R^4 represents a methyl group, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1095}).

A compound (L-85) wherein A^1 represents a nitrogen atom, R^4 represents a methyl group, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1096}).

A compound (L-85) wherein A^1 represents a nitrogen atom,

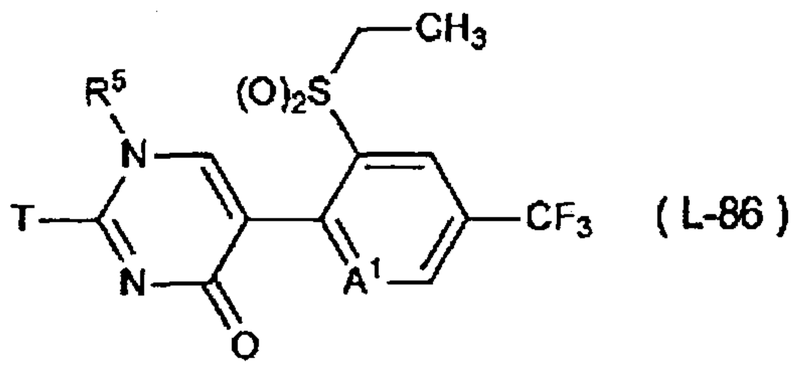
R^4 represents a methyl group, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1097}).

A compound (L-85) wherein A^1 represents a nitrogen atom, R^4 represents a methyl group, R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1098}).

A compound (L-85) wherein A^1 represents a nitrogen atom, R^4 represents a methyl group, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1099}).

[0208]

A compound represented by formula (L-86):



(L-86)

(hereinafter, referred to as Compound (L-86)) wherein A^1 represents CH, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1100}).

A compound (L-86) wherein A^1 represents CH, R^5 represents an ethyl group, and T represents any substituents

indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1101}).

A compound (L-86) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1102}).

A compound (L-86) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1103}).

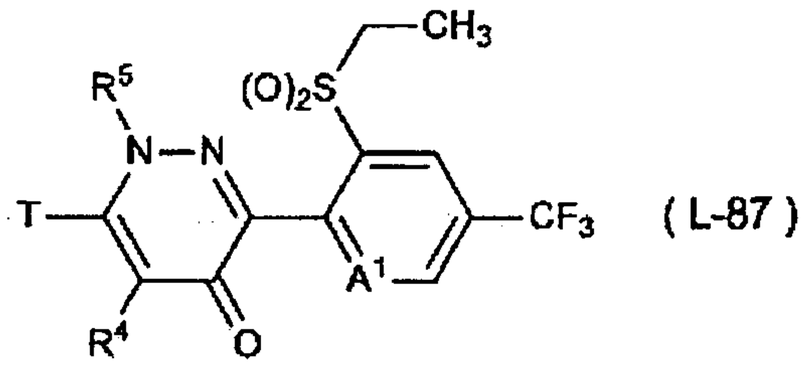
A compound (L-86) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1104}).

A compound (L-86) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1105}).

A compound (L-86) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1106}).

[0209]

A compound represented by formula (L-87):



(L-87)

(hereinafter, referred to as Compound (L-87)) wherein A^1 represents CH, R^4 represents a hydrogen atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1107}).

A compound (L-87) wherein A^1 represents CH, R^4 represents a hydrogen atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1108}).

A compound (L-87) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1109}).

A compound (L-87) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1110}).

A compound (L-87) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1111}).

A compound (L-87) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1112}).

A compound (L-87) wherein A^1 represents a nitrogen atom, R^4 represents a hydrogen atom, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1113}).

A compound (L-87) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1114}).

A compound (L-87) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1115}).

A compound (L-87) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1116}).

A compound (L-87) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents an isopropyl group, and T represents any substituents indicated in Table

1 to Table 6 (hereinafter, referred to as Compound Class SX_{1117}).

A compound (L-87) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1118}).

A compound (L-87) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1119}).

A compound (L-87) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1120}).

A compound (L-87) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1121}).

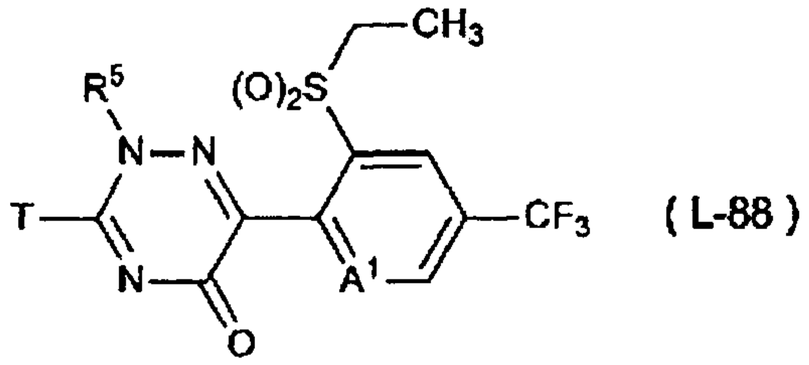
A compound (L-87) wherein A^1 represents a nitrogen atom, R^4 represents a chlorine atom, R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1122}).

A compound (L-87) wherein A^1 represents a nitrogen atom,

R^4 represents a chlorine atom, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1123}).

[0210]

A compound represented by formula (L-88):



(L-88)

(hereinafter, referred to as Compound (L-88)) wherein A^1 represents CH, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1124}).

A compound (L-88) wherein A^1 represents CH, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1125}).

A compound (L-88) wherein A^1 represents a nitrogen atom, R^5 represents a methyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1126}).

A compound (L-88) wherein A^1 represents a nitrogen atom, R^5 represents an ethyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter,

referred to as Compound Class SX_{1127}).

A compound (L-88) wherein A^1 represents a nitrogen atom, R^5 represents a propyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1128}).

A compound (L-88) wherein A^1 represents a nitrogen atom, R^5 represents an isopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1129}).

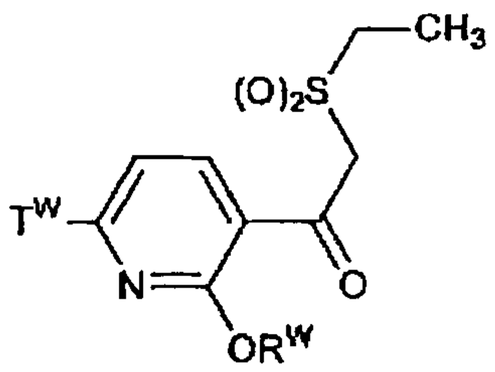
A compound (L-88) wherein A^1 represents a nitrogen atom, R^5 represents a cyclopropyl group, and T represents any substituents indicated in Table 1 to Table 6 (hereinafter, referred to as Compound Class SX_{1130}).

[0211]

Next, specific examples of an intermediate compound for preparing the compound Z of the present invention are indicated below.

[0212]

A compound represented by formula (LL-1):



(LL-1)

(hereinafter, referred to as Compound (LL-1)) wherein R^w represents a hydrogen atom, and T^W represents any

substituents indicated in Table 1 to Table 6 and Table 16.

[0213]

Table 16

SMe
SEt
SPr
S(i-Pr)
S(O)Me
S(O)Et
S(O)Pr
S(O)i-Pr
$S(O)_2Me$
$S(O)_2Et$
$S(O)_2Pr$
$S(O)_2i-Pr$
$OS(O)_2Me$
$OS(O)_2Et$
$OS(O)_2Pr$
OMe
Oi-Pr
OCH_2OMe
OBn
$OCH_2(4-OMe-Ph)$
OC(O)Me
OC(O)Et
$OC(O)CMe_3$
OH
F
Cl
Br
I

[0214]

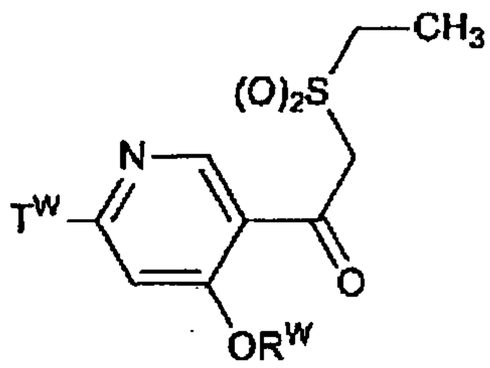
A compound (LL-1) wherein R^w represents a methyl group, and T^W represents any substituents indicated in Table 1 to Table 6 and Table 16.

A compound (LL-1) wherein R^w represents a benzyl group, and T^W represents any substituents indicated in Table 1 to

Table 6 and Table 16.

[0215]

A compound represented by formula (LL-2):



(LL-2)

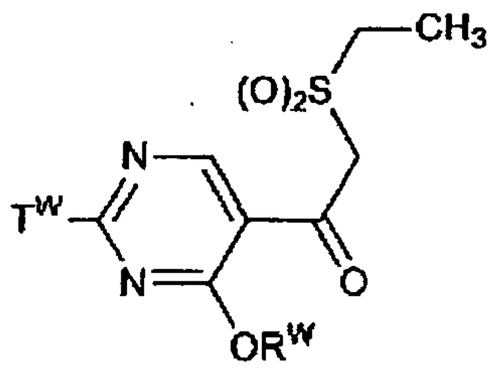
(hereinafter, referred to as Compound (LL-2)) wherein R^w represents a hydrogen atom, and T^w represents any substituents indicated in Table 1 to Table 6 and Table 16.

A compound (LL-2) wherein R^w represents a methyl group, and T^w represents any substituents indicated in Table 1 to Table 6 and Table 16.

A compound (LL-2) wherein R^w represents a benzyl group, and T^w represents any substituents indicated in Table 1 to Table 6 and Table 16.

[0216]

A compound represented by formula (LL-3):



(LL-3)

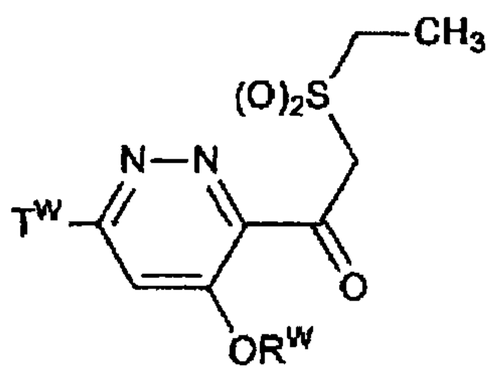
(hereinafter, referred to as Compound (LL-3)) wherein R^w represents a hydrogen atom, and T^w represents any substituents indicated in Table 1 to Table 6 and Table 16.

A compound (LL-3) wherein R^w represents a methyl group, and T^w represents any substituents indicated in Table 1 to Table 6 and Table 16.

A compound (LL-3) wherein R^{ow} represents a benzyl group, and T^w represents any substituents indicated in Table 1 to Table 6 and Table 16.

[0217]

A compound represented by formula (LL-4):



(LL-4)

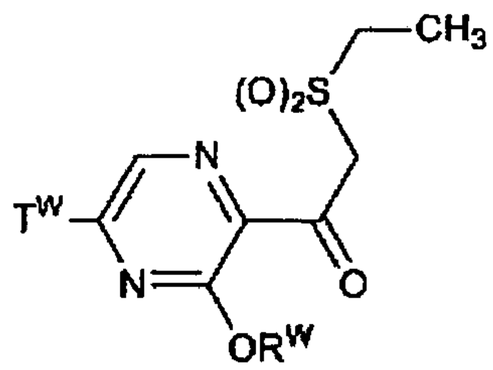
(hereinafter, referred to as Compound (LL-4)) wherein R^{ow} represents a hydrogen atom, and T^w represents any substituents indicated in Table 1 to Table 6 and Table 16.

A compound (LL-4) wherein R^w represents a methyl group, and T^w represents any substituents indicated in Table 1 to Table 6 and Table 16.

A compound (LL-4) wherein R^w represents a benzyl group, and T^w represents any substituents indicated in Table 1 to Table 6 and Table 16.

[0218]

A compound represented by formula (LL-5):



(LL-5)

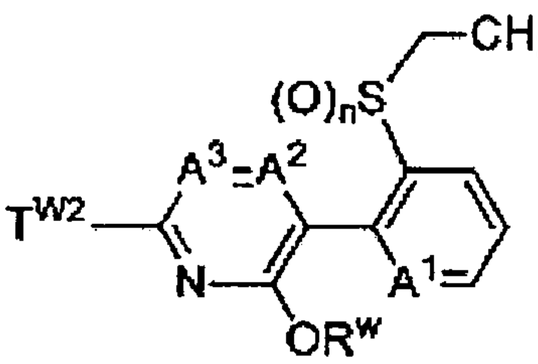
(hereinafter, referred to as Compound (LL-5)) wherein R^W represents a hydrogen atom, and T^W represents any substituents indicated in Table 1 to Table 6 and Table 16.

A compound (LL-5) wherein R^W represents a methyl group, and T^W represents any substituents indicated in Table 1 to Table 6 and Table 16.

A compound (LL-5) wherein R^W represents a benzyl group, and T^W represents any substituents indicated in Table 1 to Table 6 and Table 16.

[0219]

A compound represented by formula (LL-6):



(LL-6)

(hereinafter, referred to as Compound (LL-6)) wherein A^1 represents CH, A^2 and A^3 represent CH, R^W represents a hydrogen atom, n is 0, and T^{W2} represents any substituents indicated in Table 1 to Table 6 and Table 16.

A compound (LL-6) wherein A^1 represents CH, A^2 and A^3 represent CH, R^W represents a hydrogen atom, n is 2, and T^{W2}

represents any substituents indicated in Table 1 to Table 6 and Table 16.

A compound (LL-6) wherein A^1 represents a nitrogen atom, A^2 and A^3 represent CH, R^w represents a hydrogen atom, n is 0, and T^{W2} represents any substituents indicated in Table 1 to Table 6 and Table 16.

A compound (LL-6) wherein A^1 represents a nitrogen atom, A^2 and A^3 represent CH, R^w represents a hydrogen atom, n is 2, and T^{W2} represents any substituents indicated in Table 1 to Table 6 and Table 16.

A compound (LL-6) wherein A^1 represents a nitrogen atom, A^2 and A^3 represent CH, R^w represents a methyl group, n is 0, and T^{W2} represents any substituents indicated in Table 1 to Table 6 and Table 16.

A compound (LL-6) wherein A^1 represents a nitrogen atom, A^2 and A^3 represent CH, R^w represents a methyl group, n is 2, and T^{W2} represents any substituents indicated in Table 1 to Table 6 and Table 16.

A compound (LL-6) wherein A^1 represents a nitrogen atom, A^2 and A^3 represent CH, R^w represents a benzyl group, n is 0, and T^{W2} represents any substituents indicated in Table 1 to Table 6 and Table 16.

A compound (LL-6) wherein A^1 represents a nitrogen atom, A^2 and A^3 represent CH, R^w represents a benzyl group, n is 2, and T^{W2} represents any substituents indicated in Table 1 to

Table 6 and Table 16.

A compound (LL-6) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^3 represents a nitrogen atom, R^w represents a hydrogen atom, n is 0, and T^{W2} represents any substituents indicated in Table 1 to Table 6 and Table 16.

A compound (LL-6) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^3 represents a nitrogen atom, R^w represents a hydrogen atom, n is 2, and T^{W2} represents any substituents indicated in Table 1 to Table 6 and Table 16.

A compound (LL-6) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^3 represents a nitrogen atom, R^w represents a methyl group, n is 0, and T^{W2} represents any substituents indicated in Table 1 to Table 6 and Table 16.

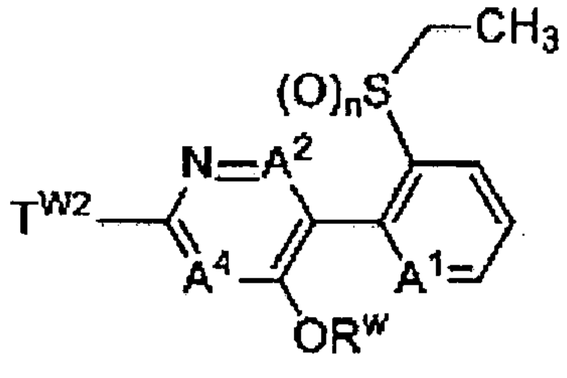
A compound (LL-6) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^3 represents a nitrogen atom, R^w represents a methyl group, n is 2, and T^{W2} represents any substituents indicated in Table 1 to Table 6 and Table 16.

A compound (LL-6) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^3 represents a nitrogen atom, R^w represents a benzyl group, n is 0, and T^{W2} represents any substituents indicated in Table 1 to Table 6 and Table 16.

A compound (LL-6) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^3 represents a nitrogen atom, R^w represents a benzyl group, n is 2, and T^{W2} represents any substituents indicated in Table 1 to Table 6 and Table 16.

[0220]

A compound represented by formula (LL-7):



(LL-7)

(hereinafter, referred to as Compound (LL-7)) wherein A^1 represents CH, A^2 and A^4 represent CH, R^w represents a hydrogen atom, n is 0, and T^{W2} represents any substituents indicated in Table 1 to Table 6 and Table 16.

A compound (LL-7) wherein A^1 represents CH, A^2 and A^4 represent CH, R^w represents a hydrogen atom, n is 2, and T^{W2} represents any substituents indicated in Table 1 to Table 6 and Table 16.

A compound (LL-7) wherein A^1 represents a nitrogen atom, A^2 and A^4 represent CH, R^w represents a hydrogen atom, n is 0, and T^{W2} represents any substituents indicated in Table 1 to Table 6 and Table 16.

A compound (LL-7) wherein A^1 represents a nitrogen atom, A^2 and A^4 represent CH, R^w represents a hydrogen atom, n is 2, and T^{W2} represents any substituents indicated in Table 1 to Table 6 and Table 16.

A compound (LL-7) wherein A^1 represents a nitrogen atom, A^2 and A^4 represent CH, R^w represents a methyl group, n is 0, and T^{W2} represents any substituents indicated in Table 1 to

Table 6 and Table 16.

A compound (LL-7) wherein A^1 represents a nitrogen atom, A^2 and A^4 represent CH, R^w represents a methyl group, n is 2, and T^{W2} represents any substituents indicated in Table 1 to Table 6 and Table 16.

A compound (LL-7) wherein A^1 represents a nitrogen atom, A^2 and A^4 represent CH, R^w represents a benzyl group, n is 0, and T^{W2} represents any substituents indicated in Table 1 to Table 6 and Table 16.

A compound (LL-7) wherein A^1 represents a nitrogen atom, A^2 and A^4 represent CH, R^w represents a benzyl group, n is 2, and T^{W2} represents any substituents indicated in Table 1 to Table 6 and Table 16.

A compound (LL-7) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^4 represents a nitrogen atom, R^w represents a hydrogen atom, n is 0, and T^{W2} represents any substituents indicated in Table 1 to Table 6 and Table 16.

A compound (LL-7) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^4 represents a nitrogen atom, R^w represents a hydrogen atom, n is 2, and T^{W2} represents any substituents indicated in Table 1 to Table 6 and Table 16.

A compound (LL-7) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^4 represents a nitrogen atom, R^w represents a methyl group, n is 0, and T^{W2} represents any substituents indicated in Table 1 to Table 6 and Table 16.

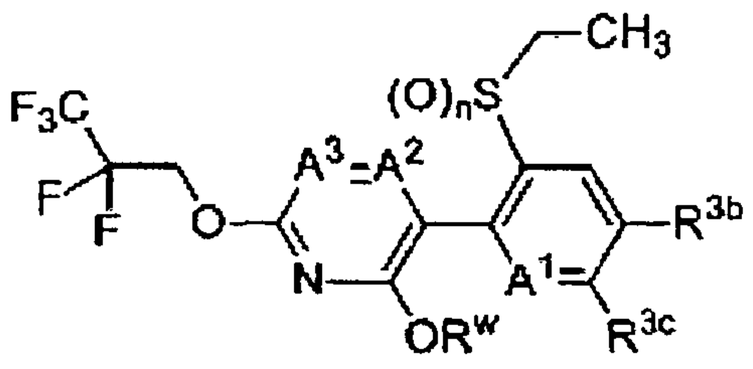
A compound (LL-7) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^4 represents a nitrogen atom, R^w represents a methyl group, n is 2, and T^{W2} represents any substituents indicated in Table 1 to Table 6 and Table 16.

A compound (LL-7) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^4 represents a nitrogen atom, R^w represents a benzyl group, n is 0, and T^{W2} represents any substituents indicated in Table 1 to Table 6 and Table 16.

A compound (LL-7) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^4 represents a nitrogen atom, R^w represents a benzyl group, n is 2, and T^{W2} represents any substituents indicated in Table 1 to Table 6 and Table 16.

[0221]

A compound represented by formula (LL-8):



(LL-8)

(hereinafter, referred to as Compound (LL-8)) wherein A^1 represents CH, A^2 and A^3 represent CH, R^w represents a hydrogen atom, n is 0, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-8) wherein A^1 represents CH, A^2 and A^3 represent CH, R^w represents a hydrogen atom, n is 2, R^{3b}

represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-8) wherein A^1 represents CH, A^2 and A^3 represent CH, R^w represents a hydrogen atom, n is 0, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-8) wherein A^1 represents CH, A^2 and A^3 represent CH, R^w represents a hydrogen atom, n is 2, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-8) wherein A^1 represents a nitrogen atom, A^2 and A^3 represent CH, R^w represents a hydrogen atom, n is 0, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-8) wherein A^1 represents a nitrogen atom, A^2 and A^3 represent CH, R^w represents a hydrogen atom, n is 2, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-8) wherein A^1 represents a nitrogen atom, A^2 and A^3 represent CH, R^w represents a hydrogen atom, n is 0, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-8) wherein A^1 represents a nitrogen atom, A^2 and A^3 represent CH, R^w represents a hydrogen atom, n is 2, R^{3c} represents a hydrogen atom, and R^{3b} represents any

substituents indicated in Table 7 to Table 15.

A compound (LL-8) wherein A^1 represents a nitrogen atom, A^2 and A^3 represent CH, R^w represents a methyl group, n is 0, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-8) wherein A^1 represents a nitrogen atom, A^2 and A^3 represent CH, R^w represents a methyl group, n is 2, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-8) wherein A^1 represents a nitrogen atom, A^2 and A^3 represent CH, R^w represents a methyl group, n is 0, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-8) wherein A^1 represents a nitrogen atom, A^2 and A^3 represent CH, R^w represents a methyl group, n is 2, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-8) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^3 represents a nitrogen atom, R^w represents a hydrogen atom, n is 0, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-8) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^3 represents a nitrogen atom, R^w represents a hydrogen atom, n is 2, R^{3b} represents a hydrogen atom, and

R^{3c} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-8) wherein A^1 represents a nitrogen atom, A^2 represents CH, R^w represents a hydrogen atom, n is 0, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-8) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^3 represents a nitrogen atom, R^w represents a hydrogen atom, n is 2, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-8) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^3 represents a nitrogen atom, R^w represents a methyl group, n is 0, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-8) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^3 represents a nitrogen atom, R^w represents a methyl group, n is 2, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15.

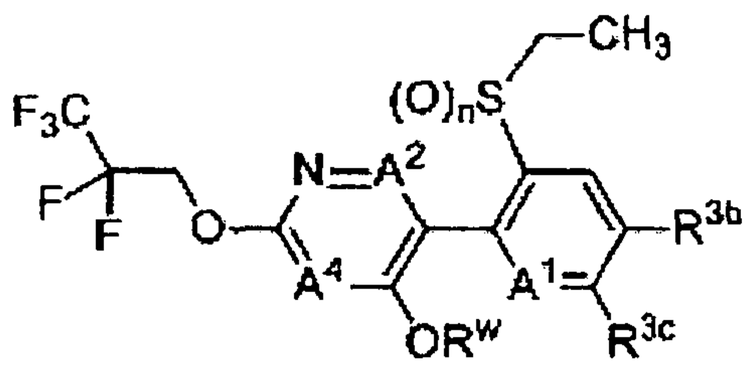
A compound (LL-8) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^3 represents a nitrogen atom, R^w represents a methyl group, n is 0, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table

15.

A compound (LL-8) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^3 represents a nitrogen atom, R^w represents a methyl group, n is 2, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15.

[0222]

A compound represented by formula (LL-9):



(LL-9)

(hereinafter, referred to as Compound (LL-9)) wherein A^1 represents CH, A^2 and A^4 represent CH, R^w represents a hydrogen atom, n is 0, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-9) wherein A^1 represents CH, A^2 and A^4 represent CH, R^w represents a hydrogen atom, n is 2, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-9) wherein A^1 represents CH, A^2 and A^4 represent CH, R^w represents a hydrogen atom, n is 0, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-9) wherein A^1 represents CH, A^2 and A^4 represent CH, R^w represents a hydrogen atom, n is 2, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-9) wherein A^1 represents a nitrogen atom, A^2 and A^4 represent CH, R^w represents a hydrogen atom, n is 0, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-9) wherein A^1 represents a nitrogen atom, A^2 and A^4 represent CH, R^w represents a hydrogen atom, n is 0, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-9) wherein A^1 represents a nitrogen atom, A^2 and A^4 represent CH, R^w represents a hydrogen atom, n is 2, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-9) wherein A^1 represents a nitrogen atom, A^2 and A^4 represent CH, R^w represents a methyl group, n is 0, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-9) wherein A^1 represents a nitrogen atom,

A^2 and A^4 represent CH, R^w represents a methyl group, n is 2, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-9) wherein A^1 represents a nitrogen atom, A^2 and A^4 represent CH, R^w represents a methyl group, n is 0, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-9) wherein A^1 represents a nitrogen atom, A^2 and A^4 represent CH, R^w represents a methyl group, n is 2, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-9) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^4 represents a nitrogen atom, R^w represents a hydrogen atom, n is 0, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-9) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^4 represents a nitrogen atom, R^w represents a hydrogen atom, n is 2, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-9) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^4 represents a nitrogen atom, R^w represents a hydrogen atom, n is 0, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table

15.

A compound (LL-9) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^4 represents a nitrogen atom, R^w represents a hydrogen atom, n is 2, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-9) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^4 represents a nitrogen atom, R^w represents a methyl group, n is 0, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-9) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^4 represents a nitrogen atom, R^w represents a methyl group, n is 2, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15.

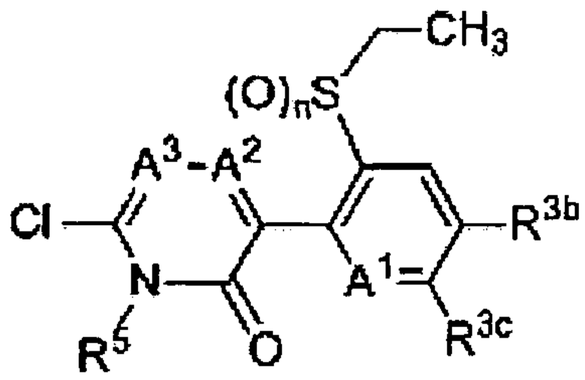
A compound (LL-9) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^4 represents a nitrogen atom, R^w represents a methyl group, n is 0, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-9) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^4 represents a nitrogen atom, R^w represents a methyl group, n is 2, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table

15.

[0223]

A compound represented by formula (LL-10):



(LL-10)

(hereinafter, referred to as Compound (LL-10)) wherein A^1 represents CH, A^2 and A^3 represent CH, R^5 represents a methyl group, n is 0, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-10) wherein A^1 represents CH, A^2 and A^3 represent CH, R^5 represents a methyl group, n is 2, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-10) wherein A^1 represents CH, A^2 and A^3 represent CH, R^5 represents a methyl group, n is 0, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-10) wherein A^1 represents CH, A^2 and A^3 represent CH, R^5 represents a methyl group, n is 2, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-10) wherein A^1 represents a nitrogen atom,

A^2 and A^3 represent CH, R^5 represents a methyl group, n is 0, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-10) wherein A^1 represents a nitrogen atom, A^2 and A^3 represent CH, R^5 represents a methyl group, n is 2, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-10) wherein A^1 represents a nitrogen atom, A^2 and A^3 represent CH, R^5 represents a methyl group, n is 0, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-10) wherein A^1 represents a nitrogen atom, A^2 and A^3 represent CH, R^5 represents a methyl group, n is 2, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-10) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^3 represents a nitrogen atom, R^5 represents a methyl group, n is 0, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15.

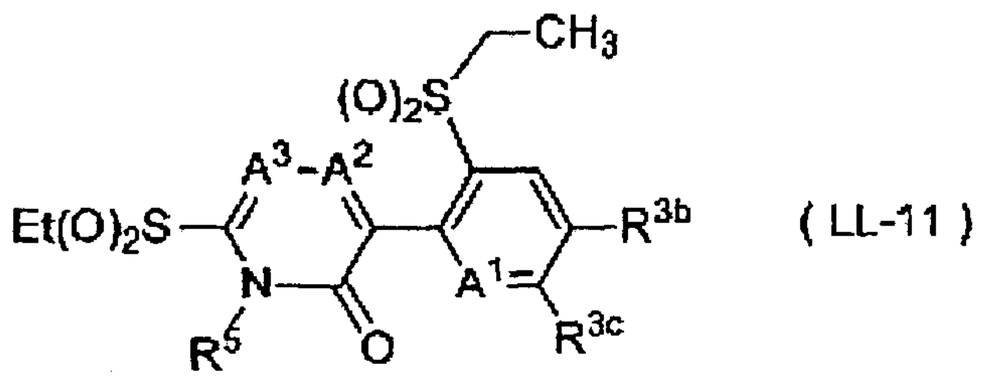
A compound (LL-10) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^3 represents a nitrogen atom, R^5 represents a methyl group, n is 2, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-10) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^3 represents a nitrogen atom, R^5 represents a methyl group, n is 0, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-10) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^3 represents a nitrogen atom, R^5 represents a methyl group, n is 2, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15.

[0224]

A compound represented by formula (LL-11):



(LL-11)

(hereinafter, referred to as Compound (LL-11)) wherein A^1 represents CH, A^2 and A^3 represent CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-11) wherein A^1 represents CH, A^2 and A^3 represent CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-11) wherein A^1 represents a nitrogen atom,

A^2 and A^3 represent CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15.

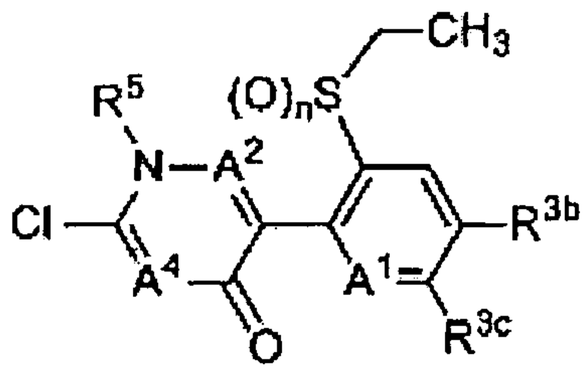
A compound (LL-11) wherein A^1 represents a nitrogen atom, A^2 and A^3 represent CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-11) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^3 represents a nitrogen atom, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-11) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^3 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15.

[0225]

A compound represented by formula (LL-12):



(LL-12)

(hereinafter, referred to as Compound (LL-12)) wherein A^1 represents CH, A^2 and A^3 represent CH, R^5 represents a methyl

group, n is 0, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-12) wherein A^1 represents CH, A^2 and A^3 represent CH, R^5 represents a methyl group, n is 2, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-12) wherein A^1 represents CH, A^2 and A^3 represent CH, R^5 represents a methyl group, n is 0, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-12) wherein A^1 represents CH, A^2 and A^3 represent CH, R^5 represents a methyl group, n is 2, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-12) wherein A^1 represents a nitrogen atom, A^2 and A^3 represent CH, R^5 represents a methyl group, n is 0, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-12) wherein A^1 represents a nitrogen atom, A^2 and A^3 represent CH, R^5 represents a methyl group, n is 2, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-12) wherein A^1 represents a nitrogen atom, A^2 and A^3 represent CH, R^5 represents a methyl group, n is 0,

R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-12) wherein A^1 represents a nitrogen atom, A^2 and A^3 represent CH, R^5 represents a methyl group, n is 2, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-12) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^3 represents a nitrogen atom, R^5 represents a methyl group, n is 0, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-12) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^3 represents a nitrogen atom, R^5 represents a methyl group, n is 2, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15.

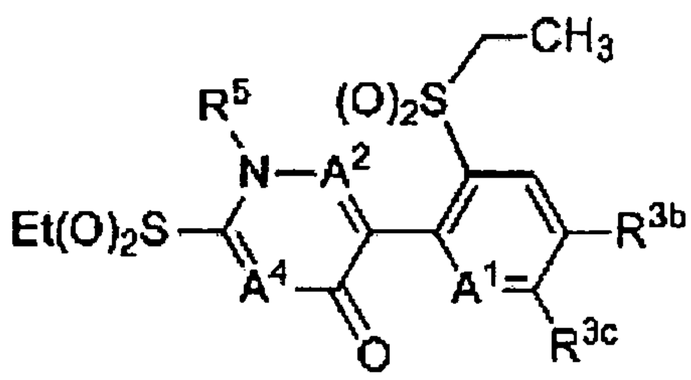
A compound (LL-12) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^3 represents a nitrogen atom, R^5 represents a methyl group, n is 0, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-12) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^3 represents a nitrogen atom, R^5 represents a methyl group, n is 2, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table

15.

[0226]

A compound represented by formula (LL-13):



(LL-13)

(hereinafter, referred to as Compound (LL-13)) wherein A^1 represents CH, A^2 and A^3 represent CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-13) wherein A^1 represents CH, A^2 and A^3 represent CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-13) wherein A^1 represents a nitrogen atom, A^2 and A^3 represent CH, R^5 represents a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-13) wherein A^1 represents a nitrogen atom, A^2 and A^3 represent CH, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-13) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^3 represents a nitrogen atom, R^5 represents

a methyl group, R^{3b} represents a hydrogen atom, and R^{3c} represents any substituents indicated in Table 7 to Table 15.

A compound (LL-13) wherein A^1 represents a nitrogen atom, A^2 represents CH, A^3 represents a nitrogen atom, R^5 represents a methyl group, R^{3c} represents a hydrogen atom, and R^{3b} represents any substituents indicated in Table 7 to Table 15.

[0227]

All the compounds classes SX_1 to SX_{1130} may be prepared according to the method described in the Example or the Process described herein.

[0228]

The Present compound Z may be mixed or combined with one or more ingredients selected from a group consisting of the following Group (a), Group (b), Group (c), Group (d), and Group (e).

The Present compound may be mixed or combined with one or more ingredients selected from a group consisting of the following Group (a), Group (b), Group (c), Group (d), Group (e), Group (f), Group (g), and group (h) (hereinafter, referred to as Present ingredient).

The above-mentioned mixing or combining represents a use of the Present compound Z and the Present ingredient at same time, separately or at certain intervals.

When the Present compound Z and the present ingredient are used at the same time, the Present compound Z and the Present ingredient may be contained in separate formulations respectively or may be contained in the same one formulation.

One aspect of the present invention is a composition comprising one or more ingredients selected from Group (a) or Group (b) as well as the Present compound Z.

[0229]

Group (a) is a group consisting of Acetylcholinesterase inhibitors (for example, carbamate insecticides, or organophosphorus insecticides), GABA-gated chloride channel blockers (for example, phenylpyrazole insecticides), Sodium channel modulators (for example, pyrethroid insecticides), Nicotinic acetylcholine receptor competitive modulators (for example, neonicotinoid insecticides), Nicotinic acetylcholine receptor allosteric modulators, Glutamatergic chlorine ion channel allosteric modulators (for example, macrolide insecticides), Juvenile hormone mimic, Multisite inhibitors, chordotonal organ TRPV channel modulators, Mites growth inhibitors, Mitochondria ATP biosynthetic enzyme inhibitors, Uncouplers of oxidative phosphorylation, Nicotinic acetylcholine receptor channel blocker (for example, Nereistoxin insecticides), Chitin synthesis inhibitors, Molting inhibitors, Ecdysone receptor agonist, Octopamine receptor agonist, Inhibitors of Mitochondrial

electron transport system complex I, II, III and IV, Voltage-dependent sodium channel blockers, Acetyl CoA carboxylase inhibitor, Ryanodine receptor modulator (for example, Diamide insecticides), Chordotonal organ modulators, Microbial pesticides, and the other insecticidal, miticidal or nematicidal active ingredients. These ingredients are classified as a class based on the action mechanism of IRAC.

[0230]

Group (b) is a group consisting of Nucleic acid synthesis inhibitors (for example, Phenylamide fungicides, or Acylamino acid fungicides), Cell division and cytoskeleton inhibitors (for example, MBC fungicides), Respiratory inhibitors (for example, QoI fungicides or QiI fungicides), Amino acid synthesis and protein synthesis inhibitors (for example, anilinopyridine fungicides), Signal transduction inhibitors, Lipid synthesis and membrane synthesis inhibitors, sterol biosynthesis inhibitors (for example, DMI fungicides such as triazole), Cell wall synthesis inhibitors, Melanin synthesis inhibitors, Plant defense inducers, Other action point contact active fungicides, Microbial fungicides, and the other fungicidal ingredients. These are classified as a class based on the action mechanism of FRAC.

[0231]

Group (c) is a plant growth modulating ingredients group

consisting of Plant growth modulating ingredients, Mycorrhizal fungi, and Root nodule bacteria.

[0232]

Group (d) is a phytotoxicity-reducing ingredient group which reduces the phytotoxicity against the crop when it is used in combination with the other chemicals.

[0233]

Group (e) is a synergist group which enhances the effectiveness of the other chemicals when it is used in combination with the other chemicals.

[0234]

Group (f) is a group consisting of repellent components consisting of bird repellant components, insect repellant components, and animal repellant components.

[0235]

Group (g) is a molluscicidal component group.

[0236]

Group (h) is an insect pheromone group.

[0237]

Examples of the combination of the Present ingredient and the Present compound Z are described below. For example, alanycarb + SX represents a combination of alanycarb and SX.

The symbol of "SX" represents any one of the Present compound Z selected from the Compound Class SX_1 to the Compound Class SX_{1130}. Also, all of the below-mentioned

present ingredient are known ingredients, and are commercially available or may be produced by the known method. If the present ingredient is a bacterium, it is available also from the bacterial authority depository. The numerical number in bracket represents a CAS RN (Register Trademark).

[0238]

Combination of the Present ingredient of the above Group (a) and the Present compound Z:

abamectin + SX, acephate + SX, acequinocyl +SX, acetamiprid + SX, acrinathrin + SX, acynonapyr + SX, afidopyropen + SX, afoxolaner + SX, alanycarb + SX, aldicarb + SX, allethrin + SX, alpha-cypermethrin + SX, alpha-endosulfan + SX, aluminium phosphide + SX, amitraz + SX, azadirachtin + SX, azamethiphos + SX, azinphos-ethyl + SX, azinphos-methyl + SX, azocyclotin + SX, bark of Celastrus angulatus + SX, bendiocarb + SX, benfluthrin + SX, benfuracarb + SX, bensultap + SX, benzoximate + SX, benzpyrimoxan + SX, beta-cyfluthrin + SX, beta-cypermethrin + SX, bifenazate + SX, bifenthrin + SX, bioallethrin + SX, bioresmethrin + SX, bistrifluron + SX, borax + SX, boric acid + SX, broflanilide + SX, bromopropylate + SX, buprofezin + SX, butocarboxim + SX, butoxycarboxim + SX, cadusafos + SX, calcium cyanide + SX, calcium phosphide + SX, carbaryl + SX, carbofuran + SX, carbosulfan + SX, cartap hydrochloride + SX, cartap + SX, chinomethionat +

SX, chlorantraniliprole + SX, chlordane + SX, chlorethoxyfos + SX, chlorfenapyr + SX, chlorfenvinphos + SX, chlorfluazuron + SX, chlormephos + SX, chloropicrin + SX, chlorpyrifos + SX, chlorpyrifos-methyl + SX, chromafenozide + SX, clofentezine + SX, clothianidin + SX, coumaphos + SX, cryolite + SX, cyanophos + SX, cyantraniliprole + SX, cycloniliprole + SX, cycloprothrin + SX, cycloxaprid + SX, cyenopyrafen + SX, cyflumetofen + SX, cyfluthrin + SX, cyhalodiamide + SX, cyhalothrin + SX, cyhexatin + SX, cypermethrin + SX, cyphenothrin + SX, cyromazine + SX, dazomet + SX, deltamethrin + SX, demeton-S-methyl + SX, diafenthiuron + SX, diazinon + SX, dichlorvos + SX, dicloromezotiaz + SX, dicofol + SX, dicrotophos + SX, diflovidazin + SX, diflubenzuron + SX, dimefluthrin + SX, dimethoate + SX, dimethylvinphos + SX, dinotefuran + SX, disodium octaborate + SX, disulfoton + SX, DNOC (2-methyl-4,6-dinitrophenol) + SX, doramectin + SX, dried leaves of Dryopteris filix-mas + SX, emamectin-benzoate + SX, empenthrin + SX, endosulfan + SX, EPN (O-ethyl O-(4-nitrophenyl) phenylphosphonothioate) + SX, epsilon-metofluthrin + SX, epsilon-momfluorothrin + SX, esfenvalerate + SX, ethiofencarb + SX, ethion + SX, ethiprole + SX, ethoprophos + SX, etofenprox + SX, etoxazole + SX, extract of Artemisia absinthium + SX, extract of Cassia nigricans + SX, extract of clitoria

ternatea + SX, extract of Symphytum officinale + SX, extracts or simulated blend of Chenopodium ambrosioides + SX, extract of Tanacetum vulgare + SX, extract of Urtica dioica + SX, extract of Viscum album + SX, famphur + SX, fenamiphos + SX, fenazaquin + SX, fenbutatin oxide + SX, fenitrothion + SX, fenobucarb + SX, fenoxycarb + SX, fenpropathrin + SX, fenpyroximate + SX, fenthion + SX, fenvalerate + SX, fipronil + SX, flometoquin + SX, flonicamid + SX, fluacrypyrim + SX, fluazaindolizine + SX, fluazuron + SX, flubendiamide + SX, flucycloxuron + SX, flucythrinate + SX, fluensulfone + SX, flufenoprox + SX, flufenoxuron + SX, flufiprole + SX, flumethrin + SX, fluopyram + SX, flupyradifurone + SX, fluralaner + SX, fluvalinate + SX, fluxametamide + SX, formetanate + SX, fosthiazate + SX, furamethrin + SX, furathiocarb + SX, gamma-cyhalothrin + SX, GS-omega/kappa HXTX-Hv1a peptide + SX, halfenprox + SX, halofenozide + SX, heptafluthrin + SX, heptenophos + SX, hexaflumuron + SX, hexythiazox + SX, potassium salt of hop beta acid + SX, hydramethylnon + SX, hydroprene + SX, imicyafos + SX, imidacloprid + SX, imiprothrin + SX, indoxacarb + SX, isofenphos + SX, isoprocarb + SX, isopropyl-O-(methoxyaminothiophosphoryl)salicylate + SX, isoxathion + SX, ivermectin + SX, kadethrin + SX, kappa- tefluthrin + SX, kappa-bifenthrin + SX, kinoprene + SX, lambda-

cyhalothrin + SX, lepimectin + SX, lime sulfur + SX, lufenuron + SX, machine oil + SX, malathion + SX, mecarbam + SX, meperfluthrin + SX, metaflumizone + SX, metam + SX, methamidophos + SX, methidathion + SX, methiocarb + SX, methomyl + SX, methoprene + SX, methoxychlor + SX, methoxyfenozide + SX, methyl bromide + SX, metofluthrin + SX, metolcarb + SX, metoxadiazone + SX, mevinphos + SX, milbemectin + SX, milbemycin oxime + SX, momfluorothrin + SX, monocrotophos + SX, moxidectin + SX, naled + SX, neem oil + SX, nicotine + SX, nicotine-sulfate + SX, nitenpyram + SX, novaluron + SX, noviflumuron + SX, oil of the seeds of Chenopodium anthelminticum + SX, omethoate + SX, oxamyl + SX, oxydemeton-methyl + SX, parathion + SX, parathion-methyl + SX, permethrin + SX, phenothrin + SX, phenthoate + SX, phorate + SX, phosalone + SX, phosmet + SX, phosphamidon + SX, phosphine + SX, phoxim + SX, pirimicarb + SX, pirimiphos-methyl + SX, potassium cyanide + SX, prallethrin + SX, profenofos + SX, profluthrin + SX, propargite + SX, propetamphos + SX, propoxur + SX, propylene glycol alginate + SX, prothiofos + SX, pyflubumide + SX, pymetrozine + SX, pyraclofos + SX, pyrethrins + SX, pyridaben + SX, pyridalyl + SX, pyridaphenthion + SX, pyrifluquinazone + SX, pyrimidifen + SX, pyriminostrobin + SX, pyriprole + SX, pyriproxyfen + SX, quinalphos + SX, resmethrin + SX, rotenone + SX,

ryanodine + SX, selamectin + SX, sigma-cypermethrin + SX, silafluofen + SX, sodium borate + SX, sodium cyanide + SX, sodium metaborate + SX, spinetoram + SX, spinosad + SX, spirodiclofen + SX, spiromesifen + SX, spiropidion + SX, spirotetramat + SX, sulfluramid + SX, sulfotep + SX, sulfoxaflor + SX, sulfur + SX, sulfuryl fluoride + SX, tartar emetic + SX, tau-fluvalinate + SX, tebufenozide + SX, tebufenpyrad + SX, tebupirimfos + SX, teflubenzuron + SX, tefluthrin + SX, temephos + SX, terbufos + SX, terpene constituents of the extract of chenopodium ambrosioides near ambrosioides, Brand name : Terpenoid blend QRD 460 + SX, tetrachlorvinphos + SX, tetradifon + SX, tetramethrin + SX, tetramethylfluthrin + SX, tetraniliprole + SX, theta-cypermethrin + SX, thiacloprid + SX, thiamethoxam + SX, thiocyclam + SX, thiodicarb + SX, thiofanox + SX, thiometon + SX, thiosultap-disodium + SX, thiosultap-monosodium + SX, tioxazafen + SX, tolfenpyrad + SX, tralomethrin + SX, transfluthrin + SX, triazamate + SX, triazophos + SX, trichlorfon + SX, triflumezopyrim + SX, triflumuron + SX, trimethacarb + SX, vamidothion + SX, XMC (3,5-dimethylphenyl N-methylcarbamate) + SX, xylylcarb + SX, zeta-cypermethrin + SX, zinc phosphide + SX, (E)-N-{1-[(6-chloropyridin-3-yl)methyl]pyridin-2(1H)-ylidene}-2,2,2-trifluoroacetamide (1689566-03-7) + SX, 3-bromo-N-[2,4-dichloro-6-(methylcarbamoyl)phenyl]-1-(3,5-dichloropyridin-

2-yl)-1H-pyrazole-5-carboxamide (1104384-14-6) + SX, N-[3-chloro-1-(pyridin-3-yl)-1H-pyrazol-4-yl]-N-ethyl-3-(3,3,3-trifluoropropylsulfanyl)propanamide (1477919-27-9) + SX, N-[3-chloro-1-(pyridin-3-yl)-1H-pyrazol-4-yl]-N-ethyl-3-(3,3,3-trifluoropropanesulfinyl)propanamide (1477923-37-7) + SX, 2-[3-(ethanesulfonyl)pyridin-2-yl]-5-(trifluoromethanesulfonyl)benzoxazole (1616678-32-0) + SX, 4-[5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4,5-dihydro-1,2-oxazol-3-yl]-2-methyl-N-(1-oxothiethan-3-yl)benzamide (1241050-20-3) + SX, 3-methoxy-N-(5-{5-(trifluoromethyl)-5-[3-(trifluoromethyl)phenyl]-4,5-dihydro-1,2-oxazol-3-yl}indan-1-yl)propanamide (1118626-57-5) + SX, N-[2-bromo-6-chloro-4-(1,1,1,2,3,3,3-heptafluoropropan-2-yl)phenyl]-3-{ethyl[(pyridin-4-yl)carbonyl]amino}-2-methoxybenzamide (1429513-53-0) + SX, N-[2-bromo-6-chloro-4-(1,1,1,2,3,3,3-heptafluoropropan-2-yl)phenyl]-3-[ethyl(4-cyanobenzoyl)amino]-2-methoxybenzamide (1609007-65-9) + SX, N-[2-bromo-6-difluoromethoxy-4-(1,1,1,2,3,3,3-heptafluoropropan-2-yl)phenyl]-3-{methyl[(pyridin-4-yl)carbonyl]amino}-2-methoxybenzamide (1630969-78-6) + SX, 1-{2-fluoro-4-methyl-5-[(2,2,2-trifluoroethyl)sulfinyl]phenyl}-3-(trifluoromethyl)-1H-1,2,4-triazole-5-amine (885026-50-6) + SX, BT crop protein Cry1Ab + SX, BT crop protein Cry1Ac + SX, BT crop protein Cry1Fa + SX, BT crop protein Cry1A.105 + SX, BT crop

protein Cry2Ab + SX, BT crop protein Vip3A + SX, BT crop protein Cry3A + SX, BT crop protein Cry3Ab + SX, BT crop protein Cry3Bb + SX, BT crop protein Cry34Ab1/Cry35Ab1 + SX, Adoxophyes orana granulosis virus + SX, Anticarsia gemmatalis mNPV + SX, Autographa californica mNPV FV#11 + SX, Cydia pomonella GV V15 + SX, Cydia pomonella GV V22 + SX, Cryptophlebia leucotreta GV + SX, Dendrolimus punctatus cypovirus + SX , Helicoverpa armigera NPV BV-0003 + SX, Helicoverpa zea NPV + SX, Lymantria dispar NPV + SX, Mamestra brassicae NPV + SX, Mamestra configurata NPV + SX, Neodiprion abietis NPV + SX, Neodiprion lecontei NPV + SX, Neodiprion sertifer NPV + SX, Nosema locustae + SX, Orgyia pseudotsugata NPV + SX, Pieris rapae GV + SX, Plodia interpunctella GV + SX, Spodoptera exigua mNPV + SX, Spodoptera littoralis mNPV + SX, Spodoptera litura NPV + SX, Arthrobotrys dactyloides + SX, Bacillus firmus GB-126 + SX, Bacillus firmus I-1582 + SX, Bacillus megaterium + SX, Bacillus sp.AQ175 + SX, Bacillus sp.AQ177 + SX, Bacillus sp.AQ178 + SX, Bacillus sphaericus 2362 + SX, Bacillus sphaericus ABTS1743 + SX, Bacillus sphaericus Serotype H5a5b + SX, Bacillus thuringiensis AQ52 + SX, Bacillus thuringiensis BD#32 + SX, Bacillus thuringiensis CR-371 + SX, Bacillus thuringiensis subsp. Aizawai ABTS-1857 + SX, Bacillus thuringiensis subsp. Aizawai AM65-52 + SX, Bacillus thuringiensis subsp. Aizawai GC-91 + SX, Bacillus

thuringiensis subsp. Aizawai Serotype H-7 + SX, Bacillus thuringiensis subsp. Kurstaki ABTS351 + SX, Bacillus thuringiensis subsp. Kurstaki BMP123 + SX, Bacillus thuringiensis subsp. Kurstaki EG234 + SX, Bacillus thuringiensis subsp. Kurstaki EG7841 + SX, Bacillus thuringiensis subsp. Kurstaki EVB113-19 + SX, Bacillus thuringiensis subsp. Kurstaki F810 + SX, Bacillus thuringiensis subsp. Kurstaki HD-1 + SX, Bacillus thuringiensis subsp. Kurstaki PB54 + SX, Bacillus thuringiensis subsp. Kurstaki SA-11 + SX, Bacillus thuringiensis subsp. Kurstaki SA-12 + SX, Bacillus thuringiensis subsp. Tenebriosis NB176 + SX, Bacillus thuringiensis subsp. Thuringiensis MPPL002 + SX, Bacillus thuringiensis subsp.morrisoni + SX, Bacillus thuringiensis var. colmeri + SX, Bacillus thuringiensis var. darmstadiensis 24-91 + SX, Bacillus thuringiensis var. dendrolimus + SX, Bacillus thuringiensis var. galleriae + SX, Bacillus thuringiensis var. israelensis BMP144 + SX, Bacillus thuringiensis var. israelensis serotype H-14 + SX, Bacillus thuringiensis var. japonensis buibui + SX, Bacillus thuringiensis var. san diego M-7 + SX, Bacillus thuringiensis var.7216 + SX, Bacillus thuringiensis var.aegypti + SX, Bacillus thuringiensis var.T36 + SX, Beauveria bassiana ANT-03 + SX, Beauveria bassiana ATCC74040 + SX, Beauveria bassiana GHA + SX, Beauveria

brongniartii + SX, Burkholderia rinojensis A396 + SX, Chromobacterium subtsugae PRAA4-1T + SX, Dactyllela ellipsospora + SX, Dectylaria thaumasia + SX, Hirsutella minnesotensis + SX, Hirsutella rhossiliensis + SX, Hirsutella thompsonii + SX, Lagenidium giganteum + SX, Lecanicillium lecanii KV01 + SX, Lecanicillium lecanii conidia of strain DAOM198499 + SX, Lecanicillium lecanii conidia of strain DAOM216596 + SX, Metarhizium anisopliae F52 + SX, Metarhizium anisopliae var. acridum + SX, Metarhizium flavoviride + SX, Monacrosporium phymatopagum + SX, Paecilomyces fumosoroseus Apopka97 + SX, Paecilomyces lilacinus 251 + SX, Paecilomyces tenuipes T1 + SX, Paenibacillus popilliae + SX, Pasteuria nishizawae Pn1 + SX, Pasteuria penetrans + SX, Pasteuria usgae + SX, Pasteuria thoynei + SX, Serratia entomophila + SX, Verticillium chlamydosporium + SX, Verticillium lecani NCIM1312 + SX, lenoremycin + SX, concanamycin A + SX.

[0239]

Combination of the Present ingredient of the above Group (b) and the Present compound Z:

acibenzolar-S-methyl + SX, aldimorph + SX, ametoctradin + SX, aminopyrifen + SX, amisulbrom + SX, anilazine + SX, azaconazole + SX, azoxystrobin + SX, basic copper sulfate + SX, benalaxyl + SX, benalaxyl-M + SX, benodanil + SX, benomyl + SX, benthiavalicarb + SX, benthivalicarb-isopropyl + SX,

benzovindiflupyr + SX, binapacryl + SX, biphenyl + SX, bitertanol + SX, bixafen + SX, blasticidin-S + SX, Bordeaux mixture + SX, boscalid + SX, bromothalonil + SX, bromuconazole + SX, bupirimate + SX, captafol + SX, captan + SX, carbendazim + SX, carboxin + SX, carpropamid + SX, chinomethionat + SX, chitin + SX, chloroneb + SX, chlorothalonil + SX, chlozolinate + SX, colletochlorin B + SX, copper(II) acetate + SX, copper(II) hydroxide + SX, copper oxychloride + SX, copper(II) sulfate + SX, coumoxystrobin + SX, cyazofamid + SX, cyflufenamid + SX, cymoxanil + SX, cyproconazole + SX, cyprodinil + SX, dichlobentiazox + SX, dichlofluanid + SX, diclocymet + SX, diclomezine + SX, dicloran + SX, diethofencarb + SX, difenoconazole + SX, diflumetorim + SX, imethachlone + SX, dimethirimol + SX, dimethomorph + SX, dimoxystrobin + SX, diniconazole + SX, diniconazole-M + SX, dinocap + SX, dipotassium hydrogenphosphite + SX, dipymetitrone + SX, dithianon + SX, dodecylbenzenesulphonic acid bisethylenediamine copper(II) salt + SX, dodemorph + SX, dodine + SX, edifenphos + SX, enoxastrobin + SX, epoxiconazole + SX, etaconazole + SX, ethaboxam + SX, ethirimol + SX, etridiazole + SX, extract from Melaleuca alternifolia + SX, extract from Reynoutria sachalinensis + SX, extract from the cotyledons of lupine plantlets("BLAD") + SX, extract of Allium sativum + SX, extract of Equisetum

arvense + SX, extract of Tropaeolum majus + SX, famoxadone + SX, fenamidone + SX, fenaminstrobin + SX, fenarimol + SX, fenbuconazole + SX, fenfuram + SX, fenhexamid + SX, fenoxanil + SX, fenpiclonil + SX, fenpicoxamid + SX, fenpropidin + SX, fenpropimorph + SX, fenpyrazamine + SX, fentin acetate + SX, fentin chloride + SX, fentin hydroxide + SX, ferbam + SX, ferimzone + SX, florylpicoxamid + SX, fluazinam + SX, fludioxonil + SX, flufenoxystrobin + SX, fluindapyr + SX, flumorph + SX, fluopicolide + SX, fluopimomide + SX, fluoroimide + SX, fluoxastrobin + SX, fluquinconazole + SX, flusilazole + SX, flusulfamide + SX, flutianil + SX, flutolanil + SX, flutriafol + SX, fluxapyroxad + SX, folpet + SX, fosetyl + SX, fosetyl-aluminium + SX, fuberidazole + SX, furalaxyl + SX, furametpyr + SX, guazatine + SX, hexaconazole + SX, hymexazole + SX, imazalil + SX, imibenconazole + SX, iminoctadine + SX, iminoctadine triacetate + SX, inpyrfluxam + SX, iodocarb + SX, ipconazole + SX, ipfentrifluconazole + SX, ipflufenoquin + SX, iprobenfos + SX, iprodione + SX, iprovalicarb + SX, isofetamid + SX, soflucypram + SX, isoprothiolane + SX, isopyrazam + SX, isotianil + SX, kasugamycin + SX, kresoxim-methyl + SX, laminarin + SX, leaves and bark of Quercus + SX, mancozeb + SX, mandestrobin + SX, mandipropamid + SX, maneb + SX, mefentrifluconazole + SX, mepanipyrim + SX, mepronil + SX, meptyldinocap + SX, metalaxyl + SX, metalaxyl-

M + SX, metconazole + SX, methasulfocarb + SX, metiram + SX, metominostrobin + SX, metrafenone + SX, mineral oils + SX, myclobutanil + SX, naftifine + SX, nuarimol + SX, octhilinone + SX, ofurace + SX, orysastrobin + SX, oxadixyl + SX, oxathiapiprolin + SX, oxine-copper + SX, oxolinic acid + SX, oxpoconazole + SX, oxpoconazole fumarate + SX, oxycarboxin + SX, oxytetracycline + SX, pefurazoate + SX, penconazole + SX, pencycuron + SX, penflufen + SX, penthiopyrad + SX, phenamacril + SX, phosphorous acid + SX, phthalide + SX, picarbutrazox + SX, picoxystrobin + SX, piperalin + SX, polyoxins + SX, potassium hydrogencarbonate + SX, potassium dihydrogenphosphite + SX, probenazole + SX, prochloraz + SX, procymidone + SX, propamidine + SX, propamocarb + SX, propiconazole + SX, propineb + SX, proquinazid + SX, prothiocarb + SX, prothioconazole + SX, pydiflumetofen + SX, pyraclostrobin + SX, pyrametostrobin + SX, pyraoxystrobin + SX, pyrapropoyne + SX, pyraziflumid + SX, pyrazophos + SX, pyribencarb + SX, pyributicarb + SX, pyrifenox + SX, pyrimethanil + SX, pyrimorph + SX, pyriofenone + SX, pyrisoxazole + SX, pyroquilon + SX, Quillaja extract + SX, quinconazole + SX, quinofumelin + SX, quinoxyfen + SX, quintozene + SX, Saponins of Chenopodium quinoa + SX, sedaxane + SX, silthiofam + SX, simeconazole + SX, sodium hydrogencarbonate + SX, spiroxamine + SX, streptomycin + SX, sulfur + SX, tebuconazole + SX, tebufloquin + SX,

teclofthalam + SX, tecnazene + SX, terbinafine + SX, tetraconazole + SX, thiabendazole + SX, thifluzamide + SX, thiophanate + SX, thiophanate-methyl + SX, thiram + SX, thymol + SX, tiadinil + SX, tolclofos-methyl + SX, tolfenpyrad + SX, tolprocarb + SX, tolylfluanid + SX, triadimefon + SX, triadimenol + SX, triazoxide + SX, triclopyricarb + SX, tricyclazole + SX, tridemorph + SX, trifloxystrobin + SX, triflumizole + SX, triforine + SX, triticonazole + SX, validamycin + SX, valifenalate + SX, vinclozolin + SX, yellow mustard powder + SX, zinc thiazole + SX, zineb + SX, ziram + SX, zoxamide + SX, 3-difluoromethyl-N-methoxy-1-methyl-N-[(1R)-1-methyl-2-(2,4,6-trichlorophenyl)ethyl]pyrazol-4-carboxamide (1639015-48-7) + SX, 3-difluoromethyl-N-methoxy-1-methyl-N-[(1S)-1-methyl-2-(2,4,6-trichlorophenyl)ethyl]pyrazol-4-carboxamide (1639015-49-8) + SX, 3-difluoromethyl-1-methyl-N-(1,1,3-trimethylindan-4-yl)pyrazole-4-carboxamide (141573-94-6) + SX, 3-difluoromethyl-N-[(3R)-7-fluoro-1,1,3-trimethylindan-4-yl]-1-methylpyrazole-4-carboxamide (1513466-73-3) + SX, 3-chloro-5-phenyl-6-methyl-4-(2,6-difluorophenyl)pyridazine (1358061-55-8) + SX, N'-[4-({3-[(4-chlorophenyl)methyl]-1,2,4-thiadiazol-5-yl}oxy-2,5-dimethylphenyl]-N-ethyl-N-methylmethaneimidamide (1202781-91-6 + SX, 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-

1,2-oxazol-5-yl}-3-chlorophenyl=methanesulfonate (1360819-11-9) + SX, 4-(2-bromo-4-fluorophenyl)-N-(2-chloro-6-fluorophenyl)-1,3-dimethyl-1H-pyrazole-5-amine (1362477-26-6) + SX, 2,2-dimethyl-9-fluoro-5-(quinolin-3-yl)-2,3-dihydrobenzo[f][1,4]oxazepine (1207749-50-5 + SX, 2-[6-(3-fluoro-4-methoxyphenyl)-5-methylpyridin-2-yl]quinazoline (1257056-97-5) + SX, 5-fluoro-2-[(4-methylphenyl)methoxy]-4-pyrimidineamine (1174376-25-0) + SX, 5-fluoro-4-imino-3-methyl-1-tosyl-3,4-dihydropyrimidine-2(1H)-one (1616664-98-2) + SX, N'-(2,5-dimethyl-4-phenoxyphenyl)-N-ethyl-N-methyl-methaneimidamide (1052688-31-9) + SX, N'-{4-[(4,5-dichlorothiazol-2-yl)oxy]-2,5-dimethylphenyl}-N-ethyl-N-methyl-methaneimidamide (929908-57-6) + SX, ethyl (2Z)-3-amino-2-cyano-3-phenylacrylate (39491-78-6) + SX, N-{(2-chlorothiazol-5-yl)methyl}-N-ethyl-6-methoxy-3-nitropyridine-2-amine (1446247-98-8) + SX, 1-[2-({[1-(4-chlorophenyl)-1H-pyrazol-3-yl]oxy}methyl)-3-methylphenyl]-4-methyl-5-oxo-4,5-dihydro-1H-tetrazole (1472649-01-6) + SX, α-[3-(4-chloro-2-fluorophenyl)-5-(2,4-difluorophenyl)-4-isoxazolyl]-3-pyridine methanol (1229605-96-2) + SX, (αS)-[3-(4-chloro-2-fluorophenyl)-5-(2,4-difluorophenyl)-4-isoxazolyl]-3-pyridine methanol (1229606-46-5) + SX, (αS)-[3-(4-chloro-2-fluorophenyl)-5-(2,4-difluorophenyl)-4-isoxazolyl]-3-pyridine methanol (1229606-46-5) + SX), (αR)-[3-(4-chloro-2-fluorophenyl)-5-(2,4-difluorophenyl)-4-

isoxazolyl]-3-pyridine methanol (1229606-02-3) + SX), 2-{[3-(2-chlorophenyl)-2-(2,4-difluorophenyl)oxiran-2-yl]methyl}-2,4-dihydro-3H-1,2,4-triazole-3-thione (1342260-19-8) + SX, 2-{[(2R,3S)-3-(2-chlorophenyl)-2-(2,4-difluorophenyl)oxiran-2-yl]methyl}-2,4-dihydro-3H-1,2,4-triazole-3-thione (1638897-70-7) + SX, 2-{[(2S,3R)-3-(2-chlorophenyl)-2-(2,4-difluorophenyl)oxiran-2-yl]methyl}-2,4-dihydro-3H-1,2,4-triazole-3-thione (1638897-71-8) + SX, 2-{[(2R,3R)-3-(2-chlorophenyl)-2-(2,4-difluorophenyl)oxiran-2-yl]methyl}-2,4-dihydro-3H-1,2,4-triazole-3-thione (1638897-72-9) + SX, 2-{[(2S,3S)-3-(2-chlorophenyl)-2-(2,4-difluorophenyl)oxiran-2-yl]methyl}-2,4-dihydro-3H-1,2,4-triazole-3-thione (1638897-73-0) + SX, 1-{[3-(2-chlorophenyl)-2-(2,4-difluorophenyl)oxiran-2-yl]methyl}-1H-1,2,4-triazol-5-yl thiocyanate (1342260-26-7) + SX, 1-{[(2R,3S)-3-(2-chlorophenyl)-2-(2,4-difluorophenyl)oxiran-2-yl]methyl}-1H-1,2,4-triazol-5-yl thiocyanate (1638897-82-1) + SX, 1-{[(2S,3R)-3-(2-chlorophenyl)-2-(2,4-difluorophenyl)oxiran-2-yl]methyl}-1H-1,2,4-triazol-5-yl thiocyanate (1638897-84-3) + SX, 1-{[(2R,3R)-3-(2-chlorophenyl)-2-(2,4-difluorophenyl)oxiran-2-yl]methyl}-1H-1,2,4-triazol-5-yl thiocyanate (1638897-86-5) + SX, 1-{[(2S,3S)-3-(2-chlorophenyl)-2-(2,4-difluorophenyl)oxiran-2-yl]methyl}-1H-1,2,4-triazol-5-yl thiocyanate (1638897-89-8) + SX, 5-(4-chlorobenzyl)-2-

chloromethyl-2-methyl-1-(1H-1,2,4-triazol-1-ylmethyl)cyclopentanol (1394057-11-4) + SX, (1R,2S,5S)-5-(4-chlorobenzyl)-2-chloromethyl-2-methyl-1-(1H-1,2,4-triazol-1-ylmethyl)cyclopentanol (1801930-06-2) + SX, (1S,2R,5R)-5-(4-chlorobenzyl)-2-chloromethyl-2-methyl-1-(1H-1,2,4-triazol-1-ylmethyl)cyclopentanol (1801930-07-3) + SX, (1R,2R,5R)-5-(4-chlorobenzyl)-2-chloromethyl-2-methyl-1-(1H-1,2,4-triazol-1-ylmethyl)cyclopentanol (1801919-53-8) + SX, (1S,2S,5S)-5-(4-chlorobenzyl)-2-chloromethyl-2-methyl-1-(1H-1,2,4-triazol-1-ylmethyl)cyclopentanol (1801919-54-9) + SX, (1R,2R,5S)-5-(4-chlorobenzyl)-2-chloromethyl-2-methyl-1-(1H-1,2,4-triazol-1-ylmethyl)cyclopentanol (1801919-55-0) + SX, (1S,2S,5R)-5-(4-chlorobenzyl)-2-chloromethyl-2-methyl-1-(1H-1,2,4-triazol-1-ylmethyl)cyclopentanol (1801919-56-1) + SX, (1R,2S,5R)-5-(4-chlorobenzyl)-2-chloromethyl-2-methyl-1-(1H-1,2,4-triazol-1-ylmethyl)cyclopentanol (1801919-57-2) + SX, (1S,2R,5S)-5-(4-chlorobenzyl)-2-chloromethyl-2-methyl-1-(1H-1,2,4-triazol-1-ylmethyl)cyclopentanol (1801919-58-3) + SX, Methyl = 3-[4-(chlorophenyl)methyl]-2-hydroxy-1-methyl-2-(1H-1,2,4-triazol-1-ylmethyl)cyclopentane carboxylate (1791398-02-1) + SX, Methyl = (1R, 2S, 3S)-3-[(4-chlorophenyl)methyl]-2-hydroxy-1-methyl-2-(1H-1,2,4-triazol-1-ylmethyl)cyclopentane carboxylate + SX, Methyl = (1S, 2R, 3R)-3-[(4-chlorophenyl)methyl]-2-hydroxy-1-methyl-

2-(1H-1,2,4-triazol-1-ylmethyl)cyclopentane carboxylate + SX, Methyl = (1R, 2R, 3R)-3-[(4-chlorophenyl)methyl]-2-hydroxy-1-methyl-2-(1H-1,2,4-triazol-1-ylmethyl)cyclopentane carboxylate + SX, Methyl = (1S, 2S, 3S)-3-[(4-chlorophenyl)methyl]-2-hydroxy-1-methyl-2-(1H-1,2,4-triazol-1-ylmethyl)cyclopentane carboxylate + SX, Methyl = (1R, 2R, 3S)-3-[(4-chlorophenyl)methyl]-2-hydroxy-1-methyl-2-(1H-1,2,4-triazol-1-ylmethyl)cyclopentane carboxylate + SX, Methyl = (1S, 2S, 3R)-3-[(4-chlorophenyl)methyl]-2-hydroxy-1-methyl-2-(1H-1,2,4-triazol-1-ylmethyl)cyclopentane carboxylate + SX, Methyl = (1R, 2S, 3R)-3-[(4-chlorophenyl)methyl]-2-hydroxy-1-methyl-2-(1H-1,2,4-triazol-1-ylmethyl)cyclopentane carboxylate + SX, Methyl = (1S, 2R, 3S)-3-[(4-chlorophenyl)methyl]-2-hydroxy-1-methyl-2-(1H-1,2,4-triazol-1-ylmethyl)cyclopentane carboxylate + SX, 2-chloromethyl-5-(4-fluorobenzyl)-2-methyl-1-(1H-1,2,4-triazol-1-ylmethyl)cyclopentanol (1394057-13-6) + SX, (1R, 2S, 5S)-2-chloromethyl-5-(4-fluorobenzyl)-2-methyl-1-(1H-1,2,4-triazol-1-ylmethyl)cyclopentanol (1801930-08-4) + SX, (1S, 2R, 5R)-2-chloromethyl-5-(4-fluorobenzyl)-2-methyl-1-(1H-1,2,4-triazol-1-ylmethyl)cyclopentanol (1801930-09-5) + SX, (1R, 2R, 5R)-2-chloromethyl-5-(4-fluorobenzyl)-2-methyl-1-(1H-1,2,4-triazol-1-ylmethyl)cyclopentanol (1638898-08-4) + SX, (1S, 2S, 5S)-2-chloromethyl-5-(4-fluorobenzyl)-2-

methyl-1-(1H-1,2,4-triazol-1-ylmethyl)cyclopentanol (1638898-10-8) + SX, (1R, 2R, 5S)-2-chloromethyl-5-(4-fluorobenzyl)-2-methyl-1-(1H-1,2,4-triazol-1-ylmethyl)cyclopentanol (1638898-13-1) + SX, (1S, 2S, 5R)-2-chloromethyl-5-(4-fluorobenzyl)-2-methyl-1-(1H-1,2,4-triazol-1-ylmethyl)cyclopentanol (1638898-16-4) + SX, (1R, 2S, 5R)-2-chloromethyl-5-(4-fluorobenzyl)-2-methyl-1-(1H-1,2,4-triazol-1-ylmethyl)cyclopentanol (1638898-20-0) + SX, (1S, 2R, 5S)-2-chloromethyl-5-(4-fluorobenzyl)-2-methyl-1-(1H-1,2,4-triazol-1-ylmethyl)cyclopentanol (1638898-24-4) + SX, (R)-2-[2-chloro-4-(4-chlorophenoxy)phenyl]-1-(1,2,4-triazol-1-yl)pent-3-yne-2-ol (1801919-59-4) + SX, (R)-2-[4-(4-chlorophenoxy)-2-(trifluoromethyl)phenyl]-1-(1,2,4-triazol-1-yl)propane-2-ol (1616236-94-2) + SX, (R)-1-[4-(4-chlorophenoxy)-2-(trifluoromethyl)phenyl]-1-cyclopropyl-2-(1,2,4-triazol-1-yl)ethanol (1801919-60-7) + SX, (R)-2-[4-(4-chlorophenoxy)-2-(trifluoromethyl)phenyl]-3-methyl-1-(1,2,4-triazol-1-yl)butane-2-ol (1801919-61-8) + SX, 3-[5-(4-chlorophenyl)-2,3-dimethyl-1,2-oxazolydin-3-yl]pyridine (847749-37-5) + SX, Agrobacterium radiobactor K1026 + SX, Agrobacterium radiobactor K84 + SX, Bacillus amyloliquefaciens AT332 + SX, Bacillus amyloliquefaciens B3 + SX, Bacillus amyloliquefaciens D747 + SX, Bacillus amyloliquefaciens DB101 + SX, Bacillus amyloliquefaciens DB102 + SX, Bacillus amyloliquefaciens GB03 + SX, Bacillus

amyloliquefaciens FZB24 + SX, Bacillus amyloliquefaciens FZB42 + SX, Bacillus amyloliquefaciens IN937a + SX, Bacillus amyloliquefaciens MBI600 + SX, Bacillus amyloliquefaciens QST713 + SX, Bacillus amyloliquefaciens isolate B246 + SX, Bacillus amyloliquefaciens F727 + SX, Bacillus licheniformis HB-2 + SX, Bacillus licheniformis SB3086 + SX, Bacillus pumilus AQ717 + SX, Bacillus pumilus BUF-33 + SX, Bacillus pumilus GB34 + SX, Bacillus pumilus QST2808 + SX, Bacillus simplex CGF2856 + SX, Bacillus subtilis AQ153 + SX, Bacillus subtilis AQ743 + SX, Bacillus subtilis BU1814 + SX, Bacillus subtilis D747 + SX, Bacillus subtilis DB101 + SX, Bacillus subtilis FZB24 + SX, Bacillus subtilis GB03 + SX, Bacillus subtilis HAI0404 + SX, Bacillus subtilis IAB/BS03 + SX, Bacillus subtilis MBI600 + SX, Bacillus subtilis QST30002/AQ30002 + SX, Bacillus subtilis QST30004/AQ30004 + SX, Bacillus subtilis QST713 + SX, Bacillus subtilis QST714 + SX, Bacillus subtilis var. Amyloliquefaciens FZB24 + SX, Bacillus subtilis Y1336 + SX, Burkholderia cepacia + SX, Burkholderia cepacia type Wisconsin J82 + SX, Burkholderia cepacia type Wisconsin M54 + SX, Candida oleophila O + SX, Candida saitoana + SX, Chaetomium cupreum + SX, Clonostachys rosea + SX, Coniothyrium minitans CGMCC8325 + SX, Coniothyrium minitans CON/M/91-8 + SX, cryptococcus albidus + SX, Erwinia carotovora subsp.carotovora CGE234M403 + SX, Fusarium oxysporum Fo47 + SX, Gliocladium catenulatum J1446

+ SX, Paenibacillus polymyxa AC-1 + SX, Paenibacillus polymyxa BS-0105 + SX, Pantoea agglomerans E325 + SX, Phlebiopsis gigantea VRA1992 + SX, Pseudomonas aureofaciens TX-1 + SX, Pseudomonas chlororaphis 63-28 + SX, Pseudomonas chlororaphis MA342 + SX, Pseudomonas fluorescens 1629RS + SX, Pseudomonas fluorescens A506 + SX, Pseudomonas fluorescens CL145A + SX, Pseudomonas fluorescens G7090 + SX, Pseudomonas sp. CAB-02 + SX, Pseudomonas syringae 742RS + SX, Pseudomonas syringae MA-4 + SX, Pseudozyma flocculosa PF-A22UL + SX, Pseudomonas rhodesiae HAI-0804 + SX, Pythium oligandrum DV74 + SX, Streptomyces griseoviridis K61 + SX, Streptomyces lydicus WYCD108US + SX, Streptomyces lydicus WYEC108 + SX, Talaromyces flavus SAY-Y-94-01 + SX, Talaromyces flavus V117b + SX, Trichoderma asperellum ICC012 + SX, Trichoderma asperellum SKT-1 + SX, Trichoderma asperellum T34 + SX, Trichoderma atroviride CNCM 1-1237 + SX, Trichoderma atroviride LC52 + SX, Trichoderma atroviride SC1 + SX, Trichoderma atroviride SKT-1 + SX, Trichoderma gamsii ICC080 + SX, Trichoderma harzianum 21 + SX, Trichoderma harzianum DB104 + SX, Trichoderma harzianum DSM 14944 + SX, Trichoderma harzianum ESALQ-1303 + SX, Trichoderma harzianum ESALQ-1306 + SX, Trichoderma harzianum IIHR-Th-2 + SX, Trichoderma harzianum kd + SX, Trichoderma harzianum MO1 + SX, Trichoderma harzianum SF + SX, Trichoderma harzianum T22 + SX, Trichoderma harzianum T39 +

SX, Trichoderma harzianum TEM908 + SX, Trichoderma harzianum TH35 + SX, Trichoderma polysporum IMI206039 + SX, trichoderma stromaticum + SX, Trichoderma virens G-41 + SX, Trichoderma virens GL-21 + SX, Trichoderma viride + SX, Variovorax paradoxus CGF4526 + SX, and Harpin protein + SX.

[0240]

Combination of the Present ingredient of the above Group (c) and the Present compound Z:

1-methylcyclopropene + SX, 2,3,5-triiodobenzoic acid + SX, IAA ((1H-indol-3-yl)acetic acid) + SX, IBA (4-(1H-indol-3-yl)butyric acid) + SX, MCPA (2-(4-chloro-2-methylphenoxy)acetic acid) + SX, MCPB (4-(4-chloro-2-methylphenoxy)butyric acid) + SX, 4-CPA (4-chlorophenoxyacetic acid) + SX, 5-aminolevulinic acid hydrochloride + SX, 6-benzylaminopurine + SX, abscisic acid + SX, AVG (aminoethoxyvinylglycine) + SX, ancymidol + SX, butralin + SX, calcium carbonate + SX, calcium chloride + SX, calcium formate + SX, calcium peroxide + SX, calcium polysulfide + SX, calcium sulfate + SX, chlormequat-chloride + SX, chlorpropham + SX, choline chloride + SX, cloprop + SX, cyanamide + SX, cyclanilide + SX, daminozide + SX, decan-1-ol + SX, dichlorprop + SX, dikegulac + SX, dimethipin + SX, diquat + SX, ethephon + SX, ethychlozate + SX, flumetralin + SX, flurprimidol + SX, forchlorfenuron + SX, Gibberellin A + SX, Gibberellin A3 + SX, inabenfide + SX,

Kinetin + SX, maleic hydrazide + SX, mefluidide + SX, mepiquat-chloride + SX, oxidized glutathione + SX, pacrobutrazol + SX, pendimethalin + SX, prohexandione-calcium + SX, prohydrojasmon + SX, pyraflufen-ethyl + SX, sintofen + SX, sodium 1-naphthaleneacetate + SX, sodium cyanate + SX, streptmycin + SX, thidiazuron + SX, triapenthenol + SX, Tribufos + SX, trinexapac-ethyl + SX, uniconazole-P + SX, 2-(naphthalene-1-yl)acetamide + SX, [4-oxo-4-(2-phenyethyl)amino]butyric acid + SX, Methyl 5-(trifluoromethyl)benzo[b]thiophen-2-carboxylate + SX, 3-[(6-chloro-4-phenylquinazolin-2-yl)amino]-1-propanol + SX, formononetin + SX, Glomus spp. + SX, Glomus intraradices + SX, Glomus mosseae + SX, Glomus aggregatum + SX, Glomus etunicatum + SX, Bradyrhizobium elkani + SX, Bradyrhizobium japonicum + SX, Bradyrhizobium lupini + SX, Rhizobium leguminosarum bv. trifolii + SX, Rhizobium leguminosarum bv. phaseoli + SX, Rhizobium leguminosarum bv. viciae + SX, Sinorhizobium meliloti + SX, Rhizobium spp. + SX, Rhizobium fredii + SX, Rhizobium loti + SX, Rhizobium trifolii + SX, Rhizobium tropici + SX, 1,3-diphenylurea + SX, Claroideoglomus etunicatum + SX, Funneliformis mosseae + SX, Gigaspora margarita + SX, Gigaspora rosea + SX, Glomus aggregatum + SX, Glomus deserticola + SX, Glomus monosporum + SX, Paraglomus brasillianum + SX, Rhizophagus clarus + SX, Rhizophagus intraradices RTI-801 + SX, Rhizophagus

irregularis DAOM 197198 + SX, Azorhizobium caulinodans + SX, Azospirillum amazonense + SX, Azospirillum brasilense XOH + SX, Azospirillum brasilense Ab-V5 + SX, Azospirillum brasilense Ab-V6 + SX, Azospirillum caulinodans + SX, Azospirillum halopraeferens + SX, Azospirillum irakense + SX, Azospirillum lipoferum + SX, Bradyrhizobium elkanii SEMIA 587 + SX, Bradyrhizobium elkanii SEMIA 5019 + SX, Bradyrhizobium japonicum TA-11 + SX, Bradyrhizobium japonicum USDA 110 + SX, Bradyrhizobium liaoningense + SX, Bradyrhizobium lupini + SX, Delftia acidovorans RAY209 + SX, Mesorhizobium ciceri + SX, Mesorhizobium huakii + SX, Mesorhizobium loti + SX, Rhizobium etli + SX, Rhizobium galegae + SX, Rhizobium leguminosarum bv. Phaseoli + SX, Rhizobium leguminosarum bv. Trifolii + SX, Rhizobium leguminosarum bv. Viciae + SX, Rhizobium tropici + SX, Sinorhizobium fredii + SX, and Sinorhizobium meliloti + SX.

[0241]

Combination of the Present ingredient of the above Group (d) and the Present compound Z:

allidochlor + SX, benoxacor + SX, cloquintocet + SX, cloquintocet-mexyl + SX, cyometrinil + SX, cyprosulfamide + SX, dichlormid + SX, dicyclonone + SX, dimepiperate + SX, disulfoton + SX, dymron + SX, fenchlorazole + SX, fenchlorazole-ethyl + SX, fenclorim + SX, flurazole + SX, furilazole + SX, fluxofenim + SX, Hexim + SX, isoxadifen +

SX, isoxadifen-ethyl + SX, mecoprop + SX, mefenpyr + SX, mefenpyr-ethyl + SX, mefenpyr-diethyl + SX, mephenate + SX, metcamifen + SX, oxabetrinil + SX, 1,8-naphthalic anhydride + SX, 1,8-octamethylene diamine + SX, AD-67 (4-(dichloroacetyl)-1-oxa-4-azaspiro [4.5] decane) + SX, CL-304415 (4-carboxy-3,4-dihydro-2H-1-benzopyran-4-acetic acid) + SX, CSB (1-bromo-4-[(chloromethyl)sulfonyl]benzene) + SX, DKA-24 (2,2-dichloro-N-[2-oxo-2-(2-propenylamino)ethyl]-N-(2-propenyl)acetamide) + SX, MG191 (2-(dichloromethyl)-2-methyl-1,3-dioxolane) + SX, MG-838 (2-propenyl 1-oxa-4-azaspiro[4.5]decane-4-carbodithioate) + SX, PPG-1292 (2,2-dichloro-N-(1,3-dioxan-2-ylmethyl)-N-(2-propenyl)acetamide) + SX, R-28725 (3-(dichloroacetyl)-2,2-dimethyl-1,3-oxazolidine) + SX, R-29148 (3-(dichloroacetyl)-2,2,5-trimethyl-1,3-oxazolidine) + SX, and TI-35 (1-(dichloroacetyl)azepane) + SX.

[0242]

Combination of the Present ingredient of the above Group (e) and the Present compound Z:

1-dodecyl-1H-imidazole + SX, N-(2-ethylhexyl)-8,9,10-trinorborn-5-ene-2,3-dicarboximide + SX, bucarpolate + SX, N,N-dibutyl-4-chlorobenzenesulfonamide + SX, dietholate + SX, diethylmaleate + SX, piperonyl butoxide + SX, piperonyl cyclonene + SX, piprotal + SX, propyl isome + SX, safroxan + SX, sesamex + SX, sesamolin + SX, sulfoxide + SX, Verbutin

+ SX, DMC (1,1-bis(4-chlorophenyl)ethanol) + SX, FDMC (1,1-bis(4-chlorophenyl)-2,2,2-trifluoroethanol) + SX, ETN (1,2-epoxy-1,2,3,4-tetrahydronaphthalene) + SX, ETP (1,1,1-trichloro-2,3-expoxypropane) + SX, PSCP (phenylsaligenin cyclic phosphate) + SX, TBPT (S,S,S-tributyl phosphorotrithioate) + SX, and TPP (triphenyl phosphate) + SX.

[0243]

Combination of the Present ingredient of the above Group (f) and the Present compound Z:

anthraquinone + SX, chloralose + SX, acrep + SX, butopyronoxyl + SX, camphor + SX, *d*-camphor + SX, carboxide + SX, dibutyl phthalate + SX, deet + SX, dimethyl carbate + SX, dimethyl phthalate + SX, dibutyl succinate + SX, dibutyl adipate + SX, ethohexadiol + SX, hexamide + SX, icaridin + SX, methoquin-butyl + SX, methylneodecanamide + SX, 2-(octylthio)ethanol + SX, butoxypolypropylene glycol + SX, oxamate + SX, quwenzhi + SX, quyingding + SX, zengxiaon + SX, rebemide + SX, copper naphthenate + SX, and zinc naphthenate + SX.

[0244]

Combination of the Present ingredient of the above Group (g) and the Present compound Z:

bis(tributyltin) oxide + SX, allicin + SX, bromoacetamide + SX, cloethocarb + SX, copper sulfate + SX,

fentin + SX, ferric phosphate + SX, metaldehyde + SX, niclosamide + SX, pentachlorophenol + SX, sodium pentachlorophenoxide + SX, tazimcarb + SX, tralopyril + SX, and trifenmorph + SX.

[0245]

Combination of the Present ingredient of the above Group (h) and the Present compound Z:

(E)-2-hexenal + SX, (E)-2-octadecenal + SX, (E)-4-tridecen-1-yl acetate + SX, (E)-5-decen-1-yl acetate + SX, (E)-5-decen-1-ol + SX, (E)-3,3-dimethylcyclohexylideneacetaldehyde + SX, (E)-7-dodecen-1-yl acetate + SX, (E)-8-dodecen-1-yl acetate + SX, (E)-9-dodecen-1-yl acetate + SX, (E)-10-hexadecenal + SX, (E)-11-hexadecen-1-yl acetate + SX, (E)-11-tetradecen-1-yl acetate + SX, (E)-11-tetradecen-1-ol + SX, (E)-4-tridecen-1-yl acetate + SX, (E)-6-methylhept-2-en-4-ol + SX, (Z)-2-(3,3-dimethylcyclohexylidene)ethanol + SX, (Z)-4-decen-1-yl acetate + SX, (Z)-4-tridecen-1-yl acetate + SX, (Z)-5-decen-1-yl acetate + SX, (Z)-5-decen-1-ol + SX, (Z)-7-tetradecenal + SX, (Z)-7-dodecen-1-yl acetate + SX, (Z)-8-dodecen-1-yl acetate + SX, (Z)-9-dodecen-1-yl acetate + SX, (Z)-8-dodecen-1-ol + SX, (Z)-9-hexadecenal + SX, (Z)-10-hexadecen-1-yl acetate + SX, (Z)-11-hexadecen-1-ol + SX, (Z)-11-hexadecenal + SX, (Z)-11-hexadecen-1-yl acetate + SX, (Z)-11-octadecenal + SX, (Z)-13-octadecenal + SX, (Z)-hexadec-

13-en-11-yn-1-yl acetate + SX, (Z)-13-octadecenal + SX, (Z)-icos-13-en-10-one + SX, (Z)-7-tetradecenal + SX, (Z)-tetradec-9-en-1-ol + SX, (Z)-9-tetradecen-1-yl acetate + SX, (Z)-11-tetradecen-1-yl acetate + SX, (Z)-13-icosen-10-one + SX, (Z,E)-7,11-hexadecadien-1-yl acetate + SX, (Z,E)-9,12-tetradecadien-1-yl acetate + SX, (E,Z)-4,10-tetradecadien-1-yl acetate + SX, (E,E)-8,10-dodecadien-1-ol + SX, (E,E)-10,12-hexadecadienal + SX, (E,E)-9,11-tetradecadien-1-yl acetate + SX, (E,Z)-2,13-octadecadien-1-ol + SX, (E,Z)-3,13-octadecadien-1-ol + SX, (E,Z)-2,13-octadecadien-1-yl acetate + SX, (E,Z)-3,13-octadecadien-1-yl acetate + SX, (E,Z)-7,9-dodecadien-1-yl acetate + SX, (E,E)-7,9-dodecadien-1-yl acetate + SX, (Z,E)-9,12-tetradecadien-1-yl acetate + SX, (Z,E)-9,11-tetradecadien-1-yl acetate + SX, (Z,E)-7,11-hexadecadien-1-yl acetate + SX, (Z,Z)-3,13-octadecadien-1-ol + SX, (Z,Z)-4,7-decadien-1-yl acetate + SX, (Z,Z)-3,13-octadecadien-1-yl acetate + SX, (Z,Z)-7,11-hexadecadien-1-yl acetate + SX, (Z,Z,E)-7,11,13-hexadecatrienal + SX, (5R)-5-[(1Z)-1-decen-1-yl]dihydro-2(3H)-furanone + SX, (2R,5R)-ethyl-1,6-dioxaspiro[4,4]nonane + SX, (2R,5S)-ethyl-1,6-dioxaspiro[4,4]nonane + SX, (4R,8R)-4,8-dimethyldecanal + SX, (4R,8S)-4,8-dimethyldecanal + SX, 2,4-dimethyl-5-ethyl-6,8-dioxabicyclo[3,2,1]octane + SX, (-)-4-methyl-3-heptanol + SX, 1,7-dioxaspiro[5,5]undecane + SX, 3-carene + SX, 3-methylcyclohex-2-en-1-one + SX, 14-methyloctadec-1-ene + SX,

4-methylnonan-5-ol + SX, 4-methylnonan-5-one + SX, 4-(3-oxobutyl)phenyl acetate + SX, dodecyl acetate+SX, dodeca-8,10-dien-1-yl acetate + SX, ethyl (2E,4Z)-decadienoate + SX, ethyl 4-methyloctanoate + SX, methyl 2,6,10-trimethyldodecanoate + SX, tetradecan-1-ol + SX, tetradec-11-en-1-ol + SX, tetradec-11-en-1-yl acetate + SX, tridec-4-en-1-yl acetate + SX, (3S,6R)-3-methyl-6-isopropenyl-9-decen-1-yl acetate + SX, (3S,6S)-3-methyl-6-isopropenyl-9-decen-1-yl acetate + SX, alpha-multistriatin + SX, alpha-pinene + SX, endo-brevicomin + SX, exo-brevicomin + SX, camphene + SX, codlelure + SX, codlemone + SX, cuelure + SX, disparlure + SX, dominicalure + SX, eugenol + SX, farnesol + SX, ferrolure + SX, frontalin + SX, gossyplure + SX, grandlure + SX, grandlure I + SX, grandlure II + SX, grandlure III + SX, grandlure IV + SX, hexalure + SX, ipsdienol + SX, ipsenol + SX, japonilure + SX, lineatin + SX, litlue + SX, looplure + SX, medlure + SX, megatomoic acid + SX, methyl eugenol + SX, muscalure + SX, nerolidol + SX, orfralure + SX, oryctalure + SX, ostramone + SX, rhyncolure + SX, siglure + SX, sordidin + SX, sulcatol + SX, trimedlure + SX, trimedlure A + SX, trimedlure B1 + SX, trimedlure B2 + SX, trimedlure C + SX, trunc-call + SX, (E)-verbenol + SX, (Z)-verbenol + SX, trans-verbenol + SX, and (S)-verbenone + SX.

[0246]

The ratio of the Present compound Z to the Present ingredient includes, but not limited thereto, as a ration by weight (the Present compound Z : the Present ingredient) 1,000:1 to 1:1,000, 500:1 to 1:500, 100:1 to 1:100, 50:1 to 1:50, 20:1 to 1:20, 10:1 to 1:10, 3:1 to 1:3, 1:1 to 1:500, 1:1 to 1:100, 1:1 to 1:50, 1:1 to 1:20, or 1:1 to 1:10, abd the others.

[0247]

Examples of the pests on which the present compound Z or the present composition has efficacies include harmful arthropods such as harmful insects and harmful mites, harmful nematodes, and harmful molluscs, and specific examples of the harmful arthropods include the followings, but which are not limited thereto.

[0248]

Hemiptera pests:

Delphacidae (for example, *Laodelphax striatellus*, *Nilaparvata lugens*, *Sogatella furcifera*, *Peregrinus maidis*, *Javesella pellucida*, *Perkinsiella saccharicida*, or *Tagosodes orizicolus*);

Cicadellidae (for example, *Nephotettix cincticeps*, *Nephotettix virescens*, *Nephotettix nigropictus*, *Recilia dorsalis*, *Empoasca onukii*, *Empoasca fabae*, *Dalbulus maidis*, or *Cofana spectra*);

Cercopidae (for example, *Mahanarva posticata*, or

Mahanarva fimbriolata);

Aphididae (for example, *Aphis fabae*, *Aphis glycines*, *Aphis gossypii*, *Aphis pomi*, *Aphis spiraecola*, *Myzus persicae*, *Brachycaudus helichrysi*, *Brevicoryne brassicae*, Rosy apple aphid (*Dysaphis plantaginea*), *Lipaphis erysimi*, *Macrosiphum euphorbiae*, *Aulacorthum solani*, *Nasonovia ribisnigri*, *Rhopalosiphum padi*, *Rhopalosiphum maidis*, *Toxoptera citricidus*, *Hyalopterus pruni*, *Melanaphis sacchari*, *Tetraneura nigriabdominalis*, *Ceratovacuna lanigera*, or *Eriosoma lanigerum*);

Phylloxeridae (for example, *Daktulosphaira vitifoliae*, Pecan phylloxera (*Phylloxera devastatrix*), Pecan leaf phylloxera (*Phylloxera notabilis*), or Southern pecan leaf phylloxera (*Phylloxera russellae*));

Adelgidae (for example, *Adelges tsugae*, *Adelges piceae*, or *Aphrastasia pectinatae*);

Pentatomidae (for example, *Scotinophara lurida*, Malayan rice black bug (*Scotinophara coarctata*), *Nezara antennata*, *Eysarcoris aeneus*, *Eysarcoris lewisi*, *Eysarcoris ventralis*, *Eysarcoris annamita*, *Halyomorpha halys*, *Nezara viridula*, Brown stink bug (*Euschistus heros*), Red banded stink bug (Piezodorus guildinii), *Oebalus pugnax*, *Dichelops melacanthus*);

Cydnidae (for example, Burrower brown bug (*Scaptocoris castanea*));

Alydidae (for example, *Riptortus pedestris*, *Leptocorisa chinensis*, or *Leptocorisa acuta*);

Coreidae (for example, *Cletus punctiger*, or *Leptoglossus australis*);

Lygaeidae (for example, *Caverelius saccharivorus*, *Togo hemipterus*, or *Blissus leucopterus*);

Miridae (for example, *Trigonotylus caelestialium*, *Stenotus rubrovittatus*, *Stenodema calcarata*, or *Lygus lineolaris*);

Aleyrodidae (for example, *Trialeurodes vaporariorum*, *Bemisia tabaci*, *Dialeurodes citri*, *Aleurocanthus spiniferus*, *Aleurocanthus camelliae*, or *Pealius euryae*);

Diaspididae (for example, *Abgrallaspis cyanophylli*, *Aonidiella aurantii*, *Diaspidiotus perniciosus*, *Pseudaulacaspis pentagona*, *Unaspis yanonensis*, or *Unaspis citri*);

Coccidae (for example, *Ceroplastes rubens*);

Margarodidae (for example, *Icerya purchasi*, or *Icerya seychellarum*);

Pseudococcidae (for example, *Phenacoccus solani*, *Phenacoccus solenopsis*, *Planococcus kraunhiae*, *Planococcus comstocki*, *Planococcus citri*, *Pseudococcus calceolariae*, *Pseudococcus longispinus*, or *Brevennia rehi*);

Psyllidae (for example, *Diaphorina citri*, *Trioza erytreae*, *Cacopsylla pyrisuga*, *Cacopsylla chinensis*,

Bactericera cockerelli, or Pear psylla (*Cacopsylla pyricola*));

Tingidae (for example, *Corythucha ciliata*, *Corythucha marmorata*, *Stephanitis nashi*, or *Stephanitis pyrioides*);

Cimicidae (for example, *Cimex lectularius*);

Cicadidae (for example, Giant Cicada (*Quesada gigas*));

and

Triatoma spp. (for example, *Triatoma infestans*).

[0249]

Lepidoptera

Crambidae (for example, *Chilo suppressalis*, Darkheaded stem borer (*Chilo polychrysus*), White stem borer (*Scirpophaga innotata*), *Scirpophaga incertulas*, *Rupela albina*, *Cnaphalocrocis medinalis*, *Marasmia patnalis*, *Marasmia exigua*, *Notarcha derogata*, *Ostrinia furnacalis*, European corn borer (*Ostrinia nubilalis*), *Hellula undalis*, *Herpetogramma luctuosale*, *Pediasia teterrellus*, *Nymphula depunctalis*, or Sugarcane borer (*Diatraea saccharalis*));

Pyralidae (for example, *Elasmopalpus lignosellus* or *Plodia interpunctella*);

Noctuidae (for example, *Spodoptera litura*, *Spodoptera exigua*, *Mythimna separata*, *Mamestra brassicae*, *Sesamia inferens*, *Spodoptera mauritia*, *Naranga aenescens*, *Spodoptera frugiperda*, *Spodoptera exempta*, *Agrotis ipsilon*, *Autographa nigrisigna*, *Plusia festucae*, Soybean looper (*Chrysodeixis*

includens), *Trichoplusia* spp., *Heliothis* spp. (for example, *Heliothis virescens*), *Helicoverpa armigera*, *Helicoverpa* spp. (for example, *Helicoverpa* zea), Velvetbean caterpillar (*Anticarsia gemmatalis*), Cotton leafworm (*Alabama argillacea*), or Hop vine borer (*Hydraecia immanis*)),

Pieridae (for example, *Pieris rapae*);

Tortricidae (for example, *Grapholita molesta*, *Grapholita dimorpha*, *Leguminivora glycinivorella*, *Matsumuraeses azukivora*, *Adoxophyes orana fasciata*, *Adoxophyes honmai*, *Homona magnanima*, *Archips fuscocupreanus*, *Cydia pomonella*, *Tetramoera schistaceana*, Bean Shoot Borer (*Epinotia aporema*), or Citrus fruit borer (*Ecdytolopha aurantiana*));

Gracillariidae (for example, *Caloptilia theivora*, or *Phyllonorycter ringoniella*);

Carposinidae (for example, *Carposina sasakii*);

Lyonetiidae (for example, Coffee Leaf miner (*Leucoptera coffeela*), *Lyonetia clerkella*, or *Lyonetia prunifoliella*);

Lymantriidae (for example, *Lymantria* spp. (for example, *Lymantria* dispar), or *Euproctis* spp. (for example, *Euproctis pseudoconspersa*));

Pluteliidae (for example, *Plutella xylostella*);

Gelechiidae (for example, *Anarsia lineatella*, *Helcystogramma triannulellum*, *Pectinophora gossypiella*, *Phthorimaea operculella*, or *Tuta absolut*);

Arctiidae (for example, *Hyphantria cunea*);

Castniidae (for example, Giant Sugarcane borer (*Telchin licus*));

Cossidae (for example, *Cosus insularis*);

Geometridae (for example, *Ascotis selenaria*);

Limacodidae (for example, *Parasa lepida*);

Stathmopodidae (for example, *Stathmopoda masinissa*);

Sphingidae (for example, *Acherontia lachesis*);

Sesiidae (for example, *Nokona feralis*);

Hesperiidae (for example, *Parnara guttata*); and

Tinedae (for example, Tinea translucens or Tineola bisselliella).

[0250]

Thysanoptera

Thripidae (for example, *Frankliniella occidentalis*, *Thrips palmi*, *Scirtothrips dorsalis*, *Thrips tabaci*, *Frankliniella intonsa*, *Stenchaetothrips biformis*, or *Echinothrips americanus*); and

Phlaeothripidae (for example, *Haplothrips aculeatus*).

[0251]

Diptera

Anthomyiidae (for example, *Delia platura* or *Delia antiqua*);

Ulidiidae (for example, *Tetanops myopaeformis*);

Agromyzidae (for example, *Agromyza oryzae*, *Liriomyza*

sativae, *Liriomyza trifolii*, or *Chromatomyia horticola*);

Chloropidae (for example, *Chlorops oryzae*);

Tephritidae (for example, *Bactrocera cucurbitae*, *Bactrocera dorsalis*, *Bactrocera latifrons*, *Bactrocera oleae*, *Bactrocera tryoni*, or *Ceratitis capitata*);

Ephydridae (for example, *Hydrellia griseola*, *Hydrellia philippina*, or *Hydrellia sasakii*);

Drosophilidae (for example, *Drosophila suzukii*);

Phoridae (for example, *Megaselia spiracularis*);

Psychodidae (for example, *Clogmia albipunctata*);

Sciaridae (for example, *Bradysia difformis*);

Cecidomyiidae (for example, *Mayetiola destructor*, or *Orseolia oryzae*);

Diopsidae (for example, *Diopsis macrophthalma*);

Tipulidae (for example, *Tipula aino*, Common cranefly (*Tipula oleracea*), or European cranefly (*Tipula paludosa*)).

Culicidae (for example, *Culex pipiens pallens*, *Aedes aegypti*, *Aedes albopicutus*, *Anopheles hyracanus sinesis*, *Culex quinquefasciatus*, *Culex pipiens molestus Forskal*, or *Culex quinquefasciatus*);

Simulidae (for example, *Prosimulium yezoensis*, or *Simulium ornatum*);

Tabanidae (for example, *Tabanus trigonus*);

Muscidae (for example, *Musca domestica*, *Muscina*

stabulans, *Stomoxys calcitrans*, or *Haematobia irritans*);

Calliphoridae;

Sarcophagidae;

Chironomidae (for example, *Chironomus plumosus*, *Chironomus yoshimatsui*, or *Glyptotendipes tokunagai*); and

Fannidae.

[0252]

Coleoptera

Chrysomelidae (for example, *Diabrotica virgifera virgifera*, *Diabrotica undecimpunctata howardi*, *Diabrotica barberi*, *Diabrotica virgifera zeae*, *Diabrotica balteata*, Cucurbit Beetle (*Diabrotica speciosa*), *Cerotoma trifurcata*, *Oulema melanopus*, *Aulacophora femoralis*, *Phyllotreta striolata*, Cabbage flea beetle (*Phyllotreta cruciferae*), Western black flea beetle (*Phyllotreta pusilla*), Cabbage stem flea beetle (*Psylliodes chrysocephala*), *Leptinotarsa decemlineata*, *Oulema oryzae*, *Colaspis brunnea*, *Chaetocnema pulicaria*, *Chaetocnema confinis*, *Epitrix cucumeris*, *Dicladispa armigera*, Grape Colaspis (*Colaspis brunnea*), southern corn leaf beetle (*Myochrous denticollis*), *Laccoptera quadrimacu*, or *Epitrix hirtipennis*);

Carabidae (for example, Seedcorn beetle (*Stenolophus lecontei*), or Slender seedcorn beetle (*Clivina impressifrons*));

Scarabaeidae (for example, *Anomala cuprea*, *Anomala*

rufocuprea, *Anomala albopilosa*, *Popillia japonica*, *Heptophylla picea*, European Chafer (*Rhizotrogus majalis*), *Tomarus gibbosus*, *Holotrichia* spp., *Phyllophaga* spp. (for example, *Phyllophaga crinita*), or Diloboderus spp. (for example, *Diloboderus abderus*);

Curculionidae (for example, *Araecerus coffeae*, *Cylas formicarius*, *Euscepes postfasciatus*, *Hypera postica*, *Sitophilus zeamais*, *Echinocnemus squameus*, *Lissorhoptrus oryzophilus*, *Rhabdoscelus lineatocollis*, *Anthonomus grandis*, *Sphenophorus venatus*, Southern Corn Billbug (*Sphenophorus callosus*), Soybean stalk weevil (*Sternechus subsignatus*), Sgarcane wiivil (*Sphenophorus levis*), *Scepticus griseus*, *Scepticus uniformis*, *Zabrotes subfasciatus*, *Tomicus piniperda*, Coffee Berry Borer (*Hypothenemus hampei*), Aracanthus spp. (for example, *Aracanthus mourei*), or Curculionidae (for example, cotton root borer (*Eutinobothrus brasiliensis*));

Tenebrionidae (for example, *Tribolium castaneum*, or *Tribolium confusum*);

Coccinellidae (for example, *Epilachna vigintioctopunctata*);

Bostrychidae (for example, *Lyctus brunneus*);

Ptinidae;

Cerambycidae (for example, *Anoplophora malasiaca*, or *Migdolus fryanus*);

Elateridae (for example, *Melanotus okinawensis*, *Agriotes fuscicollis*, *Melanotus legatus*, *Anchastus* spp., *Conoderus* spp., *Ctenicera* spp., *Limonius* spp., or *Aeolus* spp.);

Staphylinidae (for example, *Paederus fuscipes*);

Dermestidae (for example, *Anthrenus verbasci*, or *Dermestes maculates*);

Anobidae (for example, *Lasioderma serricorne*, or Stegobium paniceum).

[0253]

Orthoptera

Acrididae (for example, *Locusta migratoria*, *Dociostaurus maroccanus*, *Chortoicetes terminifera*, *Nomadacris septemfasciata*, Brown Locust (*Locustana pardalina*), Tree Locust (*Anacridium melanorhodon*), Italian Locust (*Calliptamus italicus*), Differential grasshopper (*Melanoplus differentialis*), Two striped grasshopper (*Melanoplus bivittatus*), Migratory grasshopper (*Melanoplus sanguinipes*), Red-Legged grasshopper (*Melanoplus femurrubrum*), Clearwinged grasshopper (*Camnula pellucida*), Schistocerca gregaria, Yellow-winged locust (*Gastrimargus musicus*), Spur-throated locust (*Austracris guttulosa*), *Oxya yezoensis*, *Oxya japonica*, or *Patanga succincta*);

Gryllotalpidae (for example, *Gryllotalpa orientalis*);

Gryllidae (for example, *Acheta domestica*, or

Teleogryllus emma); and

Tettigoniidae (for example, Mormon cricket (*Anabrus simplex*)).

[0254]

Hymenoptera

Tenthredinidae (for example, Athalia rosae, or Athalia japonica);

Formicidae (for example, *Solenopsis* spp. (for example, *Solenopsis invicta*, or *Solenopsis geminata*), *Atta* spp. (for example, Brown leaf-cutting ant (*Atta capiguara*)), *Acromyrmex* spp., *Camponotus* spp. (for example, *Paraponera clavata*, *Ochetellus glaber*, *Monomorium pharaonis*, *Linepithema humile*, Formica fusca japonica, *Pristomyrmex punctutus*), *Pheidole noda*, *Pheidole megacephala*, *Camponotus japonicus*, or *Camponotus obscuripes*), *Pogonomyrmex* spp. (for example, *Pogonomyrmex occidentalis*), *Wasmania* spp. (for example, *Wasmania auropunctata*), or *Anoplolepis gracilipes*);

Vespidae (for example, *Vespa mandarinia japonica*, *Vespa simillima*, *Vespa analis Fabriciusi*, *Vespa velutina*, *Polistes jokahamae*);

Siricidae (for example, *Urocerus gigas*); and

Bethylidae.

[0255]

Blattodea

Blattellidae (for example, *Blattella germanica*);

Blattidae (for example, *Periplaneta fuliginosa*, *Periplaneta americana*, *Periplaneta brunnea*, or *Blatta orientalis*);

Termitidae (for example, *Reticulitermes speratus*, *Coptotermes formosanus*, *Incisitermes minor*, *Cryptotermes domesticus*, *Odontotermes formosanus*, *Neotermes koshunensis*, *Glyptotermes satsumensis*, *Glyptotermes nakajimai*, *Glyptotermes fuscus*, *Hodotermopsis sjostedti*, *Coptotermes guangzhouensis*, *Reticulitermes amamianus*, *Reticulitermes miyatakei*, *Reticulitermes kanmonensis*, *Nasutitermes takasagoensis*, *Pericapritermes nitobei*, *Sinocapritermes mushae*, or *Cornitermes cumulans*).

[0256]

Siphonaptera

Ctenocephalidae felis, *Ctenocephalides canis*, *Pulex irritans*, *Xenopsylla cheopis*, *Tunga penetrans*, *Echidnophaga gallinacea*, and *Nosopsyllus fasciatus*.

[0257]

Anoplura

Haematopinus suis, *Haematopinus eurysternus*, *Dalmalinia ovis*, *Linognathus seypsus*, *Pediculus humanis*, *Pediculuc humanus corporis*, *Pediculus humanus humanus*, and *Phthirus pubis*.

[0258]

Mallophagida

Menoponidae such as *Bovicola* spp. (for example, *Dalmalinia bovis*, or *Dalmalinia ovis*), *Trichodectes* spp. (for example, *Trichodectes canis*), *Felocpla* spp. (for example, *Felicola subrostrata*), *Lipeurus* spp. (for example, *Lipeurus caponis*), *Trimenopon* spp., and *Menopon* spp.

[0259]

Acari

Tetranychidae (for example, *Tetranychus urticae*, *Tetranychus kanzawai*, *Tetranychus evansi*, *Panonychus citri*, *Panonychus ulmi*, or *Oligonychus* spp.);

Eriophyidae (for example, *Aculops pelekassi*, *Phyllocoptruta citri*, *Aculops lycopersici*, *Calacarus carinatus*, *Acaphylla theavagrans*, *Eriophyes chibaensis*, *Aculus schlechtendali*, *Aceria diospyri*, *Aceria tosichella*, or *Shevtchenkella* sp.);

Tarsonemidae (for example, *Polyphagotarsonemus latus*);

Tenuipalpidae (for example, *Brevipalpus phoenicis*);

Tuckerellidae;

Ixodidae (for example, *Haemaphysalis longicornis*, *Haemaphysalis flava*, *Dermacentor taiwanensis*, *Dermacentor variabilis*, *Dermacentor andersoni*, *Ixodes ovatus*, *Ixodes persulcatus*, *Ixodes ricinus*, *Ixodes scapularis*, *Amblyomma americanum*, *Ambryomma maculatum*, *Boophilus microplus*, *Boophilus annulatus*, or *Rhipicephalus sanguineus*);

Acaridae (for example, *Tyrophagus putrescentiae*, or

Tyrophagus similis);

Pyroglyphidae (for example, *Dermatophagoides farinae*, or *Dermatophagoides pteronyssinus*);

Cheyletidae (for example, *Cheyletus eruditus*, *Cheyletus malaccensis*, *Cheyletus moorei*, or *Cheyletiella yasguri*);

Sarcoptidae (for example, *Otodectes cynotis*, or *Sarcoptes scabiei*);

Demodicidae (for example, *Demodex canis*);

Listrophoridae;

Haplochthoniidae;

Macronyssidae (for example, *Ornithonyssus bacoti*, or *Ornithonyssus sylviarum*);

Dermanyssidae (for example, *Dermanyssus gallinae*); and

Trombiculidae (for example, *Leptotrombidium akamushi*).

[0260]

Araneae

Eutichuridae (for example, *Cheiracanthium japonicum*); and Theridiidae (for example, *Latrodectus hasseltii*).

Polydesmida

Paradoxosomatidae (for example, *Oxidus gracilis* and *Nedyopus tambanus*);

Isopoda

Armadillidiidae (for example, *Armadillidium vulgare*).

[0261]

Chilopoda

Scutigeridae (for example, *Thereuonema hilgendorfi*); Scolopendridae (for example, *Scolopendra subspinipes*); and Ethopolidae (for example, *Bothropolys rugosus*).

Gastropoda

Limacidae (for example, *Limax marginatus*, or *Limax flavus*); Philomycidae (for example, *Meghimatium bilineatum*); Ampullariidae (for example, *Pomacea canaliculata*); and Lymnaeidae (for example, *Austropeplea ollula*).

[0262]

Nematoda

Aphelenchoididae (for example, *Aphelenchoides besseyi*); Pratylenchidae (for example, *Pratylenchus coffeae*, *Pratylenchus brachyurus*, *Pratylenchus neglectus*, or *Radopholus similis*); Heteroderidae (for example, *Meloidogyne javanica*, *Meloidogyne incognita*, *Meloidogyne hapla*, *Heterodera glycines*, *Globodera rostochiensis*, or *Globodera pallida*): Hoplolaimidae (for example, *Rotylenchulus reniformis*); Anguinidae (for example, *Nothotylenchus acris*, or *Ditylenchus dipsaci*); Tylenchulidae (for example, *Tylenchulus semipenetrans*); Longidoridae (for example, *Xiphinema index*); Trichodoridae;

and Parasitaphelenchidae (for example, *Bursaphelenchus xylophilus*).

[0263]

The harmful insects and harmful mites to be targeted may be insects and mites whose sensitivity to the insecticides and miticides. However, when the sensitivity to chemicals is largely reduced or the resistance against chemicals is largely developed, it is desirable to use the composition of the present invention comprising any insecticides and miticides other than the insecticides and the miticides to be targeted.

[0264]

The present compound Z or the present composition may be used to protect plants from the plant diseases caused by insect-mediated viruses or insect-mediated bacteria.

[0265]

Examples of the insect-mediated viruses are included the followings.

[0266]

Rice tungro spherical virus, Rice tungro bacilliform virus, Rice grassy stunt virus, Rice ragged stunt virus, Rice stripe virus, Rice black streaked dwarf virus, Southern rice black-streaked dwarf virus, Rice gall dwarf virus, Rice hoja blanca virus, Rice yellow stunt virus, Rice yellow mottle virus, Rice dwarf virus, Northern cereal mosaic virus,

Barley yellow dwarf virus, Barley mild mosaic virus, Barley yellow dwarf virus-PAV, Cereal yellow dwarf virus-RPS, Wheat yellow leaf virus, Oat sterile dwarf virus, Wheat streak mosaic virus, Maize dwarf mosaic virus, Maize stripe virus, Maize chlorotic mottle virus, Maize chlorotic dwarf virus, Maize rayado fino virus, Sugarcane mosaic virus, Fiji disease virus, Sugarcane yellow leaf virus, Soybean mild mosaic virus, Cycas necrotic stunt, Soybean dwarf virus, Milk vetch dwarf virus, Soybean mosaic virus, Alfalfa mosaic virus, Bean yellow mosaic virus, Bean common mosaic virus, Southern bean mosaic virus, Peanut stunt virus, Broad bean wilt virus 1, Broad bean wilt virus 2, Broad bean necrosis virus, Broad bean yellow vein virus, Clover yellow vein virus, Peanut mottle virus, Tobacco streak virus, Bean pod mottle virus, Cowpea chlorotic mottle virus, Mung bean yellow mosaic virus, Soybean crinkle leaf virus, Tomato chlorosis virus, Tomato spotted wilt virus, Tomato yellow leaf curl virus, Tomato aspermy virus, Tomato infectious chlorosis virus, Potato leafroll virus, Potato virus Y, Melon yellow spot virus, Melon necrotic spot virus, Watermelon mosaic virus, Cucumber mosaic virus, Zucchini yellow mosaic virus, Turnip mosaic virus, Turnip yellow mosaic virus, Cauliflower mosaic virus, Lettuce mosaic virus, Celery mosaic virus, Beet mosaic virus, Cucurbit chlorotic yellows virus, Capsicum chlorosis virus, Beet pseudo yellows virus, Leak yellow stripe virus, Onion

yellow dwarf virus, Sweet potato feathery mottle virus, Sweet potato shukuyo mosaic virus, Strawberry mottle virus, Strawberry mild yellow edge virus, Strawberry pseudo mild yellow edge virus, Strawberry crinkle virus, Strawberry vein banding virus, plum pox virus, Chrysanthemum stem necrosis virus, Impatiens necrotic spot virus, Iris yellow spot virus, Lily mottle cirus, Lilly symptomless virus, Tulip mosaic virus, and the like.

[0267]

Examples of the insect-mediated bacetria are included the followings.

[0268]

Candidatus Phytoplasma oryzae, Candidatus Phytoplasma asteris, Maize bushy stunt phytoplasma, Candidatus Liberbacter asiaticus, Candidatus Liberbacter africanus, Candidatus Liberbacter americanus, and the like.

[0269]

When the present ingredient is a fungicide active ingredient, the composition of the present invention can be used to control plant diseases. Examples of the plant disease include the followings. Here the descriptions in a parenthesis indicates an academic name of phytopathogenic microorganism that causes the disease.

[0270]

Rice diseases: blast (*Magnaporthe grisea*), brown spot (*Cochliobolus miyabeanus*), sheath blight (*Rhizoctonia solani*), bakanae disease (*Gibberella fujikuroi*), and downy mildew (*Sclerophthora macrospora*);

Wheat diseases: powdery mildew (*Erysiphe graminis*), fusarium blight (Fusarium graminearum, F. avenaceum, F. culmorum, Microdochium nivale), stem rust (*Puccinia striiformis*, P. *graminis*, P. *recondita*), snow mould (*Microdochium nivale*, M. *majus*), typhulasnow snow blight (*Typhula* sp.), loose smut (*Ustilago tritici*), stinking smut (*Tilletia caries*, T. controversa), eyespot (*Pseudocercosporella herpotrichoides*), septoria leaf blotch (*Septoria tritici*), glume blotch (*Stagonospora nodorum*), tan spot (*Pyrenophora tritici-repentis*), rhizoctonia seeding blight (*Rhizoctonia solani*), and take-all disease (*Gaeumannomyces graminis*);

Barley diseases: owdery mildew (*Erysiphe graminis*), fusarium blight (Fusarium graminearum, F. avenaceum, F. culmorum, Microdochium nivale), stem rust (*Puccinia striiformis*, P. *graminis*, P. *hordei*), loose smut (*Ustilago nuda*), scald (*Rhynchosporium secalis*), scald (Rhynchosporium secalis), net blotch (*Pyrenophora teres*), spot blotch (*Cochliobolus sativus*), stripe (*Pyrenophora graminea*), Ramularia disease (Ramularia collo-cygni), stripe rust (Puccinia striiformis), stem rust (Puccinia graminis), dwarf

leaf rust (Puccinia hordei), loose smut (Ustilago nuda), scald (Rhynchosporium secalis), net blotch (Pyrenophora teres), spot blotch (Cochliobolus sativus), stripe (Pyrenophora graminea), Ramularia disease (Ramularia collo-cygni), and rhizoctonia seeding blight (Rhizoctonia solani);

Corn diseases: rust (*Puccinia sorghi*), southern rust (*Puccinia polysora*), northern leaf blight (*Setosphaeria turcica*), tropical rust (*Physopella zeae*), southern leaf blight (*Cochliobolus heterostrophus*), anthracnose (*Colletotrichum graminicola*), gray leaf spot (*Cercospora zeae-maydis*), eyespot (*Kabatiella zeae*), phaeosphaeria leaf spot (*Phaeosphaeria maydis*), diplodia rot (*Stenocarpella maydis, Stenocarpella macrospora*), stalk rot (*Fusarium graminearum, Fusarium verticilioides, Colletotrichum graminicola*), smut (*Ustilago maydis*);

Cotton diseases: anthracnose (*Colletotrichum gossypii*), grey mildew (Ramularia areola), alternaria leaf spot (Alternaria macrospora, A. gossypii), and black root rot (Thielaviopsis brasicola);

Coffee diseases: rust (*Hemileia vastatrix*), and leaf spot (*Cercospora coffeicola*);

Rape seed diseases: sclerotinia rot (*Sclerotinia sclerotiorum*), gray leaf spot (*Alternaria brassicae*), and root rot (*Phoma lingam*);

Sugar cane diseases: rust (*Puccinia melanocephela,*

Puccinia kuehnii), and smut (*Ustilago scitaminea*);

Sunflower diseases: rust (*Puccinia helianthi*), and downy mildew (*Plasmopara halstedii*);

Citrus diseases: melanose (*Diaporthe citri*), scab (*Elsinoe fawcetti*), mold (*Penicillium digitatum, Penicillium italicum*), and Phytophthora rot (*Phytophthora parasitica, Phytophthora citrophthora*);

Apple diseases: blossom blight (*Monilinia mali*), valsa canker (*Valsa ceratosperma*), powdery mildew (*Podosphaera leucotricha*), alternaria leaf spot (Alternaria alternata apple pathotype), scab (*Venturia inaequalis*), bitter rot (*Glomerella cingulata*), blotch (*Diplocarpon mali*), ring rot (*Botryosphaeria berengeriana*), crown rot (*Phytophtora cactorum*);

Pear diseases: scab (*Venturia nashicola, V. pirina*), black spot (*Alternaria alternata Japanese pear pathotype*), rust (*Gymnosporangium haraeanum*);

Peach diseases: brown rot (*Monilinia fructicola*), scab (*Cladosporium carpophilum*), Phomopsis rot (*Phomopsis* sp.), and leaf curl (*Taphrina deformans*);

Grapes diseases: anthracnose (*Elsinoe ampelina*), ripe rot (*Glomerella cingulata*), powdery mildew (*Uncinula necator*), rust (*Phakopsora ampelopsidis*), black rot (*Guignardia bidwellii*), and downy mildew (*Plasmopara viticola*);

Japanese persimmon diseases: anthracnose (*Gloeosporium kaki*, *Colletotrichum acutatum*), and leaf spot (*Cercospora kaki*, *Mycosphaerella nawae*);

Diseases of gourd family: anthracnose (*Colletotrichum lagenarium*), powdery mildew (*Sphaerotheca fuliginea*), gummy stem blight (*Didymella bryoniae*), Corynespora leaf spot (*Corynespora cassiicola*), fusarium wilt (*Fusarium oxysporum*), downy mildew (*Pseudoperonospora cubensis*), phytophthora rot (*Phytophthora* sp.), and damping-off (*Pythium* sp.);

Tomato diseases: early blight (*Alternaria solani*), leaf mold (*Cladosporium fulvum*), Cercospora leaf mold (*Pseudocercospora fuligena*), late blight (*Phytophthora infestans*), and powdery mildew (*Leveillula taurica*);

Eggplant diseases: brown spot (*Phomopsis vexans*), and powdery mildew (*Erysiphe cichoracearum*);

Cruciferous vegetables diseases: alternaria leaf spot (*Alternaria japonica*), white spot (*Cercosporella brassicae*), clubroot (*Plasmodiophora brassicae*), downy mildew (*Peronospora parasitica*);

Welsh onion disease: rust (*Puccinia allii*);

Soybean diseases: purple stain (*Cercospora kikuchii*), sphaceloma scab (*Elsinoe glycines*), pod and stem blight (*Diaporthe phaseolorum* var. *sojae*), rust (*Phakopsora pachyrhizi*), target spot (*Corynespora cassiicola*), anthracnose (*Colletotrichum glycines*, C. *truncatum*),

Rhizoctonia rot (*Rhizoctonia solani*), septoria brown spot (*Septoria glycines*), Cercospora leaf spot (*Cercospora sojina*), stem rot (*Sclerotinia sclerotiorum*), powdery mildew (*Microsphaera diffusa*), phytophthora stem and root rot (Phytophthora sojae), downy mildew (*Peronospora manshurica*), sudden death syndrome (*Fusarium virguliforme*),

Kidney bean diseases: stem rot (*Sclerotinia sclerotiorum*), rust (*Uromyces appendiculatus*), angular leaf spot (*Phaeoisariopsis griseola*), and anthracnose (*Colletotrichum lindemuthianum*);

Peanut diseases: leaf spot (*Cercospora personata*), brown leaf spot (*Cercospora arachidicola*), and southern blight (*Sclerotium rolfsii*);

Garden pea disease: powdery mildew (*Erysiphe pisi*);

Potato diseases: early blight (*Alternaria solani*), late blight (*Phytophthora infestans*), Pink rot (*Phytophthora erythroseptica*), powdery scab (*Spongospora subterranea* f. sp. *subterranea*), and verticillium wilt (*Verticillium albo-atrum*, *Verticillium dahliae*, *Verticillium nigrescens*;

Strawberry disease: powdery mildew (*Sphaerotheca humuli*);

Tea diseases: net blister blight (*Exobasidium reticulatum*), white scab (*Elsinoe leucospila*), gray blight (*Pestalotiopsis* sp.), and anthracnose (*Colletotrichum theae-sinensis*);

Tobacco diseases: brown spot (*Alternaria longipes*), anthracnose (*Colletotrichum tabacum*), blue mold (*Peronospora tabacina*), and black shank (*Phytophthora nicotianae*);

Sugar beet diseases: cercospora leaf spot (*Cercospora beticola*), leaf blight (*Thanatephorus cucumeris*), root rot (*Thanatephorus cucumeris*), and aphanomyces root rot (*Aphanomyces cochlioides*), and rust (*Uromyces betae*);

Rose diseases: black spot (*Diplocarpon rosae*), and powdery mildew (*Sphaerotheca pannosa*);

Chrysanthemum diseases: leaf blight (*Septoria chrysanthemi-indici*), and white rust (*Puccinia horiana*);

Onion diseases: botrytis leaf blight (*Botrytis cinerea*, B. *byssoidea*, B. *squamosa*), gray-mold neck rot (*Botrytis allii*), and small sclerotial neck rot (*Botrytis squamosa*);

Various crops diseases: Botrytis rot (*Botrytis cinerea*), and sclerotinia rot (*Sclerotinia sclerotiorum*);

Japanese radish disease: alternaria leaf spot (*Alternaria brassicicola*);

Turfgrass diseases: dollar spot (*Sclerotinia homoeocarpa*), and brown patch and large patch (*Rhizoctonia solani*); as well as

Banana disease: Sigatoka disease (*Mycosphaerella fijiensis*, *Mycosphaerella musicola*).

Seed diseases or diseases in the early stages of the growth of various plants caused by *Aspergillus* spp.,

Penicillium spp., *Fusarium* spp., *Gibberella* spp., *Tricoderma* spp., *Thielaviopsis* spp., *Rhizopus* spp., *Mucor* spp., *Corticium* spp., *Phoma* spp., *Rhizoctonia* spp. or *Diplodia* spp.; and the like;

Viral diseases: viral diseases of several crops transmitted by *Polymixa* spp. or *Olpidium* spp.

Bacterial seedling blight of rice (*Burkholderia plantarii*), bacterial spot of cucumber (*Pseudomonas syringae* pv. *Lachrymans*), bacterial wilt of eggplant (*Ralstonia solanacearum*), canker of citrus (*Xanthomonas citri*), and bacterial soft rot of Chinese cabbage (*Erwinia carotovora*).

[0271]

The harmful arthropods, harmful nematodes and phytopathogenic fungus may be harmful arthropods, harmful nematodes or phytopathogenic fungus whose the sensitivity to any of the present ingredient is lowered or whose the resistance against the present ingredient is developed.

[0272]

The composition for controlling harmful arthropods of the present invention comprises the compound Z of the present invention or the composition of the present invention and an inert carrier. The composition for controlling harmful arthropods of the present invention is usually prepared by mixing the compound Z of the present invention or the

composition of the present invention with an inert carrier such as solid carrier, liquid carrier or gaseous carrier, and if necessary, adding surfactants and the other auxiliary agents for formulation, to formulate into emulsifiable concentrates, oil solutions, dust formulations, granules, wettable powders, flowables, microcapsules, aerosols, smoking agents, poison baits, resin formulations, shampoo formulations, paste-like formulations, foams, carbon dioxide formulations, and tablets and the others. Such formulations may be processed into mosquito repellent coils, electric mosquito repellent mats, liquid mosquito formulations, smoking agents, fumigants, sheet formulations, spot-on formulations or formulations for oral treatment. Also, the composition for controlling harmful arthropods of the present invention comprises usually 0.0001 to 95 % by weight of the compound Z of the present invention or the composition of the present invention.

[0273]

Examples of the solid carrier to be used in the formulation include fine powders or granules of clays (for example, kaolin clay, diatomaceous earth, bentonite, Fubasami clay, or acid white clay), dry silica, wet silica, talcs, ceramics, other inorganic minerals (for example, sericite, quartz, sulfur, active carbon, or calcium carbonate) or chemical fertilizers (for example, ammonium

sulfate, ammonium phosphate, ammonium nitrate, urea, or ammonium chloride) and the others; as well as synthetic resins (for example, polyester resins such as polypropylene, polyacrylonitrile, polymethyl methacrylate or polyethylene terephthalate; nylon resins (for example, nylon-6, nylon-11, or nylon-66); polyamide resins; polyvinyl chloride, polyvinylidene chloride, vinyl chloride-propylene copolymers, and the others).

[0274]

Examples of the liquid carriers include water; alcohols (for example, methanol, ethanol, isopropyl alcohol, butanol, hexanol, benzyl alcohol, ethylene glycol, propylene glycol, or phenoxy ethanol); ketones (for example, acetone, methyl ethyl ketone, or cyclohexanone); aromatic hydrocarbons (for example, toluene, xylene, ethyl benzene, dodecyl benzene, phenyl xylyl ethane, or methylnaphthalene); aliphatic hydrocarbons (for example, hexane, cyclohexane, kerosene, or light oil); esters (for example, ethyl acetate, butyl acetate, isopropyl myristate, ethyl oleate, diisopropyl adipate, diisobutyl adipate, or propylene glycol monomethyl ether acetate); nitriles (for example, acetonitrile, or isobutyronitrile); ethers (for example, diisopropyl ether, 1,4-dioxane, 1,2-dimethoxyethane, diethyleneglycol dimethyl ether, diethylene glycol monomethyl ether, propylene glycol monomethyl ether, dipropylene glycol monomethyl ether, or 3-

methoxy-3-methyl-1-butanol); amides (for example, DMF, or N,N-dimethylacetamide); sulfoxides (for example, dimethyl sulfoxide); propylene carbonate; and vegetable oils (for example, soybean oil or cottonseed oil).

[0275]

Examples of gaseous carrier include fluorocarbon, butane gas, liquefied petroleum gas (LPG), dimethyl ether, and carbon dioxide gas.

[0276]

Examples of the surfactants include nonionic surfactants such as polyoxyethylenated alkyl ethers, polyoxyethylenated alkyl aryl ethers, and polyethylene glycol fatty acid esters; and anionic surfactants such as alkyl sulfonates, alkylbenzene sulfonates and alkyl sulfates.

[0277]

Examples of the other auxiliary agents for formulation include a binder, a dispersant, a colorant and a stabilizer. Specific examples include casein, gelatin, polysaccharides (for example, starch, gum arabic, cellulose derivatives and alginic acid), lignin derivatives, bentonite, water-soluble synthetic polymers (for example, polyvinyl alcohol, polyvinyl pyrrolidone and polyacrylic acids), acidic isopropyl phosphate, 2,6-di-tert-butyl-4-methylphenol, and a mixture of 2-tert-butyl-4-methoxyphenol and 3-tert-butyl-4-methoxyphenol.

[0278]

Examples of base material of the resin formulation include polyvinyl chloride polymers, polyurethane and the others, and a plasticizer such as phthalate esters (for example, dimethyl phthalate, dioctyl phthalate), adipic acid esters and stearic acid may be added to these base materials, if necessary. The resin formulation can be prepared by mixing the compound of the present invention with the above-mentioned base material, kneading the mixture, followed by molding it by injection molding, extrusion molding or pressure molding and the like. The resultant resin formulation can be subjected to further molding or cutting procedure and the like, if necessary, to be processed into shapes such as a plate, film, tape, net or string shape. These resin formulations can be processed into animal collars, animal ear tags, sheet products, trap strings, gardening supports and other products.

Examples of a base material for the poison baits include bait ingredients such as grain powder, vegetable oil, saccharide and crystalline cellulose, and if necessary, with addition of antioxidants such as dibutylhydroxytoluene and nordihydroguaiaretic acid, preservatives such as dehydroacetic acid, accidental ingestion inhibitors for children and pets such as a chili powder, insect attraction fragrances such as cheese flavor, onion flavor and peanut

oil.

[0279]

The method for controlling harmful arthropods of the present invention is carried out by applying an effective amount of the compound Z of the present invention or the composition of the present invention to a harmful arthropod directly and/or a habitat thereof (for example, plant bodies, soil, an interior of a house, animal bodies). Also, the method for controlling harmful arthropods of the present invention may be applied to seeds. In the method for controlling harmful arthropods of the present invention, the Present compound is usually used in the form of a harmful arthropod controlling composition.

[0280]

When a composition for controlling harmful arthropods of the present invention is used for controlling harmful arthropods in an agricultural field, the application dose as an amount of the compound Z of the present invention is usually within a range from 1 to 10,000 g per 10,000 m^2. In the case of being applied to seeds, the application dose as an amount of the compound of the present invention is usually within a range of 0.001 to 100 g per 1Kg seeds. When the composition for controlling harmful arthropods of the present invention is formulated into emulsifiable concentrate, wettable powder, or flowable formulation, the

composition of the present invention is usually applied by diluting it with water in such a way that a concentration of the concentration of the active ingredient is within a range from 0.01 to 10,000 ppm. The granular formulation, or the dust formulation etc., is usually applied as itself without diluting it.

[0281]

These formulations or an aqueous dilution thereof may be sparged directly to harmful arthropods or plants (such as crops) to be protected from harmful arthropods, and also may be applied to the soil of crop land in order to control harmful arthropods which live there.

[0282]

Also, the resin preparation which is processed into a sheet or a string may be applied by winding a plant with a sheet or a string of the resin preparation, putting a string of the resin preparation around a crop so that the plant is surrounded by the string, or laying a sheet of the resin preparation on the soil surface near the root of a plant.

[0283]

When the composition for controlling harmful arthropods of the present invention is used to control harmful arthropods that live inside a house, the application dose as an amount of the Present compound Z is

usually within a range from 0.01 to 1,000 mg per 1 m^2 of an area to be treated, in the case of using it on a planar area. In the case of using it spatially, the application dose as an amount of the Present compound Z is usually within a range from 0.01 to 500 mg per 1 m^3 of the space to be treated. When the composition for controlling harmful arthropods of the present invention is formulated into emulsifiable concentrates, wettable powders, flowables or the others, such formulations are usually applied after diluting it with water in such a way that a concentration of the active ingredient is within a range from 0.1 to 10,000 ppm, and then sparging it. In the case of being formulated into oil solutions, aerosols, smoking agents, poison baits and the others, such formulations are used as itself without diluting it.

[0284]

When the composition for controlling harmful arthropods of the present invention is used for controlling external parasites of livestock such as cows, horses, pigs, sheep, goats and chickens and small animals such as dogs, cats, rats and mice, the agent of the present invention may be applied to the animals by a known method in the veterinary field. Specifically, when systemic control is intended, the agent of the present invention is administered to the animals as a tablet, a mixture with feed or a suppository, or by

injection (including intramuscular, subcutaneous, intravenous and intraperitoneal injections). On the other hand, when non-systemic control is intended, the agent of the present invention is applied to the animals by means of spraying of the oil solution or aqueous solution, pour-on or spot-on treatment, or washing of the animal with a shampoo formulation, or by putting a collar or ear tag made of the resin formulations to the animal. In the case of being administered to an animal body, the dose of the Present compound Z is usually within a range from 0.1 to 1,000 mg per 1 kg of an animal body weight.

[0285]

Also, the Present compound Z or the Present composition may be used as an agent for controlling harmful arthropods in agricultural lands such as paddy fields, fields, turfs, and orchards. The Present compound Z or the Present composition may be controlled the harmful arthropods where lives in agricultural lands where the following plants etc., are grown.

[0286]

Crops:

corn, rice, wheat, barley, rye, oat, sorghum, cotton, soybean, peanut, buckwheat, beet, rapeseed, sunflower, sugar cane, tobacco, and the others;

Vegetables:

solanaceous vegetables (for example, eggplant, tomato, pimento, pepper, or potato),

cucurbitaceous vegetables (for example, cucumber, pumpkin, zucchini, water melon, or melon),

cruciferous vegetables (for example, *Japanese radish*, white turnip, horseradish, kohlrabi, *Chinese cabbage*, cabbage, leaf mustard, broccoli, or cauliflower),

asteraceous vegetables (for example, burdock, crown daisy, artichoke, or lettuce),

liliaceous vegetables (for example, green onion, onion, garlic, or asparagus),

ammiaceous vegetables (for example, carrot, parsley, celery, or parsnip),

chenopodiaceous vegetables (for example, spinach, or *Swiss chard*),

lamiaceous vegetables (for example, *Perilla frutescens*, mint, or basil),

strawberry, sweet potato, *Dioscorea japonica*, colocasia, or the others;

Flowers:

Ornamental foliage plants:

Lawn:

Fruits:

pomaceous fruits (for example, apple, pear, *Japanese pear*, *Chinese quince*, or quince),

stone fleshy fruits (for example, peach, plum, nectarine, *Prunus mume*, cherry fruit, apricot, or prune),

citrus fruits (for example, *Citrus unshiu*, orange, lemon, lime, or grapefruit),

nuts (for example, chestnut, walnuts, hazelnuts, almond, pistachio, cashew nuts, or macadamia nuts),

berry fruits (for example, blueberry, cranberry, blackberry or raspberry),

grape, kaki persimmon, olive, *Japanese plum*, banana, coffee, date palm, coconuts, and the others;

Trees other than fruit trees:

tea, mulberry, flowering plant, roadside trees (for example, ash, birch, dogwood, Eucalyptus, Ginkgo biloba, lilac, maple, Quercus, poplar, Judas tree, Liquidambar formosana, plane tree, zelkova, Japanese arborvitae, fir wood, hemlock, juniper, Pinus, Picea, and Taxus cuspidate); and the others.

[0287]

The above plants also include a plant that can be generated by a natural crossbreeding, a plant that can be generated by mutations, an F1 hybrid plant, and a genetically modified crop. Examples of the genetically modified crop include a plant modified to have the resistance to HPPD (4-hydroxyphenylpyruvate dioxygenase) inhibitors such as isoxaflutole, ALS (acetolactate synthase) inhibitors such as

imazethapyr and thifensulfuron-methyl, EPSP (5-enolpyruvoylshikimate-3-phosphate synthase) inhibitors, glutamine synthetase inhibitors, PPO (protoporphyrinogen oxidase) inhibitors, or herbicides such as bromoxynil and dicamba; a plant modified to synthesize a selective toxin known to be produced in Bacillus such as Bacillus thuringiensis; and a plant modified to have a specific insecticidal activity by synthesizing a gene fragment partially corresponding to an endogenous gene derived from a harmful insect to induce the gene silencing (RNAi; RNA interference) in the target harmful insect.

[0288]

Examples of applying an effective amount of the compound Z of the present invention or the composition of the present invention to plant or soils for cultivating plants include a method of applying an effective amount of the compound Z of the present invention or the composition of the present invention to a stem and leaf, a flower, a seedling, an ear of a plant; a method of applying an effective amount of the compound Z of the present invention or the composition of the present invention to a seed or a bulb such as seed tuber (for example, a seed disinfection , a seed soaking, or a seed coating), or a method of applying an effective amount of the compound Z of the present invention or the composition of the present invention to soils before planting plants or

soils after planting plants.

[0289]

Specific examples of applying an effective amount of the compound Z of the present invention or the composition of the present invention to a stem and leaf, a flower, a fruit, an ear of a plant include a method for applying an effective amount of the compound Z of the present invention or the composition of the present invention to a surface of a plant (for example, foliage application, and trunk application), a method for applying an effective amount of the compound Z of the present invention or the composition of the present invention to a flower or a whole plant at flowering times including before flowering, during flowering, and after flowering, and a method for applying an effective amount of the compound Z of the present invention or the composition of the present invention to an ear or a whole grain at sprouting season of grain.

[0290]

Also, examples of a method of controlling harmful arthropods by applying an effective amount of the compound Z of the present invention or the composition of the present invention soils before planting plants or after planting plants include a method of applying an effective amount of the compound Z of the present invention or the composition of the present invention to a root part of a crop to be

protected from damage such as ingestion by harmful arthropods, and a method of controlling harmful arthropods that ingest a plant by permeating and transferring an effective amount of the compound Z of the present invention or the composition of the present invention from a root into the interior of the plant body. More specifically, examples of the method of applying an effective amount of the compound of the present invention or the composition of the present invention to soils before planting plants or after planting plants include planting hole treatment (spraying into planting holes, soil mixing after planting hole treatment), plant foot treatment (plant foot spraying, soil mixing after plant foot treatment, irrigation at plant foot, plant foot treatment at a later seeding raising stage), planting furrow treatment (planting furrow spraying, soil mixing after planting furrow treatment), planting row treatment (planting row spraying, soil mixing after planting row treatment, planting row spraying at a growing stage), planting row treatment at the time of sowing (planting row spraying at the time of sowing, soil mixing after planting row treatment at the time of sowing), broadcast treatment (overall soil surface spraying, soil mixing after broadcast treatment), side-article treatment, treatment of water surface (application to water surface, application to water surface after flooding), other soil spraying treatment (spraying of

a granular formulation on leaves at a growing stage, spraying under a canopy or around a tree stem, spraying on the soil surface, mixing with surface soil, spraying into seed holes, spraying on the ground surfaces of furrows, spraying between plants), other irrigation treatment (soil irrigation, irrigation at a seedling raising stage, drug solution injection treatment, irrigation of a plant part just above the ground, drug solution drip irrigation, chemigation), seedling raising box treatment (spraying into a seedling raising box, irrigation of a seedling raising box, flooding into a seedling raising box with drug solution), seedling raising tray treatment (spraying on a seedling raising tray, irrigation of a seedling raising tray, flooding into a seedling raising tray with drug solution), seedbed treatment (spraying on a seedbed, irrigation of a seedbed, spraying on a lowland rice nursery, immersion of seedlings), seedbed soil incorporation treatment (mixing with seedbed soil, mixing with seedbed soil before sowing, spraying at sowing before covering with soils, spraying at sowing after covering with soils, mixing with covering soil, and other treatment (mixing with culture soil, plowing under, mixing with surface soil, mixing with soil at the place where raindrops fall from a canopy, treatment at a planting position, spraying of a granule formulation on flower clusters, mixing with a paste fertilizer).

[0291]

A bulb described herein represents discoid stems, corms, rhizomes, tubers, tuberous, seed tubers, and tuberous roots. A method for controlling harmful arthropods by applying an effective amount of the compound Z of the present invention or the composition of the present invention into a seed or a bulb include a method of applying an effective amount of the compound Z of the present invention or the composition of the present invention directly into a seed or a bulb of a plant to be protected from damage such as ingestion by harmful arthropods; and a method for controlling harmful arthropods that ingest a seed by applying an effective amount of the compound Z of the present invention or the composition of the present invention in the vicinity of a seed or a bulb; and a method for controlling harmful arthropods that ingest a plant by permeating and transferring an effective amount of the compound Z of the present invention or the composition of the present invention from a seed or a bulb into the interior of the plant body. More specifically, spraying treatment, spray coating treatment, immersion treatment, impregnation treatment, coating treatment, film coating treatment, and pellet coating treatment are included. These methods can provide a preparation of a seed or a bulb that retain an effective amount of the compound Z of the present invention or the composition of the present invention on the

surface and/or into the interior thereof.

[0292]

When the compound Z of the present invention or the composition of the present invention are applied to a seed or a bulb, an effective amount of the compound Z of the present invention is usually within a range of 0.001 to 100g, preferably within a range of 0.02 to 20 g, based on 1 kg of the seed or the bulb. Also an effective amount of the composition of the present invention is usually within a range of 0.000001 to 50 g, preferably within a range of 0.0001 to 30 g of a total amount of the compound Z of the present invention and the active ingredient of the present invention, based on 1 kg of the seed or the bulb.

[0293]

The plants described above are not limited specifically, as long as they are breeds that are usually cultivated.

EXAMPLES

[0294]

Hereinafter, the present invention is explained in more detail by using Preparation Example, Formulation Example, and Test Example and the like, however, the present invention should not be limited to these examples.

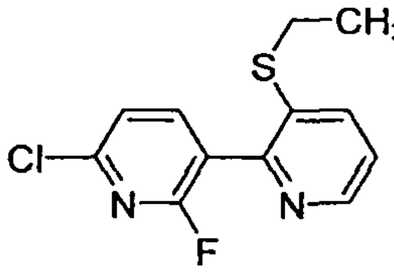
In the below-mentioned Examples, when "present

compound" is described, the term encompasses the "Present compound" and the "Present compound Z". First, the Preparation Examples of the present compound Z are shown.

[0295]

Reference Preparation Example 1-1

The mixture of 6-chloro-2-fluoropyridin-3-yl boronic acid 3.75 g, 2-bromo-3-(ethylsulfanyl)pyridine 4.66 g, [1,1-bis(diphenylphosphino)ferrocene]palladium dichloride 0.77 g, tripotassium phosphate 13.5 g, DMF 20 mL, and water 2 mL were stirred at 80°C under argon atmosphere for 9 hours. The reaction mixtures were cooled to room temperature, and water was added to the mixtures, and the mixtures were extracted with ethyl acetate. The resulting organic layers were dried over anhydrous sodium sulfate, and concentrated under reduced pressure. The resulting residue was subjected to a silica gel column chromatography to obtain the intermediate compound A-1 shown below 2.9 g.

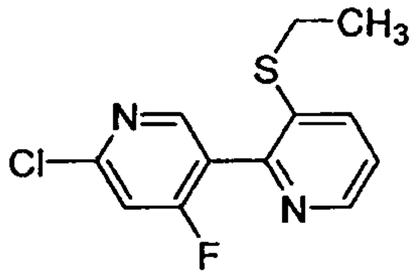


Intermediate compound A-1: ^{1}H-NMR ($CDCl_3$) δ: 8.50 (1H, dd), 7.85 (1H, dd), 7.75 (1H, dd), 7.35-7.31 (2H, m), 2.88 (2H, q), 1.26 (3H, t).

[0296]

Reference Preparation Example 1-2

The process was carried out by using 6-chloro-4-fluoropyridin-3-yl boronic acid pinacol ester in place of 6-chloro-2-fluoropyridin-3-yl boronic acid according to the method described in Reference Preparation 1-1 to obtain the intermediate compound B-1 shown below.

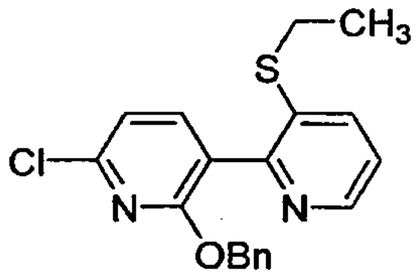


Intermediate compound B-1: ^{1}H-NMR ($CDCl_3$) δ: 8.53 (1H, dd), 8.46 (1H, d), 7.76 (1H, dd), 7.34 (1H, dd), 7.20 (1H, d), 2.87 (2H, q), 1.25 (3H, t).

[0297]

Reference Preparation Example 2-1

To the mixtures of the intermediate compound A-1 2.9 g, sodium hydride (60% in oil) 0.43 g and DMF 10 mL were added dropwise benzyl alcohol 1.1 mL under ice-cooling, and the reaction mixtures were stirred at 0°C for 5h. Water was added to the mixtures, and the mixtures were extracted with ethyl acetate. The resulting organic layers were dried over anhydrous sodium sulfate, and concentrated under reduced pressure. The resulting residue was subjected to a silica gel column chromatography to obtain the intermediate compound A-2 shown below 3.31 g.

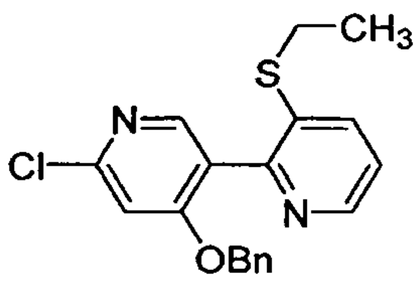


Intermediate compound A-2: ^{1}H-NMR ($CDCl_3$) δ: 8.47 (1H, dd), 7.69 (1H, dd), 7.59 (1H, d), 7.31-7.26 (6H, m), 7.04 (1H, d), 5.42 (2H, s), 2.78 (2H, q), 1.17 (3H, t).

[0298]

Reference Preparation Example 2-2

The compound which was prepared according to the method described in Reference Preparation Example 2-1 and its physical property value are shown below.



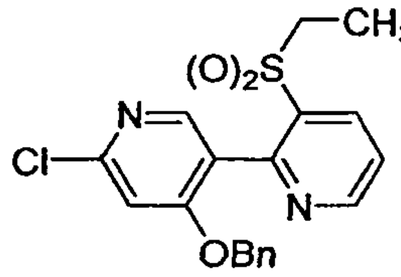
Intermediate compound B-2: ^{1}H-NMR ($CDCl_3$) δ: 8.50 (1H, dd), 8.22 (1H, s), 7.71 (1H, dd), 7.31-7.29 (6H, m), 6.96 (1H, s), 5.14 (2H, s), 2.81 (2H, q), 1.20 (3H, t).

[0299]

Reference Preparation Example 2-3

To the mixtures of the intermediate compound B-2 0.53 g and chloroform 15 mL was added mCPBA (purity 70%) 0.8 g under ice-cooling, and the mixtures were stirred at 0°C to room temperature for 5 hours. To the mixtures was added aqueous sodium thiosulfate solution, and the mixtures were extracted with chloroform. The resulting organic layers

were washed with saturated aqueous sodium bicarbonate solution, dried over anhydrous sodium sulfate, and concentrated under reduced pressure. The resulting residue was subjected to a silica gel column chromatography to obtain the intermediate compound B-3 shown below 0.35 g.

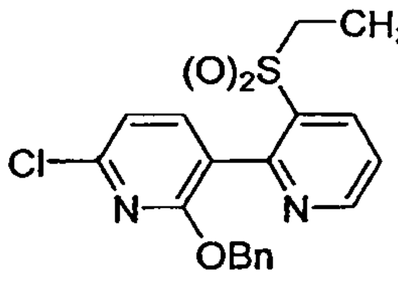


Intermediate compound B-3: ^{1}H-NMR ($CDCl_3$) δ: 8.92 (1H, dd), 8.42 (1H, dd), 8.19 (1H, s), 7.57 (1H, dd), 7.31-7.29 (3H, m), 7.23-7.21 (2H, m), 7.01 (1H, s), 5.10 (2H, s), 2.90 (2H, q), 1.10 (3H, t).

[0300]

Reference preparation Example 2-4

The compound which was prepared according to the method described in Reference Preparation Example 2-3 and its physical property value are shown below.

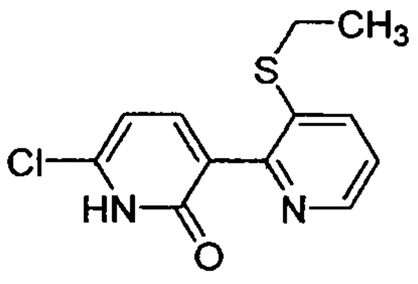


Intermediate compound A-6: ^{1}H-NMR ($CDCl_3$) δ: 8.91 (1H, dd), 8.40 (1H, dd), 7.63 (1H, d), 7.55 (1H, dd), 7.30-7.24 (5H, m), 7.08 (1H, d), 5.50-5.28 (2H, m), 2.78-2.71 (2H, m), 0.92 (3H, t).

[0301]

Reference Preparation Example 3-1

The mixtures of the intermediate compound A-2 3.31 g and concentrated hydrochloric acid 10 mL was stirred at 80°C for 1.5 hours. The mixtures were cooled to room temperature, and then to the mixtures was added 2M aqueous sodium hydroxide solution to adjust the pH 4. The precipitated solids were collected by filtration to obtain the intermediate compound A-3 shown below 2.03 g.

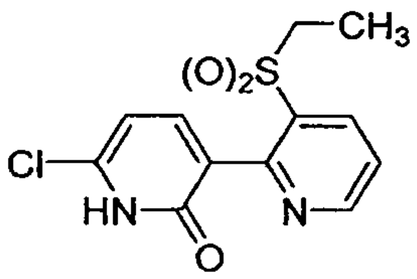


Intermediate compound A-3: ^{1}H-NMR ($CDCl_3$) δ: 8.44 (1H, d), 8.39 (1H, dd), 7.85 (1H, dd, J = 8.1, 1.5 Hz), 7.30 (1H, dd), 6.94 (1H, d), 2.94 (2H, q), 1.29 (3H, t).

[0302]

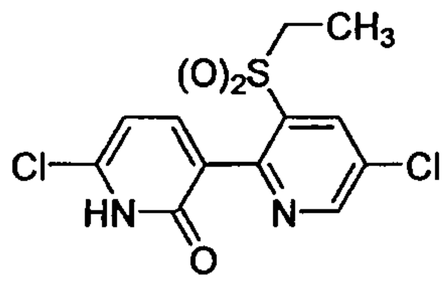
Reference preparation Example 3-1 A

The compounds which were prepared according to the method described in Reference Preparation Example 3-1 and their physical property values are shown below.



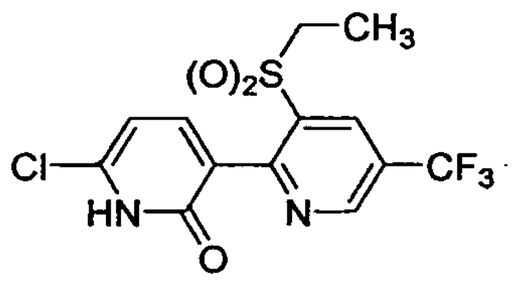
Intermediate compound A-7: ^{1}H-NMR ($CDCl_3$) δ: 8.91 (1H, dd), 8.41 (1H, dd), 7.64 (1H, d), 7.58 (1H, dd), 6.68 (1H, d), 3.37 (2H, q), 1.30 (3H, t).

[0303]



Intermediate compound A-21: ^{1}H-NMR ($CDCl_3$) δ: 8.84 (1H, d), 8.37 (1H, d), 7.59 (1H, d), 6.64 (1H, d), 3.40 (2H, q), 1.33 (3H, t).

[0304]

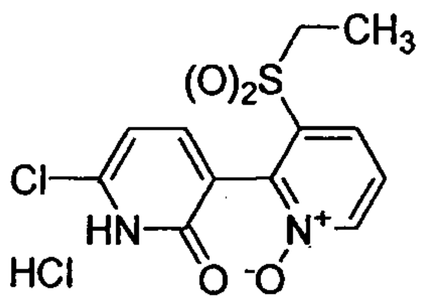


Intermediate compound A-25: ^{1}H-NMR ($CDCl_3$) δ: 9.13 (1H, s), 8.61 (1H, s), 7.62 (1H, d), 6.64 (1H, d), 3.46-3.43 (2H, m), 1.35 (3H, t).

[0305]

Reference Preparation Example 3-2

A mixture of the intermediate compound A-38 10 g and concentrated hydrochloric acid 30 mL was stirred under reflux for 16 hours. The mixture was cooled to room temperature, and thereto was added toluene, and the mixture was concentrated under reduced pressure. The resulting solids were washed with hexane to obtain the intermediate compound A-39 shown below 8 g.



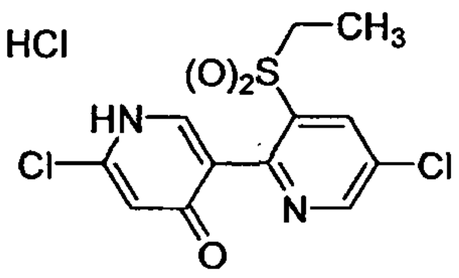
Intermediate compound A-39: ^{1}H-NMR ($CDCl_3$) δ: 8.63 (1H, d), 7.87-7.85 (1H, m), 7.73-7.68 (2H, m), 7.04 (1H, d), 3.18-3.02 (2H, m), 1.07 (3H, t).

[0306]

Reference Preparation Example 3-2A

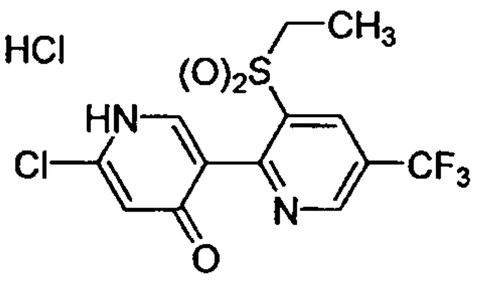
The compounds which were prepared according to the method described in Reference Preparation Example 3-2 and their physical property values are shown below.

[0307]



Intermediate compound B-16: ^{1}H-NMR ($CDCl_3$) δ: 8.87 (1H, s), 8.34 (1H, s), 8.26 (1H, s), 7.89 (1H, s), 3.24-3.18 (2H, m), 1.30 (3H, t).

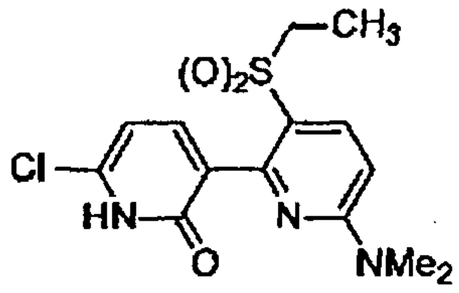
[0308]



Intermediate compound B-20: ^{1}H-NMR ($CDCl_3$) δ: 9.16 (1H, s), 8.60 (1H, s), 8.29 (1H, s), 7.66 (1H, s), 3.25-3.19 (2H, m),

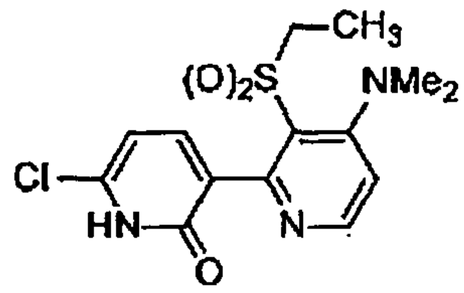
1.32-1.26 (3H, m).

[0309]



Intermediate compound A-44

[0310]

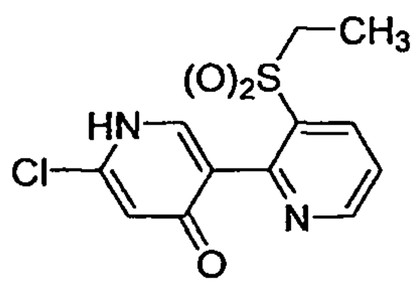


Intermediate compound A-47

[0311]

Reference Preparation Example 3-3

The mixtures of the intermediate compound B-3 0.35 g, 10% palladium-carbon 100 mg, and ethyl acetate 5 mL were stirred under hydrogen atmosphere for 3 hours. The reaction mixtures were filtered through Celite (Registered Trademark), concentrated under reduced pressure to obtain the intermediate compound B-4 shown below 0.11 g.



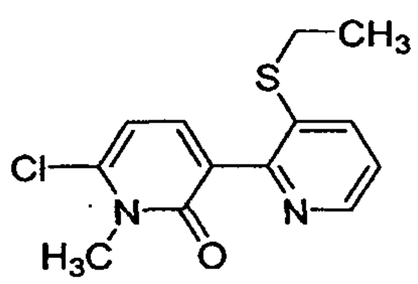
Intermediate compound B-4: ^{1}H-NMR ($CDCl_3$) δ: 8.87 (1H, dd),

8.61 (1H, d), 8.54 (1H, s), 7.62 (1H, dd), 6.94 (1H, s), 3.08 (2H, q), 1.18 (3H, t).

[0312]

Reference Preparation Example 4-1

The mixtures of the intermediate compound A-3 1.0 g, methyl iodide 0.28 mL, cesium carbonate 1.82 g, and DMF 10 mL were stirred at 0°C for 3.5 hours. Water was added to the mixtures, and the mixtures were extracted with ethyl acetate. The resulting organic layers were dried over anhydrous sodium sulfate, and concentrated under reduced pressure. The resulting residue was subjected to a silica gel column chromatography to obtain the intermediate compound A-4 shown below 0.55 g.

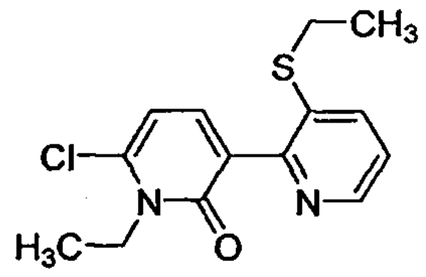


Intermediate compound A-4: ^{1}H-NMR ($CDCl_3$) δ: 8.45 (1H, dd), 7.69 (1H, dd), 7.42 (1H, d, J = 7.5 Hz), 7.24 (1H, dd), 6.43 (1H, d), 3.76 (3H, s), 2.88 (2H, q), 1.26 (3H, t).

[0313]

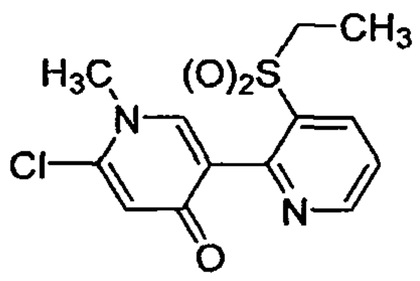
Reference Preparation Example 4-2

The compounds which were prepared according to the method described in Reference Preparation Example 4-1 and their physical property values are shown below.



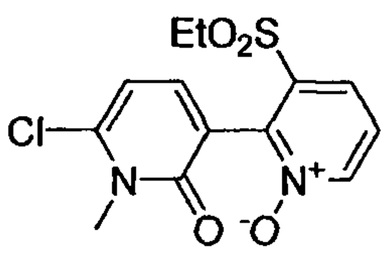
Intermediate compound A-5: ^{1}H-NMR ($CDCl_3$) δ: 8.45 (1H, d), 7.70 (1H, d), 7.40 (1H, d), 7.23 (1H, dd), 6.40 (1H, d), 4.39-4.38 (2H, m), 2.91-2.85 (2H, m), 1.37 (3H, t), 1.25 (3H, t).

[0314]



Intermediate compound B-5: ^{1}H-NMR ($CDCl_3$) δ: 8.93 (1H, dd), 8.45 (1H, dd), 8.16 (1H, s), 7.60 (1H, dd), 6.95 (1H, s), 3.83 (3H, s), 2.93 (2H, q), 1.19 (3H, t).

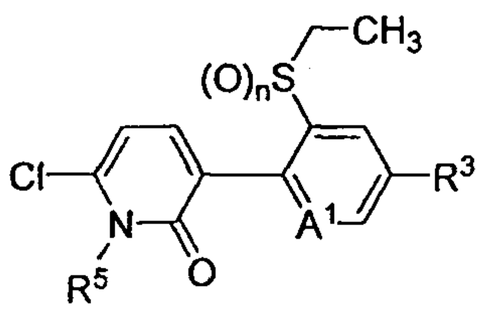
[0315]



Intermediate compound A-40

[0316]

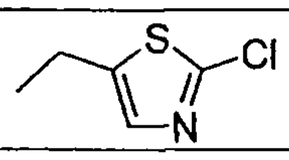
The compounds represented by formula (MA-1):



(MA-1)

wherein the combination of R^5, A^1, R^3 and n represents any combinations indicated in Table 17.

Table 17

Intermediate compound	R^5	A^1	R^3	n
A-8	Pr	N	H	2
A-9	i-Pr	N	H	2
A-10	Bu	N	H	2
A-11	$CH_2CH=CH_2$	N	H	2
A-12	$CH_2C\equiv CH$	N	H	2
A-13	CH_2c-Pr	N	H	2
A-14	$CH_2CF_2CF_3$	N	H	2
A-15	Bn	N	H	2
A-16		N	H	2
A-22	Me	N	Cl	2
A-26	Me	N	CF_3	2
A-37	Me	N	H	2
A-42	Et	N	CF_3	2

Intermediate compound A-8: ^{1}H-NMR ($CDCl_3$) δ: 8.87 (1H, dd), 8.34 (1H, dd), 7.52 (1H, dd), 7.39 (1H, d), 6.46 (1H, d), 4.25 (2H, m), 3.53-3.42 (2H, m), 1.85-1.74 (2H, m), 1.33 (3H, t), 1.01 (3H, t).

Intermediate compound A-9: ^{1}H-NMR ($CDCl_3$) δ: 8.86 (1H, dd), 8.33 (1H, dd), 7.51 (1H, dd), 7.33 (1H, t), 6.42 (1H, q), 5.18-5.14 (1H, m), 3.55-3.41 (2H, m), 1.65-1.61 (6H, m), 1.33 (3H, t).

Intermediate compound A-10: ^{1}H-NMR ($CDCl_3$) δ: 8.87 (1H, dd), 8.34 (1H, dd), 7.52 (1H, dd), 7.39 (1H, d), 6.46 (1H, d), 4.28 (2H, t), 3.48 (2H, q), 1.78-1.69 (2H, m), 1.45-1.42 (2H, m), 1.33 (3H, t), 0.97 (3H, t).

Intermediate compound A-11: ^{1}H-NMR ($CDCl_3$) δ: 8.87 (1H, dd),

8.33 (1H, dd), 7.52 (1H, dd), 7.43 (1H, d), 6.49 (1H, d), 5.98-5.89 (1H, m), 5.27-5.20 (2H, m), 4.95-4.89 (2H, m), 3.47 (2H, q), 1.32 (3H, t).

Intermediate compound A-12: ^{1}H-NMR ($CDCl_3$) δ: 8.87 (1H, dd), 8.35 (1H, dd), 7.53 (1H, dd), 7.45 (1H, d), 6.51 (1H, d), 5.11-5.00 (2H, m), 3.47 (2H, q), 2.27 (1H, t), 1.33 (3H, t).

Intermediate compound A-13: ^{1}H-NMR ($CDCl_3$) δ: 8.87 (1H, dd), 8.35 (1H, dd), 7.52 (1H, dd), 7.40 (1H, d), 6.47 (1H, d), 4.23-4.20 (2H, m), 3.48-3.44 (2H, m), 1.33 (4H, t), 0.56-0.52 (4H, m).

Intermediate compound A-14: ^{1}H-NMR ($CDCl_3$) δ: 8.88 (1H, dd), 8.35 (1H, dd), 7.55 (1H, dd), 7.47 (1H, d), 6.56 (1H, d), 5.03 (2H, br s), 3.40 (2H, q), 1.32 (3H, t).

Intermediate compound A-15: ^{1}H-NMR ($CDCl_3$) δ: 8.87 (1H, dd), 8.33 (1H, dd), 7.52 (1H, dd), 7.45 (1H, d), 7.33-7.27 (5H, m), 6.51 (1H, d), 5.64-5.42 (2H, m), 3.40-3.37 (2H, m), 1.25 (3H, t).

Intermediate compound A-16: ^{1}H-NMR ($CDCl_3$) δ: 8.88 (1H, dd), 8.36 (1H, dd), 7.66 (1H, s), 7.55 (1H, dd), 7.44 (1H, d), 6.52 (1H, d), 5.57-5.47 (2H, m), 3.54-3.37 (2H, m), 1.36 (3H, t).

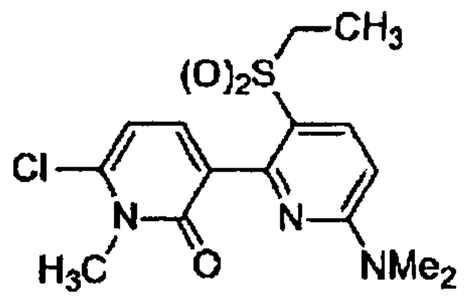
Intermediate compound A-22: ^{1}H-NMR ($CDCl_3$) δ: 8.81 (1H, d), 8.33 (1H, d), 7.41 (1H, d), 6.50 (1H, d), 3.74 (3H, s), 3.50-3.46 (2H, m), 1.35 (3H, t).

Intermediate compound A-26: ^{1}H-NMR ($CDCl_3$) δ: 9.10 (1H, s),

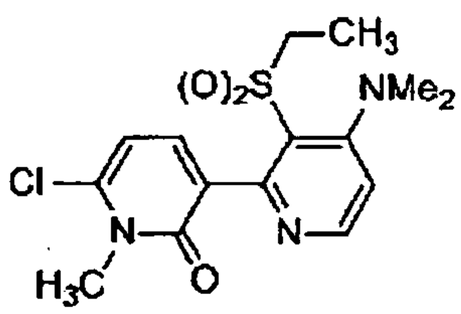
8.57 (1H, s), 7.46 (1H, d), 6.53 (1H, d), 3.75 (3H, s), 3.52 (2H, q), 1.36 (3H, t).

Intermediate compound A-37: ^{1}H-NMR ($CDCl_3$) δ: 8.86 (1H, d), 8.34 (1H, d), 7.52-7.49 (1H, m), 7.40 (1H, d), 6.48 (1H, d), 3.72 (3H, s), 3.43 (2H, q), 1.31 (3H, t).

Intermediate compound A-42: ^{1}H-NMR ($CDCl_3$) δ: 9.10 (1H, d), 8.55 (1H, d), 7.44 (1H, d), 6.50 (1H, d), 4.38 (2H, q), 3.61-3.54 (2H, m), 1.38 (3H, t), 1.37 (3H, t).

[0317] 

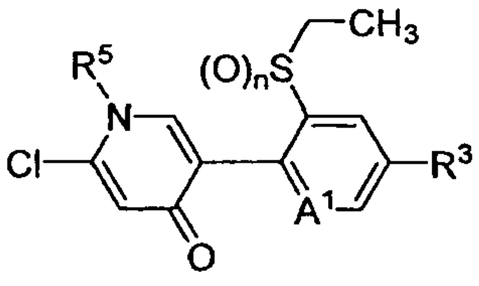
Intermediate compound A-45: ^{1}H-NMR ($CDCl_3$) δ: 7.93 (1H, d), 7.30 (1H, d), 6.52-6.40 (2H, m), 3.70 (3H, s), 3.37-3.30 (2H, m), 3.13 (6H, s), 1.27 (3H, t).

[0318] 

Intermediate compound A-48

[0319]

The compounds represented by formula (MB-1):



(MB-1)

wherein the combination of R^5, A^1, R^3 and n represents any combinations indicated in Table 18.

Table 18

Intermediate compound	R^5	A^1	R^3	n
B-9	Et	N	H	2
B-10	Pr	N	H	2
B-11	Bu	N	H	2
B-12	$CH_2CH=CH_2$	N	H	2
B-13	CH_2c-Pr	N	H	2
B-17	Me	N	Cl	2
B-21	Me	N	CF_3	2
B-22	i-Pr	N	H	2
B-23	Bn	N	H	2
B-24	$CH_2CH_2CF_3$	N	H	2

Intermediate compound B-9: ^{1}H-NMR ($CDCl_3$) δ: 8.88 (1H, dd), 8.38 (1H, dd), 7.56 (1H, s), 7.53 (1H, dd), 6.62 (1H, s), 4.15-4.09 (2H, m), 3.49-3.39 (2H, m), 1.48 (3H, t), 1.30 (3H, t).

Intermediate compound B-10: ^{1}H-NMR ($CDCl_3$) δ: 8.88 (1H, dd), 8.38 (1H, dd), 7.53 (1H, s), 7.52 (1H, dd), 6.61 (1H, s), 4.10-3.92 (2H, m), 3.51-3.36 (2H, m), 1.93-1.84 (2H, m), 1.30 (3H, t), 1.01 (3H, t).

Intermediate compound B-11: ^{1}H-NMR ($CDCl_3$) δ: 8.88 (1H, dd), 8.38 (1H, dd), 7.52 (2H, dd), 6.62 (1H, s), 4.07 (2H, s), 3.44 (2H, s), 1.84-1.81 (2H, m), 1.43-1.40 (2H, m), 1.30 (3H, t), 0.98 (3H, t).

Intermediate compound B-12: ^{1}H-NMR ($CDCl_3$) δ: 8.88 (1H, dd), 8.37 (1H, dd), 7.54-7.52 (2H, m), 6.63 (1H, s), 6.00-5.90 (1H, m), 5.39 (1H, d), 5.27 (1H, d), 4.70-4.64 (2H, m), 3.49-

3.44 (2H, m), 1.31 (3H, t).

Intermediate compound B-13: ^{1}H-NMR ($CDCl_3$) δ: 8.89 (1H, dd), 8.39 (1H, dd), 7.63 (1H, s), 7.53 (1H, dd), 6.63 (1H, s), 4.01-3.88 (2H, m), 3.50-3.37 (2H, m), 1.33-1.28 (4H, m), 0.74-0.70 (2H, m), 0.45 (2H, m).

Intermediate compound B-17: ^{1}H-NMR ($CDCl_3$) δ: 8.80 (1H, d), 8.34 (1H, d), 7.53 (1H, s), 6.63 (1H, s), 3.77 (3H, s), 3.57-3.49 (2H, m), 1.35 (3H, t).

Intermediate compound B-21: ^{1}H-NMR ($CDCl_3$) δ: 9.16 (1H, d), 8.68 (1H, d), 8.17 (1H, s), 6.98 (1H, s), 3.85 (3H, s), 2.96 (2H, q), 1.22 (3H, t).

Intermediate compound B-22: ^{1}H-NMR ($CDCl_3$) δ: 8.90 (1H, dd), 8.41 (1H, dd), 7.64 (1H, s), 7.53 (1H, dd), 6.62 (1H, s), 5.02-4.96 (1H, m), 3.41-3.29 (2H, m), 1.49 (6H, d), 1.29-1.25 (3H, m).

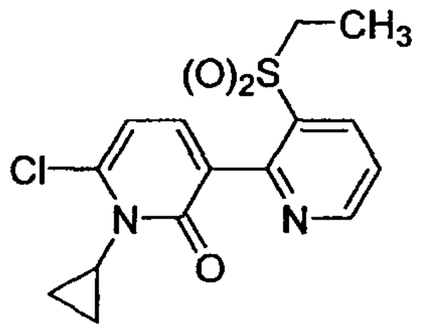
Intermediate compound B-23: ^{1}H-NMR ($CDCl_3$) δ: 8.87 (1H, dd), 8.37 (1H, dd), 7.62 (1H, s), 7.52 (1H, dd), 7.43-7.33 (3H, m), 7.26-7.22 (2H, m), 6.65 (1H, s), 5.27-5.23 (2H, m), 3.52-3.41 (2H, m), 1.32 (3H, t).

Intermediate compound B-24: ^{1}H-NMR ($CDCl_3$) δ: 8.89 (1H, dd), 8.38 (1H, dd), 7.54 (1H, dd), 7.53 (1H, s), 6.64 (1H, s), 4.41-4.22 (2H, m), 3.44-3.37 (2H, m), 2.77-2.63 (2H, m), 1.30 (3H, t).

[0320]

Reference Preparation Example 5

The mixtures of the intermediate compound A-7 0.4 g, copper(II) acetate 0.48 g, cesium carbonate 0.43 g, cyclopropyl boronic acid 0.23 g, pyridine 0.3 mL, and xylene 2.7 mL were stirred at 110°C for 20 hours. The resulting mixtures were cooled to room temperature, and the mixtures were filtered through Celite (Registered trademark) and the filtrates were concentrated under reduced pressure. The resulting residue was subjected to a silica gel column chromatography to obtain the intermediate compound A-17 shown below 37 mg.



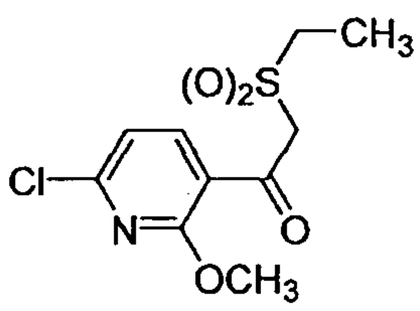
Intermediate compound A-17: ^{1}H-NMR ($CDCl_3$) δ: 8.86 (1H, dd), 8.32 (1H, dd), 7.51 (1H, dd), 7.38 (1H, d), 6.43 (1H, d), 3.52 (2H, q), 2.99-2.95 (1H, m), 1.36 (3H, t), 1.32-1.31 (2H, m), 1.03-1.00 (2H, m).

[0321]

Reference Preparation Example 6-1

To the mixtures of methyl 6-chloro-2-methoxy nicotinic acid 0.5 g, ethyl methyl sulfone 5 mL and THF 12 mL was added dropwise lithium hexamethyl disilazide (1.1 M THF solution) 5 mL at -10°C. The resulting mixtures were stirred for 20 minutes, and thereto was added 6N hydrochloric acid 1 mL.

Water was added to the resulting mixtures, and the mixtures were extracted with ethyl acetate. The resulting organic layers were dried over anhydrous sodium sulfate, and concentrated under reduced pressure. The resulting residue was subjected to a silica gel column chromatography to obtain the intermediate compound A-18 shown below 0.6 g.

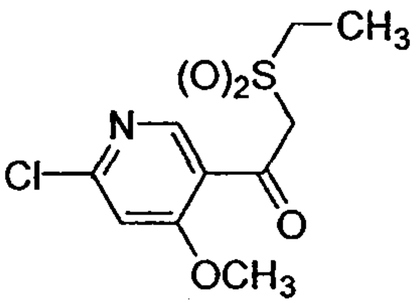


Intermediate compound A-18: ^{1}H-NMR ($CDCl_3$) δ: 8.14 (1H, d), 7.06 (1H, d), 4.74 (2H, s), 4.13 (3H, s), 3.28 (2H, q), 1.44 (3H, t).

[0322]

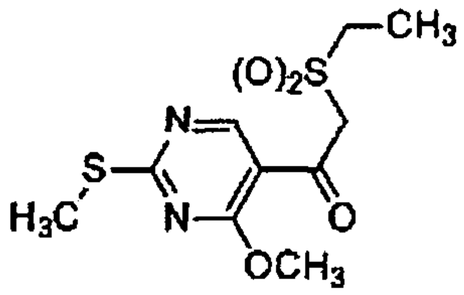
Reference Preparation Example 6-2

The compound which was prepared according to the method described in Reference Preparation Example 6-1 and its physical property value are shown below.



Intermediate compound B-6: ^{1}H-NMR ($CDCl_3$) δ: 8.69 (1H, s), 6.98 (1H, s), 4.67 (2H, s), 4.06 (3H, s), 3.26 (2H, q), 1.44 (3H, t).

[0323]

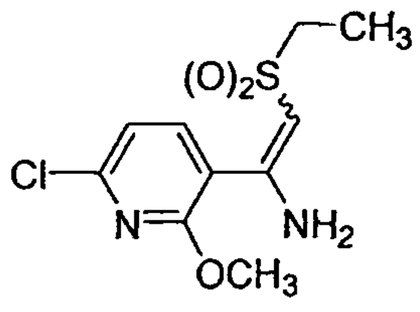


Intermediate compound C-2: ^{1}H-NMR ($CDCl_3$) δ: 8.81 (1H, s), 4.68 (2H, s), 4.17 (3H, s), 3.26 (2H, q), 2.61 (3H, s), 1.44 (5H, t).

[0324]

Reference Preparation Example 7-1

The mixtures of the intermediate compound A-18 2.96 g, ammonium acetate 5.0 g, acetic acid 0.15 mL, and methanol 13 mL were stirred at 65°C for 6 hours. The resulting mixtures were cooled to room temperature, and thereto was added 2% aqueous sodium hydroxide solution. The precipitated solids were filtered, and the obtained solids were washed with water, concentrated under reduced pressure to obtain the intermediate compound A-19 shown below 2.7 g.



Intermediate compound A-19: ^{1}H-NMR ($CDCl_3$) δ: 7.67 (1H, d), 6.98 (1H, d), 6.11 (2H, br s), 4.83 (1H, s), 4.02 (3H, s), 3.07 (2H, q), 1.41 (3H, t).

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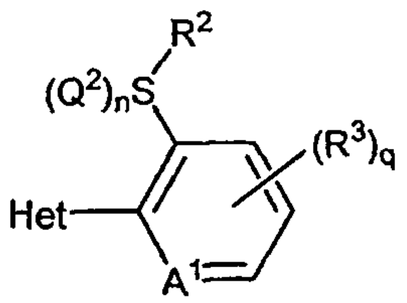
CLAIMS

1. A compound represented by formula (I):



(I)

wherein,

R^2 represents a C1-C6 alkyl group optionally having one or more halogen atoms, a cyclopropyl group or a cyclopropylmethyl group,

n is 0, 1 or 2,

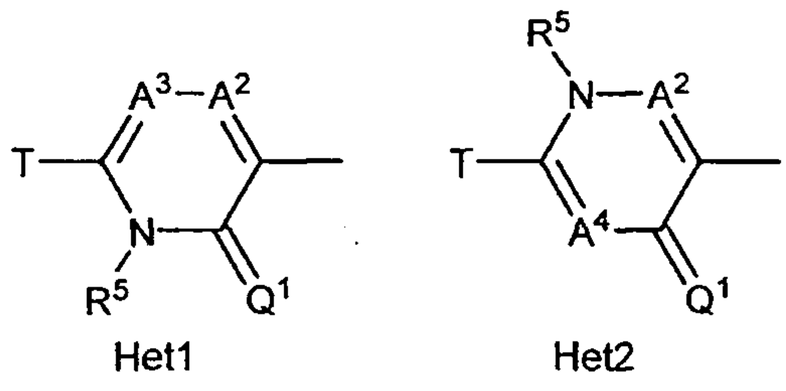
R^3 represents a C1-C6 chain hydrocarbon group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from group E, a C3-C7 cycloalkenyl group optionally having one or more substituents selected from Group J, a phenyl group optionally having one or more substituents selected from Group H, a five or six membered aromatic heterocyclic group optionally having one or more substituents selected from Group H, OR^{12}, $NR^{11}R^{12}$, $NR^{11a}R^{12a}$, $NR^{24}NR^{11}R^{12}$, $NR^{24}OR^{11}$, $NR^{11}C(O)R^{13}$, $NR^{24}NR^{11}C(O)R^{13}$, $NR^{11}C(O)OR^{14}$, $NR^{24}NR^{11}C(O)OR^{14}$, $NR^{11}C(O)NR^{15}R^{16}$, $NR^{24}NR^{11}C(O)NR^{15}R^{16}$, $N=CHNR^{15}R^{16}$, $N=S(O)_xR^{15}R^{16}$, $C(O)R^{17}$, $C(O)OR^{17}$, $C(O)NR^{15}R^{16}$, $CR^{24}=NOR^{17}$, $NR^{11}CR^{24}=NOR^{17}$, a cyano group, a nitro group, or a halogen

atom,

q is 0, 1, 2 or 3, and when q is 2 or 3, a plurality of R^3 may be identical to or different from each other,

When two R^3 are adjacent to each other, said two R^3 may combined together with a carbon atom to which they are attached to form benzene ring, pyrrole ring, furan ring, thiophene ring, pyrazole ring, imidazole ring, triazole ring, oxazole ring, isoxazole ring, thiazole ring, oxadiazole ring, thiadiazole ring, pyridine ring, pyridazine ring, pyrimidine ring, or pyrazine ring {the benzene ring, the pyrrole ring, the furan ring, the thiophene ring, the pyrazole ring, the imidazole ring, the triazole ring, the oxazole ring, the isoxazole ring, the thiazole ring, the pyridine ring, the pyridazine ring, the pyrimidine ring, and the pyrazine ring each independently may optionally have one or more substituents selected from Group H},

Het represents a group represented by the following formula Het 1 or a group represented by the following formula Het 2:



,

A^1 represents a nitrogen atom or CR^6,

A^2 represents a nitrogen atom or CR^{4a},

A^3 represents a nitrogen atom or CR^{4b},

A^4 represents a nitrogen atom or CR^{4c},

Q^1 represents an oxygen atom or a sulfur atom,

Q^2 represents an oxygen atom, N-CN, $N-NO_2$, NR^{20}, $N-C(O)R^{20}$, or $N-C(O)OR^{15}$, and when n is 2, two Q^2 may be identical to or different from each other,

R^{20} represents a C1-C6 alkyl group optionally having one or more halogen atoms, or a hydrogen atom,

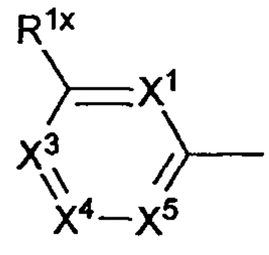
R^5 represents a C1-C6 chain hydrocarbon group optionally having one or more substituents selected from group F, a C3-C6 cycloalkyl group optionally having one or more substituents selected from Group J, a phenyl group optionally having one or more substituents selected from Group H, or a five or six membered aromatic heterocyclic group optionally having one or more substituents selected from Group H,

R^{4a}, R^{4b} and R^{4c} are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a nitro group, OR^{18}, $NR^{18}R^{19}$, a cyano group, an amino group, a halogen atom, or a hydrogen atom,

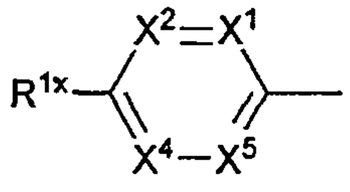
R^6 represents a hydrogen atom or a halogen atom,

T represents a C1-C10 chain hydrocarbon group, a (C1-C5 alkoxy)C2-C5 alkyl group, a (C1-C5 alkylsulfanyl)C2-C5 alkyl group, a (C1-C5 alkylsulfinyl)C2-C5 alkyl group, a

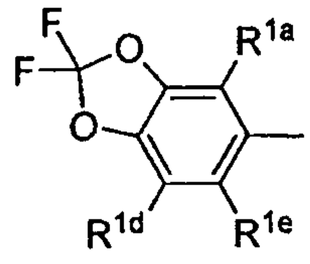
(C1-C5 alkylsulfonyl)C2-C5 alkyl group {the C1-C10 chain hydrocarbon group, the (C1-C5 alkoxy)C2-C5 alkyl group, the (C1-C5 alkylsulfanyl)C2-C5 alkyl group, the (C1-C5 alkylsulfinyl)C2-C5 alkyl group, and the (C1-C5 alkylsulfonyl)C2-C5 alkyl group each independently have one or more substituents selected from the group consisting of a cyano group and a halogen atom}, a (C3-C7 cycloalkyl)C1-C3 alkyl group, a C3-C7 cycloalkyl group {the (C3-C7 cycloalkyl)C1-C3 alkyl group and the C3-C7 cycloalkyl group each independently have one or more substituents selected from the group consisting of a cyano group, a halogen atom and a C1-C6 haloalkyl group}, OR^1, $S(O)_vR^1$, $OS(O)_2R^1$, CH_2OR^1, NR^1R^{29}, $C(O)R^1$, $C(O)NR^1R^{29}$, $NR^{29}C(O)R^1$, $N=CR^1R^{30}$, a group represented by formula T-1, a group represented by formula T-2, a group represented by formula T-3, a group represented by formula T-4, a group represented by formula T-5, a group represented by formula T-6, a group represented by formula T-7, a group represented by formula T-8, a group represented by formula T-9, a group represented by formula T-10, a group represented by formula T-11, or a group represented by formula T-12:



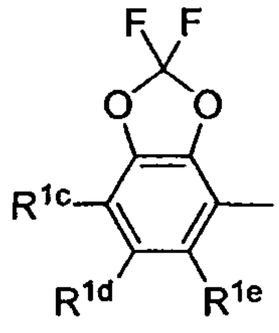
T-1



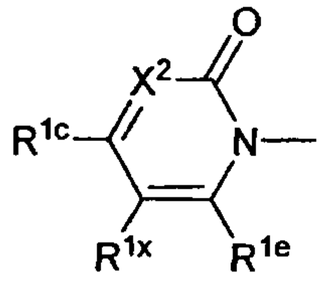
T-2



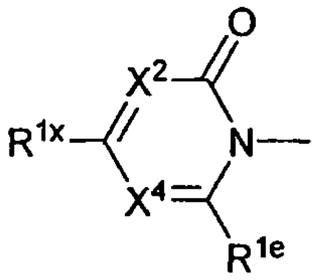
T-3



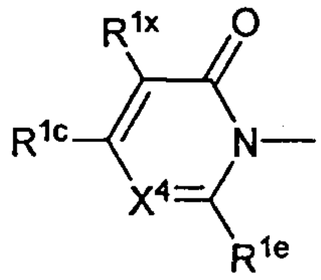
T-4



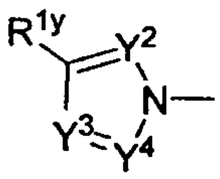
T-5



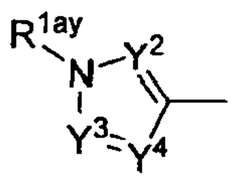
T-6



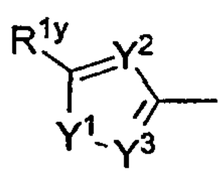
T-7



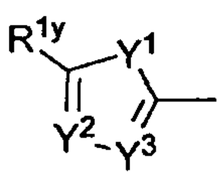
T-8



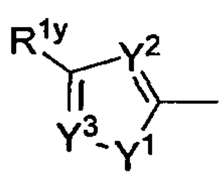
T-9



T-10



T-11



T-12

,

X^1 represents a nitrogen atom or CR^{1a},

X^2 represents a nitrogen atom or CR^{1b},

X^3 represents a nitrogen atom or CR^{1c},

X^4 represents a nitrogen atom or CR^{1d},

X^5 represents a nitrogen atom or CR^{1e},

R^{1x} represents a C1-C5 chain hydrocarbon group having one or more halogen atoms, OR^7, $OS(O)_2R^7$, $S(O)_mR^7$, $NR^8S(O)_2R^7$, or a halogen atom,

R^{1a}, R^{1b}, R^{1c}, R^{1d}, and R^{1e} are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group optionally having one or more halogen

atoms, a C3-C6 cycloalkyl group optionally having one or more halogen atoms, a halogen atom, or a hydrogen atom,

Y^1 represents NR^{25}, an oxygen atom or a sulfur atom,

Y^2 represents a nitrogen atom or CR^{26},

Y^3 represents a nitrogen atom or CR^{27},

Y^4 represents a nitrogen atom or CR^{28},

R^{25}, R^{26}, R^{27} and R^{28} are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a C3-C6 cycloalkyl group optionally having one or more halogen atoms, a halogen atom or a hydrogen atom,

R^{1y} represents a C1-C5 chain hydrocarbon group having one or more halogen atoms, OR^7, $OS(O)_2R^7$, $S(O)_mR^7$, $NR^8S(O)_2R^7$, a cyano group, or a halogen atom,

R^{1ay} and R^7 are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group having one or more halogen atoms,

m and y are identical to or different from each other and each is 0, 1 or 2,

R^1 represents a C1-C10 chain hydrocarbon group, a (C1-C5 alkoxy)C2-C5 alkyl group, a (C1-C5 alkylsulfanyl)C2-C5 alkyl group, a (C1-C5 alkylsulfinyl)C2-C5 alkyl group, a (C1-C5 alkylsulfonyl)C2-C5 alkyl group {the C1-C10 chain hydrocarbon group, the (C1-C5 alkoxy)C2-C5 alkyl group, the (C1-C5 alkylsulfanyl)C2-C5 alkyl group, the (C1-C5

alkylsulfinyl)C2-C5 alkyl group, and the (C1-C5 alkylsulfonyl)C2-C5 alkyl group each independently have one or more substituents selected from the group consisting of a cyano group and a halogen atom}, a (C3-C7 cycloalkyl)C1-C3 alkyl group, or a C3-C7 cycloalkyl group {the (C3-C7 cycloalkyl)C1-C3 alkyl group and the C3-C7 cycloalkyl group each independently have one or more substituents selected from the group consisting of a cyano group, a halogen atom and a C1-C6 haloalkyl group},

R^{30} represents a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a halogen atom, OR^{35}, $NR^{36}R^{37}$, or a hydrogen atom,

R^{18} and R^{35} are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms,

R^{17} represents a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a phenyl group optionally having one or more substituents selected from Group D, or a hydrogen atom,

R^{8}, R^{11}, R^{19}, R^{24}, R^{29}, R^{36}, and R^{37} are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, or a hydrogen atom,

R^{12} represents a C1-C6 chain hydrocarbon group optionally having one or more substituents selected from

Group F, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group J, a C3-C7 cycloalkenyl group optionally having one or more substituents selected from Group J, a phenyl group, a six membered heterocyclic group {the phenyl group, and the six membered heterocyclic group each independently may optionally have one or more substituents selected from Group D}, a hydrogen atom, or a $S(O)_2R^{23}$,

R^{23} represents a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, or a phenyl group optionally having one or more substituents selected from Group D,

R^{11a} and R^{12a} combine together with the nitrogen atom to which they are attached to form a three to seven membered nonaromatic heterocyclic group optionally having one or more substituents selected from group E,

R^{13} represents a hydrogen atom, a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a C3-C7 cycloalkyl group optionally having one or more halogen atoms, a (C3-C6 cycloalkyl)C1-C3 alkyl group optionally having one or more halogen atoms, a phenyl group optionally having one or more substituents selected from Group D, or a five or six membered aromatic heterocyclic group optionally having one or more substituents selected from Group D,

R^{14} represents a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a C3-C7 cycloalkyl group optionally having one or more halogen atoms, a (C3-C6 cycloalkyl)C1-C3 alkyl group optionally having one or more halogen atoms, or a phenyl C1-C3 alkyl group {the phenyl moiety in the phenyl C1-C3 alkyl group may optionally have one or more substituents selected from Group D},

R^{15} represents a C1-C6 alkyl group optionally having one or more halogen atoms, or a hydrogen atom,

R^{16} represents a C1-C6 chain hydrocarbon group optionally having one or more substituents selected from Group F, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group J, $S(O)_2R^{23}$ or a hydrogen atom,

x is 0 or 1,

Group B: a group consisting of a C1-C6 alkoxy group optionally having one or more halogen atoms, a C3-C6 alkenyloxy group optionally having one or more halogen atoms, a C3-C6 alkynyloxy group optionally having one or more halogen atoms, a C1-C6 alkylsulfanyl group optionally having one or more halogen atoms, a C1-C6 alkylsulfinyl group optionally having one or more halogen atoms, a C1-C6 alkylsulfonyl group optionally having one or more halogen atoms, a C3-C6 cycloalkyl group optionally having one or more halogen atoms, a cyano group, a hydroxy group, and a

halogen atom,

Group D: a group consisting of a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a hydroxy group, a C1-C6 alkoxy group optionally having one or more halogen atoms, a C3-C6 alkenyloxy group optionally having one or more halogen atoms, a C3-C6 alkynyloxy group optionally having one or more halogen atoms, a sulfanyl group, a C1-C6 alkylsulfanyl group optionally having one or more halogen atoms, a C1-C6 alkylsulfinyl group optionally having one or more halogen atoms, a C1-C6 alkylsulfonyl group optionally having one or more halogen atoms, an amino group, NR^9R^{10}, $C(O)R^{10}$, $OC(O)R^9$, $C(O)OR^9$, a cyano group, a nitro group, and a halogen atom,

R^9 represents a C1-C6 alkyl group optionally having one or more halogen atoms, or a C3-C6 cycloalkyl group optionally having one or more halogen atoms,

R^{10} represents a C1-C6 alkyl group optionally having one or more halogen atoms, a C3-C6 cycloalkyl group optionally having one or more halogen atoms, or a hydrogen atom,

Group E: a group consisting of a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a C1-C6 alkoxy group optionally having one or more halogen atoms, a C3-C6 alkenyloxy group optionally having one or more halogen atoms, a C3-C6 alkynyloxy group optionally having one or more halogen atoms, a halogen atom, an oxo group, a hydroxy

group, a cyano group, and a nitro group;

Group F: a group consisting of a C3-C6 cycloalkyl group optionally having one or more halogen atoms, a phenyl group or a six membered aromatic heterocyclic group {the phenyl group and the six membered aromatic heterocyclic group each independently may optionally have one or more substituents selected from Group D}, OR^{10}, an amino group, NR^9R^{10}, a halogen atom, a nitro group, and a cyano group;

Group H: a group consisting of a five or six membered aromatic heterocyclic group, a C1-C6 alkyl group optionally having one or more halogen atoms, a C3-C6 cycloalkyl group optionally having one or more halogen atoms, OR^{10}, an amino group, NR^9R^{10}, $C(O)R^{10}$, $C(O)NR^9R^{10}$, $OC(O)R^9$, $OC(O)OR^9$, $NR^{10}C(O)R^9$, $NR^{10}C(O)OR^9$, $C(O)OR^{10}$, a halogen atom, a nitro group, and a cyano group;

Group J: a group consisting of a C1-C6 alkyl group optionally having one or more halogen atoms, a halogen atom, a cyano group, a triazolyl group, and $NR^{10}C(O)R^9$.

2. The compound according to claim 1 wherein

T represents a C1-C10 chain hydrocarbon group having one or more halogen atoms, a (C1-C5 alkoxy)C2-C5 alkyl group having one or more halogen atoms, a (C1-C5 alkylsulfanyl)C2-C5 alkyl group having one or more halogen atoms, a (C1-C5 alkylsulfinyl)C2-C5 alkyl group having one or more halogen atoms, a (C1-C5 alkylsulfonyl)C2-C5 alkyl group having one

or more halogen atoms, a (C3-C7 cycloalkyl)C1-C3 alkyl group having one or more substituents selected from Group G, a C3-C7 cycloalkyl group having one or more substituents selected from Group G, OR^1, $S(O)_vR^1$, $OS(O)_2R^1$, CH_2OR^1, NR^1R^{29}, $C(O)R^1$, $C(O)NR^1R^{29}$, $NR^{29}C(O)R^1$, $N=CR^1R^{30}$, a group represented by formula T-1, a group represented by formula T-2, a group represented by formula T-3, a group represented by formula T-4, a group represented by formula T-5, a group represented by formula T-6, a group represented by formula T-7, a group represented by formula T-8, a group represented by formula T-9, a group represented by formula T-10, a group represented by formula T-11, or a group represented by formula T-12, and

R^1 represents a C1-C10 chain hydrocarbon group having one or more halogen atoms, a (C1-C5 alkoxy)C2-C5 alkyl group having one or more halogen atoms, a (C1-C5 alkylsulfanyl)C2-C5 alkyl group having one or more halogen atoms, a (C1-C5 alkylsulfinyl)C2-C5 alkyl group having one or more halogen atoms, a (C1-C5 alkylsulfonyl)C2-C5 alkyl group having one or more halogen atoms, a (C3-C7 cycloalkyl)C1-C3 alkyl group having one or more substituents selected from Group G, or a C3-C7 cycloalkyl group having one or more substituents selected from Group G.

3. The compound according to claim 1 or 2 wherein A^1 represents CH.

4. The compound according to claim 1 or 2 wherein A^1

represents a nitrogen atom.

5. The compound according to any one of claims 1 to 4 wherein Het represents Het 1.

6. The compound according to any one of claims 1 to 4 wherein Het represents Het 2.

7. The compound according to any one of claims 1 to 4 wherein Het represents Het 1, A^2 represents CR^{4a}, and A^3 represents CR^{4b}.

8. The compound according to any one of claims 1 to 4 wherein Het represents Het 2, A^2 represents CR^{4a}, and A^4 represents CR^{4c}.

9. The compound according to any one of claims 1 to 8 wherein Q^1 represents an oxygen atom, T represents a C1-C10 chain hydrocarbon group having one or more halogen atoms, OR^1, $S(O)_vR^1$, $OS(O)_2R^1$, NR^1R^{29}, a group represented by formula T-1, a group represented by formula T-2, a group represented by formula T-3, a group represented by formula T-4, or a group represented by formula T-8.

10. The compound according to any one of claims 1 to 8 wherein Q^1 represents an oxygen atom, T represents a C1-C5 chain hydrocarbon group having one or more halogen atoms, OR^1, $S(O)_vR^1$, $OS(O)_2R^1$, NR^1R^{29}, a group represented by formula T-1, a group represented by formula T-2, a group represented by formula T-3, a group represented by formula T-4, or a group represented by formula T-8, R^1, R^{1x} and R^{1y} are identical

to or different from each other and each represents independently a C1-C5 chain hydrocarbon group having one or more halogen atoms, and q is 0 or 1.

11. The compound according to any one of claims 1 to 8 wherein Q^1 represents an oxygen atom, T represents a C1-C5 chain hydrocarbon group having one or more halogen atoms, or OR^1, R^1 represents a C1-C5 chain hydrocarbon group having one or more halogen atoms, and q is 0 or 1.

12. The compound according to any one of claims 1 to 11 wherein R^3 represents a C1-C6 alkyl group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group E, a phenyl group, a five aromatic heterocyclic group containing one to four nitrogen atoms, a six aromatic heterocyclic group {the phenyl group, the five aromatic heterocyclic group containing one to four nitrogen atoms, and the six aromatic heterocyclic group each independently may optionally have one or more substituents selected from Group J}, $NR^{11}R^{12}$, $NR^{11}C(O)OR^{14}$, OR^{12}, or a halogen atom.

13. The compound according to any one of claims 1 to 12 wherein R^2 represents an ethyl group.

14. The compound according to any one of claims 1 to 13 wherein Q^2 represents an oxygen atom.

15. A composition for controlling harmful arthropod

comprising the compound according to any one of claims 1 to 14 and an inert carrier.

16. A method for controlling harmful arthropod which comprises applying an effective amount of the compound according to any one of claims 1 to 14 to a harmful arthropod or a habitat where a harmful arthropod lives.

17. A method for controlling harmful arthropod which comprises applying an effective amount of the compound according to any one of claims 1 to 14 to a plant or a soil where a plant grows.

18. A method for controlling harmful arthropod which comprises applying an effective amount of the compound according to any one of claims 1 to 14 to a seed or a bulb.

19. A composition comprising one or more ingredients selected from the group consisting of the following Group (a), Group (b), Group (c), Group (d) and Group (e), and the compound according to any one of claims 1 to 14,

Group (a): one or more ingredients selected from the group consisting of insecticidal ingredients, miticidal ingredients, and nematicidal ingredients;

Group (b): fungicidal ingredients;

Group (c): plant growth modulating ingredients;

Group (d): phytotoxicity-reducing ingredients; and

Group (e): synergist ingredients.

20. A composition for controlling pest comprising the

composition according to claim 19 and an inert carrier.

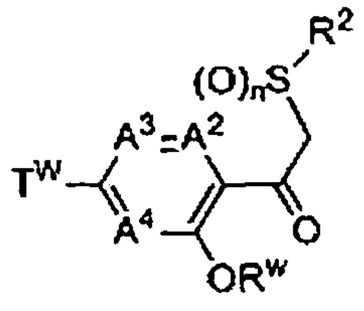
21. A method for controlling pest which comprises applying an effective amount of the composition according to claim 19 to a pest or a habitat where a pest lives.

22. A method for controlling pest which comprises applying an effective amount of the composition according to claim 19 to a plant or a soil where a plant grows.

23. A method for controlling pest which comprises applying an effective amount of the compound according to claim 19 to a seed or a bulb.

24. A seed or bulb carrying an effective amount of the compound according to any one of claim 1 to 14 or an effective amount of the composition according to claim 19.

25. A compound represented by formula (II):



(II)

[wherein,

R^2 represents a C1-C6 alkyl group optionally having one or more halogen atoms, a cyclopropyl group or a cyclopropylmethyl group,

n is 0, 1 or 2,

A^2 represents a nitrogen atom or CR^{4a},

a combination of A^3 and A^4 represents a combination

where A^3 represents a nitrogen atom, A^4 represents a nitrogen atom or CR^{4c}, or a combination where A^3 represents CR^{4b}, and A^4 represents a nitrogen atom,

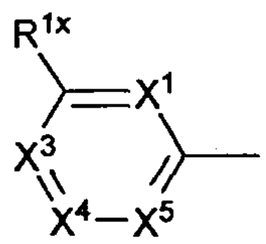
R^{4a}, R^{4b} and R^{4c} are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a nitro group, OR^{18}, $NR^{18}R^{19}$, a cyano group, an amino group, a halogen atom, or a hydrogen atom,

R^{19} represents a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, or a hydrogen atom,

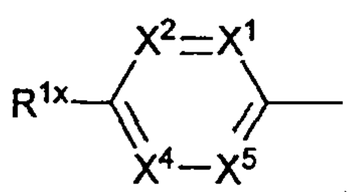
R^w represents a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a benzyl group optionally having one or more substituents selected from Group A, a C2-C7 alkylcarbonyl group, a (C1-C3 alkoxy)methyl group, or a hydrogen atom,

T^w represents a C1-C10 chain hydrocarbon group, a (C1-C5 alkoxy)C2-C5 alkyl group, a (C1-C5 alkylsulfanyl)C2-C5 alkyl group, a (C1-C5 alkylsulfinyl)C2-C5 alkyl group, a (C1-C5 alkylsulfonyl)C2-C5 alkyl group {the C1-C10 chain hydrocarbon group, the (C1-C5 alkoxy)C2-C5 alkyl group, the (C1-C5 alkylsulfanyl)C2-C5 alkyl group, the (C1-C5 alkylsulfinyl)C2-C5 alkyl group, and the (C1-C5 alkylsulfonyl)C2-C5 alkyl group each independently have one or more substituents selected from the group consisting of

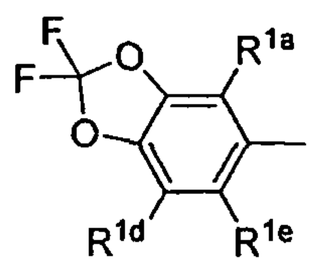
a cyano group and a halogen atom}, a (C3-C7 cycloalkyl)C1-C3 alkyl group or a C3-C7 cycloalkyl group {the (C3-C7 cycloalkyl)C1-C3 alkyl group and the C3-C7 cycloalkyl group each independently have one or more substituents selected from the group consisting of a cyano group, a halogen atom and a C1-C6 haloalkyl group}, OR^1, $S(O)_vR^1$, $OS(O)_2R^1$, CH_2OR^1, NR^1R^{29}, $C(O)R^1$, $C(O)NR^1R^{29}$, $NR^{29}C(O)R^1$, $N=CR^1R^{30}$, a group represented by formula T-1, a group represented by formula T-2, a group represented by formula T-3, a group represented by formula T-4, a group represented by formula T-5, a group represented by formula T-6, a group represented by formula T-7, a group represented by formula T-8, a group represented by formula T-9, a group represented by formula T-10, a group represented by formula T-11, or a group represented by formula T-12, a halogen atom, a C1-C6 alkylsulfanyl group, a C1-C6 alkylsulfinyl group, a C1-C6 alkylsulfonyl group {the C1-C6 alkylsulfanyl group, the C1-C6 alkylsulfinyl group, and the C1-C6 alkylsulfonyl group each may optionally have a C3-C6 cycloalkyl group}, a C3-C6 cycloalkylsulfanyl group, a C3-C6 cycloalkylsulfinyl group, a C3-C6 cycloalkylsulfonyl group, a benzyloxy group optionally having one or more substituents selected from Group A, a C2-C7 alkylcarbonyloxy group optionally having one or more halogen atoms, a (C1-C3 alkoxy)methoxy group, or a hydroxy group,



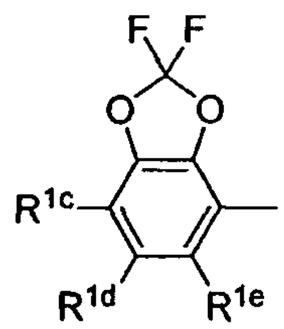
T-1



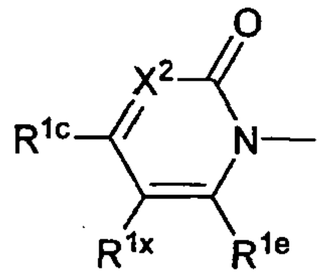
T-2



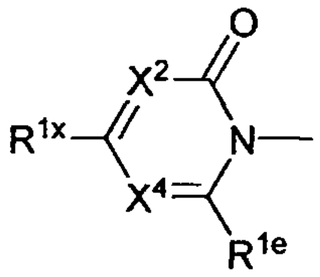
T-3



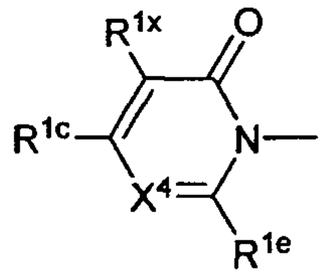
T-4



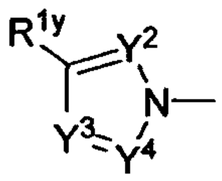
T-5



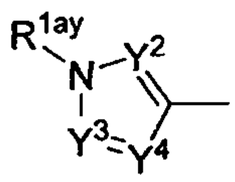
T-6



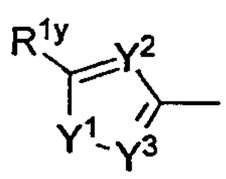
T-7



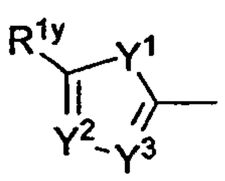
T-8



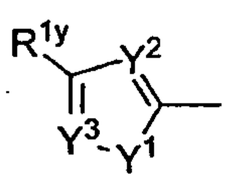
T-9



T-10



T-11



T-12

X^1 represents a nitrogen atom or CR^{1a},

X^2 represents a nitrogen atom or CR^{1b},

X^3 represents a nitrogen atom or CR^{1c},

X^4 represents a nitrogen atom or CR^{1d},

X^5 represents a nitrogen atom or CR^{1e},

R^{1x} represents a C1-C5 chain hydrocarbon group having one or more halogen atoms, OR^7, $OS(O)_2R^7$, $S(O)_mR^7$, $NR^8S(O)_2R^7$, or a halogen atom,

R^{1a}, R^{1b}, R^{1c}, R^{1d}, and R^{1e} are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group optionally having one or more halogen

atoms, a C3-C6 cycloalkyl group optionally having one or more halogen atoms, a halogen atom, or a hydrogen atom,

Y^1 represents NR^{25}, an oxygen atom or a sulfur atom,

Y^2 represents a nitrogen atom or CR^{26},

Y^3 represents a nitrogen atom or CR^{27},

Y^4 represents a nitrogen atom or CR^{28},

R^{25}, R^{26}, R^{27} and R^{28} are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a C3-C6 cycloalkyl group optionally having one or more halogen atoms, a halogen atom or a hydrogen atom,

R^{1y} represents a C1-C5 chain hydrocarbon group having one or more halogen atoms, OR^7, $OS(O)_2R^7$, $S(O)_mR^7$, $NR^8S(O)_2R^7$, a cyano group, or a halogen atom,

R^{1ay} and R^7 are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group having one or more halogen atoms,

m and v are identical to or different from each other and each is 0, 1 or 2,

R^1 represents a C1-C10 chain hydrocarbon group, a (C1-C5 alkoxy)C2-C5 alkyl group, a (C1-C5 alkylsulfanyl)C2-C5 alkyl group, a (C1-C5 alkylsulfinyl)C2-C5 alkyl group, a (C1-C5 alkylsulfonyl)C2-C5 alkyl group {the C1-C10 chain hydrocarbon group, the (C1-C5 alkoxy)C2-C5 alkyl group, the (C1-C5 alkylsulfanyl)C2-C5 alkyl group, the (C1-C5

alkylsulfinyl)C2-C5 alkyl group, and the (C1-C5 alkylsulfonyl)C2-C5 alkyl group each independently have one or more substituents selected from the group consisting of a cyano group and a halogen atom}, a (C3-C7 cycloalkyl)C1-C3 alkyl group, or a C3-C7 cycloalkyl group {the (C3-C7 cycloalkyl)C1-C3 alkyl group and the C3-C7 cycloalkyl group each independently have one or more substituents selected from the group consisting of a cyano group, a halogen atom and a C1-C6 haloalkyl group},

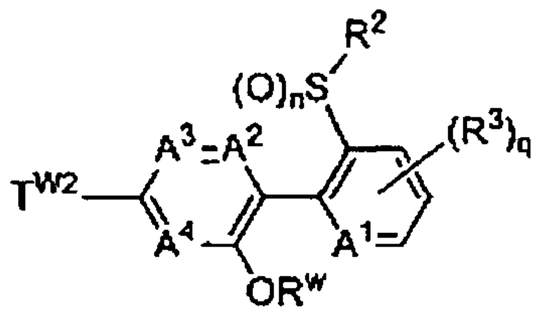
R^{30} represents a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a halogen atom, OR^{35}, $NR^{36}R^{37}$, or a hydrogen atom,

R^{18} and R^{35} are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms,

R^{8}, R^{29}, R^{36}, and R^{37} are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, or a hydrogen atom,

Group A: a group consisting of a C1-C6 alkyl group optionally having one or more halogen atoms, a C1-C6 alkoxy group optionally having one or more halogen atoms, a halogen atom, a cyano group and a nitro group.]

26. A compound represented by formula (III):



(III)

[wherein,

R^2 represents a C1-C6 alkyl group optionally having one or more halogen atoms, a cyclopropyl group or a cyclopropylmethyl group,

n is 0, 1 or 2,

A^1 represents a nitrogen atom or CR^6,

A^2 represents a nitrogen atom or CR^{4a},

a combination of A^3 and A^4 represents a combination where A^3 represents a nitrogen atom, A^4 represents a nitrogen atom or CR^{4c}, or a combination where A^3 represents CR^{4b}, and A^4 represents a nitrogen atom,

R^{4a}, R^{4b} and R^{4c} are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a nitro group, OR^{18}, $NR^{18}R^{19}$, a cyano group, an amino group, a halogen atom, or a hydrogen atom,

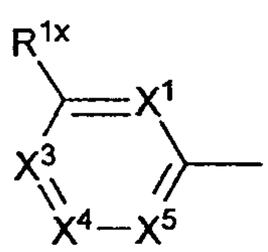
R^6 represents a hydrogen atom or a halogen atom,

R^W represents a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a benzyl group optionally having one or more substituents selected from Group A, a C2-C7 alkylcarbonyl group, a (C1-C3 alkoxy)methyl group, or a

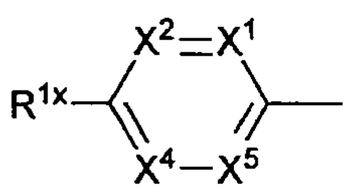
hydrogen atom,

T^{W2} represents a C1-C10 chain hydrocarbon group, a (C1-C5 alkoxy)C2-C5 alkyl group, a (C1-C5 alkylsulfanyl)C2-C5 alkyl group, a (C1-C5 alkylsulfinyl)C2-C5 alkyl group, a (C1-C5 alkylsulfonyl)C2-C5 alkyl group {the C1-C10 chain hydrocarbon group, the (C1-C5 alkoxy)C2-C5 alkyl group, the (C1-C5 alkylsulfanyl)C2-C5 alkyl group, the (C1-C5 alkylsulfinyl)C2-C5 alkyl group, and the (C1-C5 alkylsulfonyl)C2-C5 alkyl group each independently have one or more substituents selected from the group consisting of a cyano group and a halogen atom}, a (C3-C7 cycloalkyl)C1-C3 alkyl group or a C3-C7 cycloalkyl group {the (C3-C7 cycloalkyl)C1-C3 alkyl group and the C3-C7 cycloalkyl group each independently have one or more substituents selected from the group consisting of a cyano group, a halogen atom and a C1-C6 haloalkyl group}, OR^1, $S(O)_vR^1$, $OS(O)_2R^1$, CH_2OR^1, NR^1R^{29}, $C(O)R^1$, $C(O)NR^1R^{29}$, $NR^{29}C(O)R^1$, $N=CR^1R^{30}$, a group represented by formula T-1, a group represented by formula T-2, a group represented by formula T-3, a group represented by formula T-4, a group represented by formula T-5, a group represented by formula T-6, a group represented by formula T-7, a group represented by formula T-8, a group represented by formula T-9, a group represented by formula T-10, a group represented by formula T-11, or a group represented by formula T-12, a halogen atom, a C1-C6 alkoxy group, a C1-C6

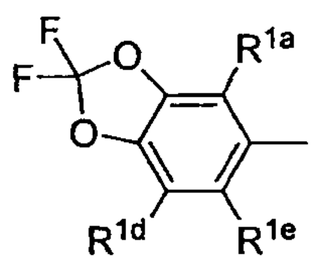
alkylsulfanyl group, a C1-C6 alkylsulfinyl group, a C1-C6 alkylsulfonyl group {the C1-C6 alkylsulfanyl group, the C1-C6 alkylsulfinyl group, and the C1-C6 alkylsulfonyl group each independently may optionally have a C3-C6 cycloalkyl group}, a C3-C6 cycloalkylsulfanyl group, a C3-C6 cycloalkylsulfinyl group, a C3-C6 cycloalkylsulfonyl group, a benzyloxy group optionally having one or more substituents selected from Group A, a C2-C7 alkylcarbonyloxy group optionally having one or more halogen atoms, a (C1-C3 alkoxy)methoxy group, or a hydroxy group,



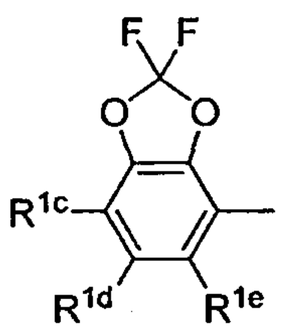
T-1



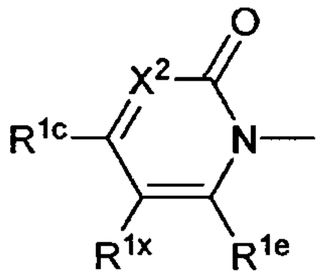
T-2



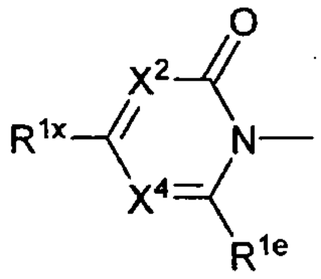
T-3



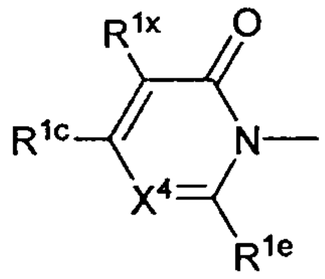
T-4



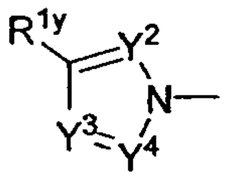
T-5



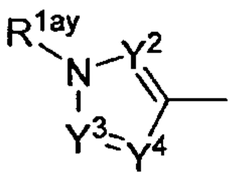
T-6



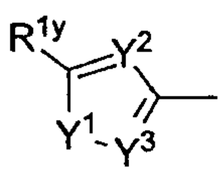
T-7



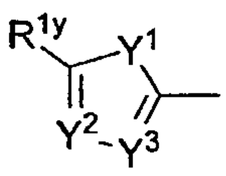
T-8



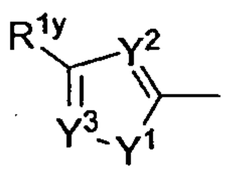
T-9



T-10



T-11



T-12

X^1 represents a nitrogen atom or CR^{1a},

X^2 represents a nitrogen atom or CR^{1b},

X^3 represents a nitrogen atom or CR^{1c},

X^4 represents a nitrogen atom or CR^{1d},

X^5 represents a nitrogen atom or CR^{1e},

R^{1x} represents a C1-C5 chain hydrocarbon group having one or more halogen atoms, OR^7, $OS(O)_2R^7$, $S(O)_mR^7$, $NR^8S(O)_2R^7$, or a halogen atom,

R^{1a}, R^{1b}, R^{1c}, R^{1d}, and R^{1e} are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a C3-C6 cycloalkyl group optionally having one or more halogen atoms, a halogen atom, or a hydrogen atom,

Y^1 represents NR^{25}, an oxygen atom or a sulfur atom,

Y^2 represents a nitrogen atom or CR^{26},

Y^3 represents a nitrogen atom or CR^{27},

Y^4 represents a nitrogen atom or CR^{28},

R^{25}, R^{26}, R^{27} and R^{28} are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a C3-C6 cycloalkyl group optionally having one or more halogen atoms, a halogen atom or a hydrogen atom,

R^{1y} represents a C1-C5 chain hydrocarbon group having one or more halogen atoms, OR^7, $OS(O)_2R^7$, $S(O)_mR^7$, $NR^8S(O)_2R^7$, a cyano group, or a halogen atom,

R^{1ay} and R^7 are identical to or different from each other

and each represents independently a C1-C6 chain hydrocarbon group having one or more halogen atoms,

m and v are identical to or different from each other and each is 0, 1 or 2,

R^1 represents a C1-C10 chain hydrocarbon group, a (C1-C5 alkoxy)C2-C5 alkyl group, a (C1-C5 alkylsulfanyl)C2-C5 alkyl group, a (C1-C5 alkylsulfinyl)C2-C5 alkyl group, a (C1-C5 alkylsulfonyl)C2-C5 alkyl group {the C1-C10 chain hydrocarbon group, the (C1-C5 alkoxy)C2-C5 alkyl group, the (C1-C5 alkylsulfanyl)C2-C5 alkyl group, the (C1-C5 alkylsulfinyl)C2-C5 alkyl group, and the (C1-C5 alkylsulfonyl)C2-C5 alkyl group each independently have one or more substituents selected from the group consisting of a cyano group and a halogen atom}, a (C3-C7 cycloalkyl)C1-C3 alkyl group, or a C3-C7 cycloalkyl group {the (C3-C7 cycloalkyl)C1-C3 alkyl group and the C3-C7 cycloalkyl group each independently have one or more substituents selected from the group consisting of a cyano group, a halogen atom and a C1-C6 haloalkyl group},

R^{30} represents a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a halogen atom, OR^{35}, $NR^{36}R^{37}$, or a hydrogen atom,

R^{18} and R^{35} are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms,

R^3 represents a C1-C6 chain hydrocarbon group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from group E, a C3-C7 cycloalkenyl group optionally having one or more substituents selected from Group J, a phenyl group optionally having one or more substituents selected from Group H, a five or six membered aromatic heterocyclic group optionally having one or more substituents selected from Group H, OR^{12}, $NR^{11}R^{12}$, $NR^{11a}R^{12a}$, $NR^{24}NR^{11}R^{12}$, $NR^{24}OR^{11}$, $NR^{11}C(O)R^{13}$, $NR^{24}NR^{11}C(O)R^{13}$, $NR^{11}C(O)OR^{14}$, $NR^{24}NR^{11}C(O)OR^{14}$, $NR^{11}C(O)NR^{15}R^{16}$, $NR^{24}NR^{11}C(O)NR^{15}R^{16}$, $N=CHNR^{15}R^{16}$, $N=S(O)_xR^{15}R^{16}$, $C(O)R^{17}$, $C(O)OR^{17}$, $C(O)NR^{15}R^{16}$, $CR^{24}=NOR^{17}$, $NR^{11}CR^{24}=NOR^{17}$, a cyano group, a nitro group, or a halogen atom,

q is 0, 1, 2 or 3, and when q is 2 or 3, a plurality of R^3 may be identical to or different from each other,

When two R^3 are adjacent to each other, said two R^3 may combined together with a carbon atom to which they are attached to form benzene ring, pyrrole ring, furan ring, thiophene ring, pyrazole ring, imidazole ring, triazole ring, oxazole ring, isoxazole ring, thiazole ring, oxadiazole ring, thiadiazole ring, pyridine ring, pyridazine ring, pyrimidine ring, or pyrazine ring {the benzene ring, the pyrrole ring, the furan ring, the thiophene ring, the pyrazole ring, the imidazole ring, the triazole ring, the oxazole ring, the

isoxazole ring, the thiazole ring, the pyridine ring, the pyridazine ring, the pyrimidine ring, and the pyrazine ring each independently may optionally have one or more substituents selected from Group H},

R^{17} represents a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a phenyl group optionally having one or more substituents selected from Group D, or a hydrogen atom,

R^{8}, R^{11}, R^{19}, R^{24}, R^{29}, R^{36}, and R^{37} are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, or a hydrogen atom,

R^{12} represents a C1-C6 chain hydrocarbon group optionally having one or more substituents selected from Group F, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group J, a C3-C7 cycloalkenyl group optionally having one or more substituents selected from Group J, a phenyl group, a six membered heterocyclic group {the phenyl group, and the six membered heterocyclic group each independently may optionally have one or more substituents selected from Group D}, a hydrogen atom, or a $S(O)_2R^{23}$,

R^{23} represents a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, or a phenyl group optionally having one or more substituents selected

from Group D,

R^{11a} and R^{12a} combine together with the nitrogen atom to which they are attached to form a three to seven membered nonaromatic heterocyclic group optionally having one or more substituents selected from group E,

R^{13} represents a hydrogen atom, a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a C3-C7 cycloalkyl group optionally having one or more halogen atoms, a (C3-C6 cycloalkyl)C1-C3 alkyl group optionally having one or more halogen atoms, a phenyl group optionally having one or more substituents selected from Group D, or a five or six membered aromatic heterocyclic group optionally having one or more substituents selected from Group D,

R^{14} represents a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a C3-C7 cycloalkyl group optionally having one or more halogen atoms, a (C3-C6 cycloalkyl)C1-C3 alkyl group optionally having one or more halogen atoms, or a phenyl C1-C3 alkyl group {the phenyl moiety in the phenyl C1-C3 alkyl group may optionally have one or more substituents selected from Group D},

R^{15} represents a C1-C6 alkyl group optionally having one or more halogen atoms, or a hydrogen atom,

R^{16} represents a C1-C6 chain hydrocarbon group optionally having one or more substituents selected from

Group F, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group J, $S(O)_2R^{23}$ or a hydrogen atom,

x is 0 or 1,

Group A: a group consisting of a C1-C6 alkyl group optionally having one or more halogen atoms, a C1-C6 alkoxy group optionally having one or more halogen atoms, a halogen atom, a cyano group and a nitro group,

Group B: a group consisting of a C1-C6 alkoxy group optionally having one or more halogen atoms, a C3-C6 alkenyloxy group optionally having one or more halogen atoms, a C3-C6 alkynyloxy group optionally having one or more halogen atoms, a C1-C6 alkylsulfanyl group optionally having one or more halogen atoms, a C1-C6 alkylsulfinyl group optionally having one or more halogen atoms, a C1-C6 alkylsulfonyl group optionally having one or more halogen atoms, a C3-C6 cycloalkyl group optionally having one or more halogen atoms, a cyano group, a hydroxy group, and a halogen atom,

Group D: a group consisting of a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a hydroxy group, a C1-C6 alkoxy group optionally having one or more halogen atoms, a C3-C6 alkenyloxy group optionally having one or more halogen atoms, a C3-C6 alkynyloxy group optionally having one or more halogen atoms, a sulfanyl group,

a C1-C6 alkylsulfanyl group optionally having one or more halogen atoms, a C1-C6 alkylsulfinyl group optionally having one or more halogen atoms, a C1-C6 alkylsulfonyl group optionally having one or more halogen atoms, an amino group, NR^9R^{10}, $C(O)R^{10}$, $OC(O)R^9$, $C(O)OR^9$, a cyano group, a nitro group, and a halogen atom,

R^9 represents a C1-C6 alkyl group optionally having one or more halogen atoms, or a C3-C6 cycloalkyl group optionally having one or more halogen atoms,

R^{10} represents a C1-C6 alkyl group optionally having one or more halogen atoms, a C3-C6 cycloalkyl group optionally having one or more halogen atoms, or a hydrogen atom,

Group E: a group consisting of a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a C1-C6 alkoxy group optionally having one or more halogen atoms, a C3-C6 alkenyloxy group optionally having one or more halogen atoms, a C3-C6 alkynyloxy group optionally having one or more halogen atoms, a halogen atom, an oxo group, a hydroxy group, a cyano group, and a nitro group;

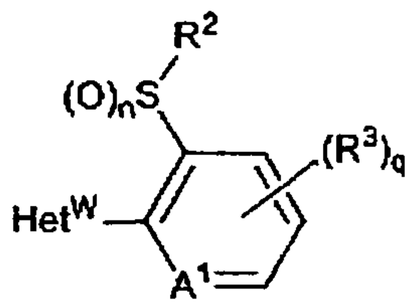
Group F: a group consisting of a C3-C6 cycloalkyl group optionally having one or more halogen atoms, a phenyl group or a six membered aromatic heterocyclic group {the phenyl group and the six membered aromatic heterocyclic group each independently may optionally have one or more substituents selected from Group D}, OR^{10}, an amino group, NR^9R^{10}, a halogen

atom, a nitro group, and a cyano group;

Group H: a group consisting of a five or six membered aromatic heterocyclic group, a C1-C6 alkyl group optionally having one or more halogen atoms, a C3-C6 cycloalkyl group optionally having one or more halogen atoms, OR^{10}, an amino group, NR^9R^{10}, $C(O)R^{10}$, $C(O)NR^9R^{10}$, $OC(O)R^9$, $OC(O)OR^9$, $NR^{10}C(O)R^9$, $NR^{10}C(O)OR^9$, $C(O)OR^{10}$, a halogen atom, a nitro group, and a cyano group.

Group J: a group consisting of a C1-C6 alkyl group optionally having one or more halogen atoms, a halogen atom, a cyano group, a triazolyl group, and $NR^{10}C(O)R^9$.

27. A compound represented by formula (IV):



(IV)

[wherein,

R^2 represents a C1-C6 alkyl group optionally having one or more halogen atoms, a cyclopropyl group or a cyclopropylmethyl group,

n is 0, 1 or 2,

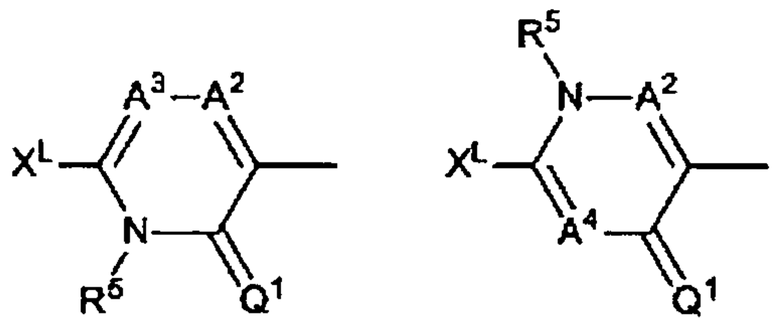
R^3 represents a C1-C6 chain hydrocarbon group optionally having one or more substituents selected from Group B, a C3-C7 cycloalkyl group optionally having one or more substituents selected from group E, a C3-C7 cycloalkenyl

group optionally having one or more substituents selected from Group J, a phenyl group optionally having one or more substituents selected from Group H, a five or six membered aromatic heterocyclic group optionally having one or more substituents selected from Group H, OR^{12}, $NR^{11}R^{12}$, $NR^{11a}R^{12a}$, $NR^{24}NR^{11}R^{12}$, $NR^{24}OR^{11}$, $NR^{11}C(O)R^{13}$, $NR^{24}NR^{11}C(O)R^{13}$, $NR^{11}C(O)OR^{14}$, $NR^{24}NR^{11}C(O)OR^{14}$, $NR^{11}C(O)NR^{15}R^{16}$, $NR^{24}NR^{11}C(O)NR^{15}R^{16}$, $N=CHNR^{15}R^{16}$, $N=S(O)_xR^{15}R^{16}$, $C(O)R^{17}$, $C(O)OR^{17}$, $C(O)NR^{15}R^{16}$, $CR^{24}=NOR^{17}$, $NR^{11}CR^{24}=NOR^{17}$, a cyano group, a nitro group, or a halogen atom,

q is 0, 1, 2 or 3, and when q is 2 or 3, a plurality of R^3 may be identical to or different from each other,

When two R^3 are adjacent to each other, said two R^3 may combined together with a carbon atom to which they are attached to form benzene ring, pyrrole ring, furan ring, thiophene ring, pyrazole ring, imidazole ring, triazole ring, oxazole ring, isoxazole ring, thiazole ring, oxadiazole ring, thiadiazole ring, pyridine ring, pyridazine ring, pyrimidine ring, or pyrazine ring {the benzene ring, the pyrrole ring, the furan ring, the thiophene ring, the pyrazole ring, the imidazole ring, the triazole ring, the oxazole ring, the isoxazole ring, the thiazole ring, the pyridine ring, the pyridazine ring, the pyrimidine ring, and the pyrazine ring each independently may optionally have one or more substituents selected from Group H},

Het^W represents a group represented by the following formula Het 3 or a group represented by the following formula Het 4:



Het3 Het4

A^1 represents a nitrogen atom or CR^6,

A^2 represents a nitrogen atom or CR^{4a},

A^3 represents a nitrogen atom or CR^{4b},

A^4 represents a nitrogen atom or CR^{4c},

Q^1 represents an oxygen atom or a sulfur atom,

R^{20} represents a C1-C6 alkyl group optionally having one or more halogen atoms, or a hydrogen atom,

R^5 represents a C1-C6 chain hydrocarbon group optionally having one or more substituents selected from group F, a C3-C6 cycloalkyl group optionally having one or more substituents selected from Group J, a phenyl group optionally having one or more substituents selected from Group H, or a five or six membered aromatic heterocyclic group optionally having one or more substituents selected from Group H,

R^{4a}, R^{4b} and R^{4c} are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group optionally one or more halogen atoms, a

nitro group, OR^{18}, $NR^{18}R^{19}$, a cyano group, an amino group, a halogen atom, or a hydrogen atom,

R^6 represents a hydrogen atom or a halogen atom,

X^L represents a halogen atom, a C1-C6 alkoxy group, a C1-C6 alkylsulfanyl group, a C1-C6 alkylsulfinyl group, a C1-C6 alkylsulfonyl group {the C1-C6 alkylsulfanyl group, the C1-C6 alkylsulfinyl group, and the C1-C6 alkylsulfonyl group each independently may optionally have a C3-C6 cycloalkyl group}, a C3-C6 cycloalkylsulfanyl group, a C3-C6 cycloalkylsulfinyl group, a C3-C6 cycloalkylsulfonyl group, a benzyloxy group optionally having one or more substituents selected from Group A, a C2-C7 alkylcarbonyloxy group optionally having one or more halogen atoms, a (C1-C3 alkoxy)methoxy group, or a hydroxy group,

R^{18} represents a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms,

R^{17} represents a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a phenyl group optionally having one or more substituents selected from Group D, or a hydrogen atom,

R^{11}, R^{19} and R^{24} are identical to or different from each other and each represents independently a C1-C6 chain hydrocarbon group optionally one or more halogen atoms, or a hydrogen atom,

R^{12} represents a C1-C6 chain hydrocarbon group

optionally having one or more substituents selected from Group F, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group J, a C3-C7 cycloalkenyl group optionally having one or more substituents selected from Group J, a phenyl group, or six membered heterocyclic group {the phenylgroup, and the six membered heterocyclic group each independently may have optionally one or more substituents selected from Group D}, a hydrogen atom, or $S(O)_2R^{23}$,

R^{23} represents a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, or a phenyl group optionally having one or more substituents selected from Group D,

R^{11a} and R^{12a} combine together with the nitrogen atom to which they are attached to form a three to seven membered nonaromatic heterocyclic group optionally having one or more substituents selected from group E,

R^{13} represents a hydrogen atom, a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a C3-C7 cycloalkyl group optionally having one or more halogen atoms, a (C3-C6 cycloalkyl)C1-C3 alkyl group optionally having one or more halogen atoms, a phenyl group optionally having one or more substituents selected from Group D, or a five or six membered aromatic heterocyclic group optionally having one or more substituents selected

from Group D,

R^{14} represents a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a C3-C7 cycloalkyl group optionally having one or more halogen atoms, a (C3-C6 cycloalkyl)C1-C3 alkyl group optionally having one or more halogen atoms, or a phenyl C1-C3 alkyl group {the phenyl moiety in the phenyl C1-C3 alkyl group may optionally have one or more substituents selected from Group D},

R^{15} represents a C1-C6 alkyl group optionally having one or more halogen atoms, or a hydrogen atom,

R^{16} represents a C1-C6 chain hydrocarbon group optionally having one or more substituents selected from Group F, a C3-C7 cycloalkyl group optionally having one or more substituents selected from Group J, $S(O)_2R^{23}$ or a hydrogen atom,

x is 0 or 1,

Group A: a group consisting of a C1-C6 alkyl group optionally having one or more halogen atoms, a C1-C6 alkoxy group optionally having one or more halogen atoms, a halogen atom, a cyano group and a nitro group,

Group B: a group consisting of a C1-C6 alkoxy group optionally having one or more halogen atoms, a C3-C6 alkenyloxy group optionally having one or more halogen atoms, a C3-C6 alkynyloxy group optionally having one or more halogen atoms, a C1-C6 alkylsulfanyl group optionally having

one or more halogen atoms, a C1-C6 alkylsulfinyl group optionally having one or more halogen atoms, a C1-C6 alkylsulfonyl group optionally having one or more halogen atoms, a C3-C6 cycloalkyl group optionally having one or more halogen atoms, a cyano group, a hydroxy group, and a halogen atom,

Group D: a group consisting of a C1-C6 chain hydrocarbon group optionally having one or more halogen atoms, a hydroxy group, a C1-C6 alkoxy group optionally having one or more halogen atoms, a C3-C6 alkenyloxy group optionally having one or more halogen atoms, a C3-C6 alkynyloxy group optionally having one or more halogen atoms, a sulfanyl group, a C1-C6 alkylsulfanyl group optionally having one or more halogen atoms, a C1-C6 alkylsulfinyl group optionally having one or more halogen atoms, a C1-C6 alkylsulfonyl group optionally having one or more halogen atoms, an amino group, NR^9R^{10}, $C(O)R^{10}$, $OC(O)R^9$, $C(O)OR^9$, a cyano group, a nitro group, and a halogen atom,

R^9 represents a C1-C6 alkyl group optionally having one or more halogen atoms, or a C3-C6 cycloalkyl group optionally having one or more halogen atoms,

R^{10} represents a C1-C6 alkyl group optionally having one or more halogen atoms, a C3-C6 cycloalkyl group optionally having one or more halogen atoms, or a hydrogen atom,

Group E: a group consisting of a C1-C6 chain hydrocarbon

group optionally having one or more halogen atoms, a C1-C6 alkoxy group optionally having one or more halogen atoms, a C3-C6 alkenyloxy group optionally having one or more halogen atoms, a C3-C6 alkynyloxy group optionally having one or more halogen atoms, a halogen atom, an oxo group, a hydroxy group, a cyano group, and a nitro group;

Group F: a group consisting of a C3-C6 cycloalkyl group optionally having one or more halogen atoms, a phenyl group or a six membered aromatic heterocyclic group {the phenyl group and the six membered aromatic heterocyclic group each independently may optionally have one or more substituents selected from Group D}, OR^{10}, an amino group, NR^9R^{10}, a halogen atom, a nitro group, and a cyano group;

Group H: a group consisting of a five or six membered aromatic heterocyclic group, a C1-C6 alkyl group optionally having one or more halogen atoms, a C3-C6 cycloalkyl group optionally having one or more halogen atoms, OR^{10}, an amino group, NR^9R^{10}, $C(O)R^{10}$, $C(O)NR^9R^{10}$, $OC(O)R^9$, $OC(O)OR^9$, $NR^{10}C(O)R^9$, $NR^{10}C(O)OR^9$, $C(O)OR^{10}$, a halogen atom, a nitro group, and a cyano group.

Group J: a group consisting of a C1-C6 alkyl group optionally having one or more halogen atoms, a halogen atom, a cyano group, a triazolyl group, and $NR^{10}C(O)R^9$].

(I)