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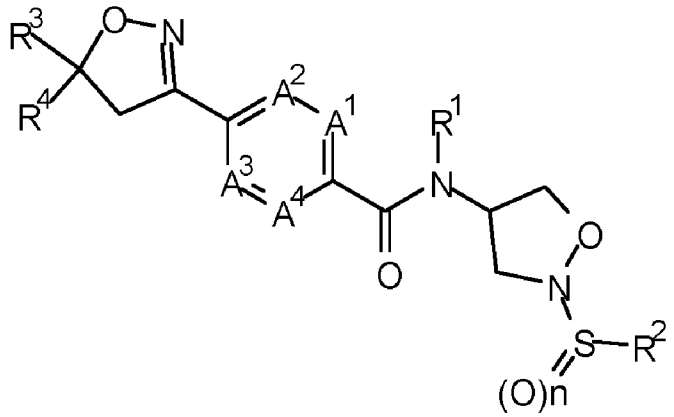
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(54) Title: ISOXAZOLINE-SUBSTITUTED BENZAMIDES AND ANALOGUES AS INSECTICIDES



(I)

(57) Abstract: The present invention relates to compounds of formula (I) wherein A^1, A^2, A^3, A^4, R^1, R^2, R^3, R^4 and n are as defined in claim 1; or a tautomer, isomer, enantiomer, salt or N-oxide thereof; to intermediates for preparing compounds of formula (I), to compositions comprising them and to methods of using them to combat and control insect, acarine, nematode and mollusc pests.

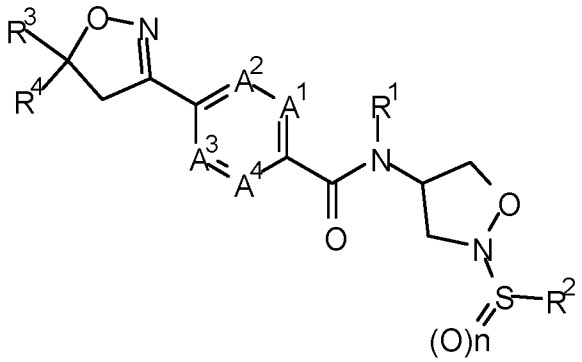
ISOXAZOLINE-SUBSTITUTED BENZAMIDES AND ANALOGUES AS INSECTICIDES

The present invention relates to certain isoxazolidine derivatives, to processes and intermediates for preparing these derivatives, to insecticidal, acaricidal, nematicidal and molluscicidal compositions comprising these derivatives and to methods of using these derivatives to control insect, acarine, nematode and mollusc pests.

Certain isoxazoline derivatives with insecticidal properties are disclosed, for example, in WO2011067272.

It has now surprisingly been found that certain isoxazolidine derivatives have highly potent insecticidal properties.

The present invention provides, in a first aspect of the invention, compounds of formula (I)



(I)

wherein

A^1, A^2, A^3 and A^4 are independently of one another C-H, C-R^5, or nitrogen;

R^1 is hydrogen, C_1-C_8alkyl, C_1-C_8alkylcarbonyl-, C_1-C_8alkoxy, C_1-C_8alkoxy-C_1-C_8alkyl or C_1-C_8alkoxycarbonyl-;

R^2 is C_1-C_8alkyl, C_1-C_8alkyl substituted by one to three R^{6a}, C_1-C_8haloalkyl, C_1-C_8haloalkyl substituted by one to three R^{6a}, C_3-C_8cycloalkyl, C_3-C_8cycloalkyl substituted by one to three R^{6b}, C_3-C_8cycloalkyl where one carbon atom is replaced by O, S, S(O) or SO_2, C_3-C_8cycloalkyl-C_1-C_8alkyl, C_3-C_8cycloalkyl-C_1-C_8alkyl where one carbon atom in the cycloalkyl group is replaced by O, S, S(O) or SO_2, C_3-C_8cycloalkyl-C_1-C_8haloalkyl, C_2-C_8alkenyl, C_2-C_8alkenyl substituted by one to three R^{6a}, C_2-C_8haloalkenyl, C_2-C_8haloalkenyl substituted by one to three R^{6a}, C_2-C_8alkynyl, C_2-C_8haloalkynyl, phenyl, phenyl substituted by one to three R^7, phenyl-C_1-C_4alkyl, phenyl-C_1-C_4alkyl wherein the phenyl moiety is substituted by one to three R^7, 5-6 membered heteroaryl, 5-6 membered heteroaryl substituted by one to three R^7, 5-6 membered heteroaryl-C_1-C_4alkyl, 5-6 membered heteroaryl-C_1-C_4alkyl wherein the heteroaryl moiety is substituted by one to three R^7, -N(R^8)(R^9), -OR^{10} or halogen;

R^3 is C_1-C_8haloalkyl;

R^4 is aryl, aryl substituted by one to three R^7, heteroaryl or heteroaryl substituted by one to three R^7;

R^5 is independently halogen, cyano, nitro, C_1-C_8alkyl, C_3-C_8cycloalkyl, C_1-C_8haloalkyl, C_2-C_8alkenyl, C_2-C_8haloalkenyl, C_2-C_8alkynyl, C_2-C_8haloalkynyl, C_1-C_8alkoxy, C_1-C_8haloalkoxy, or C_1-C_8alkoxycarbonyl-, or two R^5 on adjacent carbon atoms together form a -CH=CH-CH=CH- bridge or a -N=CH-CH=CH- bridge;

R^{6a} is independently cyano, nitro, amino, C_1-C_8alkylamino, N,N-C_1-C_8dialkylamino, hydroxy, C_1-C_8alkoxy, or C_1-C_8haloalkoxy;

R^{6b} is independently halogen, cyano, nitro, oxo, C_1-C_8alkyl, C_1-C_8haloalkyl, amino, C_1-C_8alkylamino, N,N-C_1-C_8dialkylamino, hydroxyl, C_1-C_8alkoxy, C_1-C_8haloalkoxy, phenyl, phenyl substituted by one to three R^7, 5-6 membered heteroaryl, 5-6 membered heteroaryl substituted by one to three R^7;

R^7 is independently halogen, cyano, nitro, C_1-C_8alkyl, C_1-C_8haloalkyl, C_1-C_8alkoxy,, C_1-C_8haloalkoxy;

R^8 and R^9 are independently hydrogen, cyano, cyano-C_1-C_8alkyl, C_1-C_8alkyl, C_1-C_8alkyl substituted by one to three R^{6a}, C_2-C_8alkenyl, C_2-C_8alkenyl substituted by one to three R^{6a}, C_1-C_8alkoxy, C_1-C_8haloalkoxy, C_1-C_8haloalkoxy substituted by one to three R^{6a}, C_1-C_8alkoxy substituted by one to three R^{6a},C_1-C_8haloalkyl, C_1-C_8haloalkyl substituted by one to three R^{6a}, C_3-C_8cycloalkyl, C_3-C_8cycloalkyl substituted by one to three R^{6b}, C_3-C_8cycloalkyl where one carbon atom is replaced by O, S, S(O) or SO_2, C_3-C_8cycloalkyl-C_1-C_8alkyl, C_3-C_8cycloalkyl-C_1-C_8alkyl where one carbon atom in the cycloalkyl group is replaced by O, S, S(O) or SO_2, C_3-C_8cycloalkyl-C_1-C_8haloalkyl, C_2-C_8alkenyl, C_2-C_8alkenyl substituted by one to three R^{6a}, C_2-C_8haloalkenyl, C_2-C_8haloalkenyl substituted by one to three R^{6a}, C_2-C_8alkynyl, C_2-C_8haloalkynyl, phenyl, phenyl substituted by one to three R^7, phenyl-C_1-C_4alkyl, phenyl-C_1-C_4alkyl wherein the phenyl moiety is substituted by one to three R^7, 5-6 membered heteroaryl, 5-6 membered heteroaryl substituted by one to three R^7, 5-6 membered heteroaryl-C_1-C_4alkyl, 5-6 membered heteroaryl-C_1-C_4alkyl wherein the heteroaryl moiety is substituted by one to three R^7, -S(O)R^{10}, -S(O)$_2R^{10}$, COR^{10}, COOR^{10}, or R^8 and R^9 together with the nitrogen atom can be linked through a C_3-C_8alkylene chain, a C_3-C_8alkylene chain substituted by one to three R^{6b} or a C_3-C_8alkylene chain, where one carbon atom is replaced by O, S, S(O) or SO_2;

R^{10} is hydrogen, cyano-C_1-C_8alkyl, C_1-C_8alkyl, C_1-C_8alkyl substituted by one to three R^{6a}, C_1-C_8haloalkyl, C_1-C_8haloalkyl substituted by one to three R^{6a}, C_3-C_8cycloalkyl, C_3-C_8cycloalkyl substituted by one to three R^{6b}, C_3-C_8cycloalkyl where one carbon atom is replaced by O, S, S(O) or SO_2, C_3-C_8cycloalkyl-C_1-C_8alkyl, C_3-C_8cycloalkyl-C_1-C_8alkyl where one carbon atom in the cycloalkyl group is replaced by O, S, S(O) or SO_2, C_3-C_8cycloalkyl-C_1-C_8haloalkyl, C_2-C_8alkenyl, C_2-C_8alkenyl substituted by one to three R^{6a}, C_2-C_8haloalkenyl, C_2-C_8haloalkenyl substituted by one to three R^{6a}, C_2-C_8alkynyl, C_2-C_8haloalkynyl, phenyl, phenyl substituted by one to three R^7, phenyl-C_1-C_4alkyl, phenyl-C_1-C_4alkyl wherein the phenyl moiety is substituted by one to three R^7, 5-6 membered heteroaryl, 5-6 membered heteroaryl substituted by one to three R^7, 5-6 membered heteroaryl-C_1-C_4alkyl or 5-6 membered heteroaryl-C_1-C_4alkyl wherein the heteroaryl moiety is substituted by one to three R^7;

n is 1 or 2;

or a tautomer, isomer, enantiomer, salt or *N*-oxide thereof.

Compounds of formula (I) which have at least one basic centre can form, for example, acid addition salts, for example with strong inorganic acids such as mineral acids, for example perchloric acid, sulfuric acid, nitric acid, nitrous acid, a phosphorus acid or a hydrohalic acid, with strong organic carboxylic acids, such as C_1-C_4alkanecarboxylic acids which are unsubstituted or substituted, for example by halogen, for example acetic acid, such as saturated or unsaturated dicarboxylic acids, for example oxalic acid, malonic acid, succinic acid, maleic acid, fumaric acid or phthalic acid, such as hydroxycarboxylic acids, for example ascorbic acid, lactic acid, malic acid, tartaric acid or citric acid, or such as benzoic acid, or with organic sulfonic acids, such as C_1-C_4alkane- or arylsulfonic acids which are unsubstituted or substituted, for example by halogen, for example methane- or p-toluenesulfonic acid. Compounds of formula (I) which have at least one acidic group can form, for example, salts with bases, for example mineral salts such as alkali metal or alkaline earth metal salts, for example sodium,

potassium or magnesium salts, or salts with ammonia or an organic amine, such as morpholine, piperidine, pyrrolidine, a mono-, di- or tri-lower-alkylamine, for example ethyl-, diethyl-, triethyl- or dimethylpropylamine, or a mono-, di- or trihydroxy-lower-alkylamine, for example mono-, di- or triethanolamine.

The alkyl groups occurring in the definitions of the substituents can be straight-chain or branched and are, for example, methyl, ethyl, n-propyl, isopropyl, n-butyl, sec-butyl, iso-butyl, tert-butyl, pentyl, hexyl, nonyl, decyl and their branched isomers. Alkylsulfanyl, alkylsulfinyl, alkylsulfonyl, alkoxy, alkenyl and alkynyl radicals are derived from the alkyl radicals mentioned. The alkenyl and alkynyl groups can be mono- or polyunsaturated.

Halogen is generally fluorine, chlorine, bromine or iodine. This also applies, correspondingly, to halogen in combination with other meanings, such as haloalkyl or halophenyl.

Haloalkyl groups preferably have a chain length of from 1 to 6 carbon atoms. Haloalkyl is, for example, fluoromethyl, difluoromethyl, trifluoromethyl, chloromethyl, dichloromethyl, trichloromethyl, 2,2,2-trifluoroethyl, 2-fluoroethyl, 2-chloroethyl, pentafluoroethyl, 1,1-difluoro-2,2,2-trichloroethyl, 2,2,3,3-tetrafluoroethyl and 2,2,2-trichloroethyl.

Alkoxy is, for example, methoxy, ethoxy, propoxy, i-propoxy, n-butoxy, isobutoxy, sec-butoxy and tert-butoxy and also the isomeric pentyloxy and hexyloxy radicals.

Alkoxyalkyl groups preferably have a chain length of 1 to 6 carbon atoms.

Alkoxyalkyl is, for example, methoxymethyl, methoxyethyl, ethoxymethyl, ethoxyethyl, n-propoxymethyl, n-propoxyethyl, isopropoxymethyl or isopropoxyethyl.

Alkoxycarbonyl is for example methoxycarbonyl (which is C_1alkoxycarbonyl), ethoxycarbonyl, propoxycarbonyl, isopropoxycarbonyl, n-butoxycarbonyl, tert-butoxycarbonyl, n-pentoxycarbonyl or hexoxycarbonyl.

The cycloalkyl groups preferably have from 3 to 6 ring carbon atoms, for example cyclopropyl, cyclobutyl, cyclopentyl and cyclohexyl.

Heteroaryl groups are preferably 5-6 membered heteroaryl or are 5-6 membered heteroaryl substituted by one to three R^7 , where heteroaryl groups contain 1 to 3 hetero atoms selected from the group consisting of nitrogen, oxygen and sulfur, it not being possible for each ring system to contain more than 2 oxygen atoms and more than 2 sulfur atoms. Examples of monocyclic groups include pyridyl, pyridazinyl, pyrimidinyl, pyrazinyl, pyrrolyl, pyrazolyl, imidazolyl, triazolyl (e.g. 1.2.4 triazoyl), furanyl, thiophenyl, oxazolyl, isoxazolyl, oxadiazolyl, thiazolyl, isothiazolyl, tetrazolyl and thiadiazolyl.

The compounds of formula (I) according to the invention also include hydrates which may be formed during the salt formation.

Preferred values of A^1, A^2, A^3, A^4, R^1, R^2, R^3, R^4, R^5, R^{6a}, R^{6b}, R^7, R^8, R^9, and R^{10}, in relation to each compound of the present invention, including the intermediate compounds, are, in any combination (including combinations of preferred values with the original values) as set out below.

Preferably no more than two of A^1, A^2, A^3 and A^4 are nitrogen.

Preferably A^1 is C-H or C-R^5; more preferably A^1 is C-R^5.

Preferably A^2 is C-H or C-R^5; more preferably A^2 is C-H.

Preferably A^3 is C-H or N; more preferably A^3 is C-H.

Preferably A^4 is C-H or N; more preferably A^4 is C-H.

Preferably R^1 is hydrogen, C_1-C_8alkyl, C_1-C_8alkylcarbonyl- or C_1-C_8alkoxycarbonyl-; more preferably hydrogen, methyl, ethyl, methylcarbonyl-, or methoxycarbonyl-; most preferably hydrogen, methyl or ethyl; especially hydrogen or methyl; more especially hydrogen.

Preferably R^2 is C_1-C_8alkyl, C_1-C_8alkyl substituted by one to three R^{6a}, C_2-C_8alkenyl, C_2-C_8alkynyl, C_3-C_8cycloalkyl, C_1-C_8haloalkyl, di-C_1-C_8alkylamino, -N(R^8)(R^9), aryl, aryl substituted by one to three R^{6b}, 5-6 membered heteroaryl, 5-6 membered heteroaryl substituted by one to three R^{6b} or halogen; more preferably C_1-C_4alkyl, C_1-C_4alkyl substituted by one to three R^{6a}, C_2-C_4alkenyl, C_2-C_4alkynyl, C_3-C_5cycloalkyl, C_1-C_4haloalkyl, di-C_1-C_4alkylamino, -N(R^8)(R^9), 1-3 halo-substituted phenyl, 5-6 membered heteroaryl or fluoro; most preferably methyl, ethyl, cyclopropyl, chloromethyl, fluoromethyl, difluoromethyl, fluoro, dimethylamino or methylamino.

Preferably R^3 is C_1-C_4haloalkyl; more preferably chlorodifluoromethyl or trifluoromethyl; most preferably trifluoromethyl.

Preferably R^4 is aryl, aryl substituted by one to three R^7, 5-6 membered heteroaryl or 5-6 membered heteroaryl substituted by one to three R^7; more preferably R^4 is aryl or aryl substituted by one to three R^7; most preferably phenyl or phenyl substituted by one to three R^7; even more preferably R^4 is phenyl substituted by one to three R^7; especially R^4 is 3,5-bis-(trifluoromethyl)-phenyl, 3-chloro-5-trifluoromethyl-phenyl, 3-bromo-5-trifluoromethyl-phenyl, 3,5-dibromo-phenyl, 3,5-dichloro-phenyl, 3,4-dichloro-phenyl, 3-trifluoromethyl-phenyl, 4-bromo-3,5-dichlorophenyl, 3,5-dichloro-4-fluoro-phenyl or 3,4,5-trichloro-phenyl; more especially R^4 is 3-chloro-5-trifluoromethyl-phenyl, 3,5-dichloro-phenyl, 3,5-bis-(trifluoromethyl)-phenyl, 3,5-dichloro-4-fluoro-phenyl, or 3,4,5-trichloro-phenyl.

Preferably R^5 is independently halogen, cyano, nitro, C_1-C_8alkyl, C_3-C_8cycloalkyl, C_1-C_8haloalkyl, or C_2-C_8alkenyl, or two R^5 on adjacent carbon atoms together form a -CH=CH-CH=CH- bridge; more preferably halogen, cyano, nitro, C_1-C_8alkyl, C_2-C_8 alkenyl, C_3-C_8cycloalkyl, or C_1-C_8haloalkyl; even more preferably bromo, chloro, fluoro, cyano, nitro, methyl, ethyl, trifluoromethyl, cyclopropyl, or vinyl; yet even more preferably bromo, chloro, fluoro, cyclopropyl, trifluoromethyl, vinyl, or methyl; most preferably chloro, bromo, trifluoromethyl, fluoro, or methyl.

Preferably R^{6a} independently is cyano, halogen, nitro, C_1-C_4alkoxy, or C_1-C_4haloalkoxy; more preferably fluoro, cyano, nitro, methoxy, difluoromethoxy or trifluoromethoxy.

Preferably R^{6b} independently is halogen, cyano, nitro, C_1-C_4alkyl, or C_1-C_4haloalkyl, C_1-C_4alkoxy, or C_1-C_4haloalkoxy; more preferably bromo, chloro, fluoro, cyano, nitro methyl, ethyl, trifluoromethyl, methoxy, difluoromethoxy, trifluoromethoxy; most preferably chloro, fluoro, cyano, nitro, methyl, ethyl, trifluoromethyl, methoxy, or trifluoromethoxy; especially chloro, fluoro, cyano, nitro, methyl, ethyl, trifluoromethyl, methoxy, or trifluoromethoxy; more especially bromo, fluoro, chloro, or trifluoromethyl.

Preferably R^7 is independently halogen, cyano, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy or C_1-C_4haloalkoxy; more preferably,methyl, fluoro, chloro, bromo, trifluoromethyl, trifluoromethoxy, cyano or methoxy, even more preferably R^7 is Cl, Br, F, CF_3, CH_3 or OCF_3.

Preferably R^8 and R^9 are independently hydrogen, cyano-C_1-C_8alkyl, C_1-C_8alkyl, C_3-C_8cycloalkyl, C_1-C_8haloalkyl, C_1-C_8alkoxyalkyl, C_1-C_8hydroxyalkyl, C_2-C_8alkenyl, C_2-C_8alkynyl, phenyl-C_1-C_4alkyl or phenyl-C_1-C_4alkyl wherein the phenyl moiety is substituted by one to three R^7, 5-6 membered heteoaryl-C_1-C_4alkyl or 5-6 membered heteroaryl-C_1-C_4alkyl wherein the heteroaryl moiety is substituted by one to three R^7; more preferably R^8 and R^9 are independently hydrogen, cyano-C_1-C_8alkyl-, C_1-C_8alkyl, C_3-C_8cycloalkyl, C_1-C_8alkoxyalkyl, C_1-C_8hydroxyalkyl, C_2-C_8alkenyl, C_2-C_8alkynyl, phenyl-C_1-C_4alkyl or

phenyl-C_1-C_4alkyl wherein the phenyl moiety is substituted by one to three R^7, 5-6 membered heteroaryl-C_1-C_4alkyl or 5-6 membered heteroaryl-C_1-C_4alkyl wherein the heteroaryl moiety is substituted by one to three R^7; yet even more preferably R^8 and R^9 are independently hydrogen, C_1-C_4alkyl, C_3-C_6cycloalkyl, C_1-C_4haloalkyl, C_1-C_4hydroxyalkyl, C_1-C_4alkoxy-C_1-C_4alkyl, phenyl-CH_2- or phenyl-CH_2- wherein the phenyl moiety is substituted by one to three R^7, furanyl or furanyl substituted by one to three R^7, thietanyl, oxetanyl, oxo-thietanyl, or dioxo-thietanyl; yet even more preferably R^8 and R^9 are independently hydrogen, methyl, ethyl, propyl, isopropyl, cyclopropyl, cyclobutyl, oxetanyl, thietanyl, trifluoroethyl, difluoroethyl, allyl, propargyl, cyanomethyl, benzyl, benzyl substituted by one to three R^7, or pyridine-methyl- or pyridine-methyl- substituted by one to three R^7; especially R^8 and R^9 are independently hydrogen and methyl.

Preferably each R^{10} is independently hydrogen, C_1-C_8alkyl, C_1-C_8haloalkyl or C_3-C_8cycloalkyl, more preferably hydrogen, C_1-C_4alkyl, C_1-C_4haloalkyl or C_3-C_6cycloalkyl, most preferably, hydrogen, methyl, ethyl or cyclopropyl.

Preferably n is 2.

In an embodiment E1 of formula (I), independent of other embodiments, A^1 is CR^5 and A^2, A^3 and A^4 are each CH, wherein R^5 is as defined in the first aspect of the invention.

In an embodiment E2 of formula (I), independent of other embodiments, R^1 is hydrogen, C_1-C_8alkyl, C_1-C_8alkylcarbonyl- or C_1-C_8alkoxycarbonyl-.

In an embodiment E3 of formula (I), independent of other embodiments, R^2 is C_1-C_8alkyl, C_1-C_8alkyl substituted by one to three R^{6a}, C_2-C_8alkenyl, C_2-C_8alkynyl, C_3-C_8cycloalkyl, C_1-C_8haloalkyl, di-C_1-C_8alkylamino, -N(R^8)(R^9), aryl, aryl substituted by one to three R^{6b}, 5-6 membered heteroaryl, 5-6 membered heteroaryl substituted by one to three R^{6b}, wherein R^{6a} and R^{6b} are as defined in the first aspect of the invention or halogen.

In an embodiment E4 of formula (I), independent of other embodiments, R^3 is C_1-C_4haloalkyl.

In an embodiment E5 of formula (I), independent of other embodiments, R^4 is aryl, aryl substituted by one to three R^7, 5-6 membered heteroaryl or 5-6 membered heteroaryl substituted by one to three R^7, wherein R^7 is as defined in the first aspect of the invention.

Embodiment E6 of formula (I) provides compounds of formula (I) wherein A^1 is CR^5 and A^2, A^3 and A^4 are each CH; R^1 is hydrogen, methyl, ethyl, methylcarbonyl-, or methoxycarbonyl; R^2 is C_1-C_8alkyl, C_1-C_8alkyl substituted by one to three R^{6a}, C_2-C_8alkenyl, C_2-C_8alkynyl, C_3-C_8cycloalkyl, C_1-C_8haloalkyl, di-C_1-C_8alkylamino, ~~e~~ aryl, aryl substituted by one to three R^{6b}, 5-6 membered heteroaryl, 5-6 membered heteroaryl substituted by one to three R^{6b} or fluoro; R^3 is C_1-C_4haloalkyl; R^4 is aryl or aryl substituted by one to three R^7; and n is 2; wherein R^5 is halogen or C_1-C_8alkyl, C_3-C_8cycloalkyl, C_1-C_8haloalkyl, or C_2-C_8alkenyl; R^{6a} is independently cyano, halogen, nitro, C_1-C_4alkoxy, or C_1-C_4haloalkoxy; and R^{6b} is independently halogen, cyano, nitro, C_1-C_4alkyl, or C_1-C_4haloalkyl, C_1-C_4alkoxy, or C_1-C_4haloalkoxy.

Embodiment E7 of formula (I) provides compounds of formula (I) wherein A^1 is CR^5 and A^2, A^3 and A^4 are each CH; R^1 is hydrogen, methyl, ethyl, methylcarbonyl-, or methoxycarbonyl; R^2 is C_1-C_4alkyl, C_1-C_4alkyl substituted by one to three R^{6a}, C_2-C_4alkenyl, C_2-C_4alkynyl, C_3-C_5cycloalkyl, C_1-C_4haloalkyl, di-C_1-C_4alkylamino, -NH(C_1-C_4alkyl), fluoro, phenyl, or 5-6 membered heteroaryl; R^3 is C_1-C_4haloalkyl; R^4 is aryl or aryl substituted by one to three R^7; and n is 2; wherein R^5 is halogen, cyano, nitro, C_1-C_8alkyl, C_3-C_8cycloalkyl, C_1-C_8haloalkyl, C_2-C_8alkenyl; R^{6a} is independently fluoro, cyano, nitro, methoxy,

difluoromethoxy or trifluoromethoxy; and R^7 is independently bromo, chloro, fluoro, cyano, nitro methyl, ethyl, trifluoromethyl, methoxy, difluoromethoxy, trifluoromethoxy.

Embodiment E8 of formula (I) provides compounds of formula (I) wherein A^1 is CR^5 and A^2, A^3 and A^4 are each CH; R^1 is hydrogen; R^2 is C_1-C_4alkyl, C_1-C_4alkyl substituted by one to three R^{6a}, C_2-C_4alkenyl, C_2-C_4alkynyl, C_3-C_5cycloalkyl, C_1-C_4haloalkyl, di-C_1-C_4alkylamino, -NH(C_1-C_4alkyl), fluoro, 1-3 halo-substituted phenyl, or 5-6 membered heteroaryl; R^3 is chlorodifluoromethyl or trifluoromethyl; R^4 is 3,5-bis-(trifluoromethyl)-phenyl, 3-chloro-5-trifluoromethyl-phenyl, 3-bromo-5-trifluoromethyl-phenyl, 3,5-dibromo-phenyl, 3,5-dichloro-phenyl, 3,4-dichloro-phenyl, 3-trifluoromethyl-phenyl, 4-bromo-3,5-dichlorophenyl, 3,5-dichloro-4-fluoro-phenyl or 3,4,5-trichloro-phenyl; and n is 2; wherein R^5 is bromo, chloro, fluoro, cyano, nitro, methyl, ethyl, trifluoromethyl, cyclopropyl, or vinyl; R^{6a} is independently fluoro, cyano, nitro, methoxy, difluoromethoxy or trifluoromethoxy; and R^{6b} is independently bromo, chloro, fluoro, cyano, nitro methyl, ethyl, trifluoromethyl, methoxy, difluoromethoxy, trifluoromethoxy.

Embodiment E9 of formula (I) provides compounds of formula (I) wherein A^1 is CR^5 and A^2, A^3 and A^4 are each CH; R^1 is hydrogen; R^2 is C_1-C_4alkyl, C_1-C_4alkyl substituted by one to three R^{6a}, C_2-C_4alkenyl, C_2-C_4alkynyl, C_3-C_5cycloalkyl, C_1-C_4haloalkyl, di-C_1-C_4alkylamino, -NH(C_1-C_4alkyl), fluoro or 5-6 membered heteroaryl; R^3 is chlorodifluoromethyl or trifluoromethyl; R^4 is 3,5-bis-(trifluoromethyl)-phenyl, 3-chloro-5-trifluoromethyl-phenyl, 3-bromo-5-trifluoromethyl-phenyl, 3,5-dibromo-phenyl, 3,5-dichloro-phenyl, 3,4-dichloro-phenyl, 3-trifluoromethyl-phenyl, 4-bromo-3,5-dichlorophenyl, 3,5-dichloro-4-fluoro-phenyl or 3,4,5-trichloro-phenyl; and n is 2; wherein R^5 is bromo, chloro, fluoro, cyano, nitro, methyl, ethyl, trifluoromethyl, cyclopropyl, or vinyl; R^{6a} is independently fluoro, cyano, nitro, methoxy, difluoromethoxy or trifluoromethoxy; and R^{6b} is independently bromo, chloro, fluoro, cyano, nitro methyl, ethyl, trifluoromethyl, methoxy, difluoromethoxy, trifluoromethoxy.

Embodiment E10 of formula (I) provides compounds of formula (I) wherein A^1 is CR^5 and A^2, A^3 and A^4 are each CH; R^1 is hydrogen; R^2 is methyl, ethyl, propyl, isopropyl, cyclopropyl, cyclobutyl, oxetanyl, thietanyl, chloromethyl, fluoromethyl, difluoromethyl, trifluoroethyl, difluoroethyl, allyl, propargyl, cyanomethyl, dimethylamino, methylamino or fluoro; R^3 is chlorodifluoromethyl or trifluoromethyl; R^4 is 3,5-bis-(trifluoromethyl)-phenyl, 3-chloro-5-trifluoromethyl-phenyl, 3-bromo-5-trifluoromethyl-phenyl, 3,5-dibromo-phenyl, 3,5-dichloro-phenyl, 3,4-dichloro-phenyl, 3-trifluoromethyl-phenyl, 4-bromo-3,5-dichlorophenyl, 3,5-dichloro-4-fluoro-phenyl or 3,4,5-trichloro-phenyl; and n is 2; wherein R^5 is bromo, chloro, fluoro, cyano, nitro, methyl, ethyl, trifluoromethyl, cyclopropyl, or vinyl; R^{6a} is independently fluoro, cyano, nitro, methoxy, difluoromethoxy or trifluoromethoxy; and R^{6b} is independently bromo, chloro, fluoro, cyano, nitro methyl, ethyl, trifluoromethyl, methoxy, difluoromethoxy, trifluoromethoxy.

Embodiment E11 of formula (I) provides compounds of formula (I) wherein A^2, A^3 and A^4 are each CH; R^1 is hydrogen; R^3 is chlorodifluoromethyl or trifluoromethyl; n is 2; A^1 is CR^5, wherein R^5 is chloro, bromo, trifluoromethyl, fluoro, or methyl; R^2 is methyl, ethyl, cyclopropyl, chloromethyl, fluoromethyl, difluoromethyl, iso-propyl, methylamino, dimethlyamino, fluoro, cyclobutyl, 3,3,3,-trifluoropropyl ,or 2,2,2-trifluoroethyl, or methoxyethyl; and R^4 is 3,5-bis-(trifluoromethyl)-phenyl, 3-chloro-5-trifluoromethyl-phenyl, 3-bromo-5-trifluoromethyl-phenyl, 3,5-dibromo-phenyl, 3,5-dichloro-phenyl, 3,4-dichloro-phenyl, 3-trifluoromethyl-phenyl, 4-bromo-3,5-dichlorophenyl, 3,5-dichloro-4-fluoro-phenyl or 3,4,5-trichloro-phenyl; especially R^4 is 3,5-dibromo-phenyl, 3,5-dichloro-phenyl, 3,5-bis-(trifluoromethyl)-phenyl, 4-bromo-3,5-dichlorophenyl, 3,4,5-trichloro-phenyl, 3,5-dichloro-4-fluorophenyl, pyridyl, or 3-5-substituted pyridyl wherein the substituents are selected from bromo, chloro, fluoro or trifluoro; more preferably R^4 is 3,5-

dibromo-phenyl, 3,5-dichloro-phenyl, 3,5-bis-(trifluoromethyl)-phenyl, 4-bromo-3,5-dichlorophenyl, 3,4,5-trichloro-phenyl, 3,5-dichloro-4-fluorophenyl.

Embodiment E12 of formula (I) provides compounds of formula (I) wherein A^2, A^3 and A^4 are each CH; R^1 is hydrogen; R^3 is trifluoromethyl; n is 2; A^1 is CR^5, wherein R^5 is chloro or methyl; R^2 is methyl, ethyl, cyclopropyl, methylamino, dimethlyamino, chloromethyl, fluoromethyl, difluoromethyl or fluoro; and R^4 is 3,5-bis-(trifluoromethyl)-phenyl, 3-chloro-5-trifluoromethyl-phenyl, 3-bromo-5-trifluoromethyl-phenyl, 3,5-dibromo-phenyl, 3,5-dichloro-phenyl, 3,4-dichloro-phenyl, 3-trifluoromethyl-phenyl, 4-bromo-3,5-dichlorophenyl, 3,5-dichloro-4-fluoro-phenyl or 3,4,5-trichloro-phenyl; especially R^4 is 3,5-dibromo-phenyl, 3,5-dichloro-phenyl, 3,5-bis-(trifluoromethyl)-phenyl, 4-bromo-3,5-dichlorophenyl, 3,4,5-trichloro-phenyl, 3,5-dichloro-4-fluorophenyl, pyridyl, or 3-5-substituted pyridyl wherein the substituents are selected from bromo, chloro, fluoro or trifluoro; more preferably R^4 is 3,5-dibromo-phenyl, 3,5-dichloro-phenyl, 3,5-bis-(trifluoromethyl)-phenyl, 4-bromo-3,5-dichlorophenyl, 3,4,5-trichloro-phenyl, 3,5-dichloro-4-fluorophenyl.

Embodiment E13 of formula (I) provides compounds of formula (I) wherein A^2, A^3 and A^4 are each CH; R^1 is hydrogen; R^3 is chlorodifluoromethyl or trifluoromethyl; n is 2; A^1 is CR^5, wherein R^5 is chloro, bromo, trifluoromethyl, fluoro, or methyl; R^2 is methyl, ethyl, cyclopropyl, methylamino, dimethlyamino, chloromethyl, fluoromethyl, difluoromethyl or fluoro; and R^4 is phenyl, pyridyl, mono-, di- or tri-substituted phenyl where the substituents are independently selected from chloro, bromo, fluoro, or trifluoromethyl, or mono- or di-substituted pyridyl where the substituents are independently selected from chloro, bromo, fluoro, or trifluoromethyl.

Embodiment E14 of formula (I) provides compounds of formula (I) wherein A^2, A^3 and A^4 are each CH; R^1 is hydrogen; R^3 is trifluoromethyl; n is 2; A^1 is CR^5, wherein R^5 is chloro or methyl; R^2 is methyl, ethyl, cyclopropyl, methylamino, dimethlyamino, chloromethyl, fluoromethyl, difluoromethyl or fluoro; and R^4 is 3,5-dichloro-4-fluorophenyl, 3,4,5-trichloro-phenyl, 3-bromo-5-trifluoromethyl-phenyl, 3-chloro-5-trifluoromethyl-phenyl.

Embodiment E15 of formula (I) provides compounds of formula (I) wherein A^2, A^3 and A^4 are each CH; R^1 is hydrogen; R^3 is chlorodifluoromethyl or trifluoromethyl; n is 2; A^1 is CR^5, wherein R^5 is chloro; R^2 is methyl, ethyl, cyclopropyl, chloromethyl, fluoromethyl, difluoromethyl, iso-propyl, methylamino, dimethlyamino, fluoro, cyclobutyl, 3,3,3,-trifluoropropyl ,or 2,2,2-trifluoroethyl, or methoxyethyl; and R^4 is 3,5-bis-(trifluoromethyl)-phenyl, 3-chloro-5-trifluoromethyl-phenyl, 3-bromo-5-trifluoromethyl-phenyl, 3,5-dibromo-phenyl, 3,5-dichloro-phenyl, 3,4-dichloro-phenyl, 3-trifluoromethyl-phenyl, 4-bromo-3,5-dichlorophenyl, 3,5-dichloro-4-fluoro-phenyl or 3,4,5-trichloro-phenyl; especially R^4 is 3,5-dibromo-phenyl, 3,5-dichloro-phenyl, 3,5-bis-(trifluoromethyl)-phenyl, 4-bromo-3,5-dichlorophenyl, 3,4,5-trichloro-phenyl, 3,5-dichloro-4-fluorophenyl, pyridyl, or 3-5-substituted pyridyl wherein the substituents are selected from bromo, chloro, fluoro or trifluoro; more preferably R^4 is 3,5-dibromo-phenyl, 3,5-dichloro-phenyl, 3,5-bis-(trifluoromethyl)-phenyl, 4-bromo-3,5-dichlorophenyl, 3,4,5-trichloro-phenyl, 3,5-dichloro-4-fluorophenyl.

Embodiment E16 of formula (I) provides compounds of formula (I) wherein A^2, A^3 and A^4 are each CH; R^1 is hydrogen; R^3 is trifluoromethyl; n is 2; A^1 is CR^5, wherein R^5 is chloro; R^2 is methyl, ethyl, cyclopropyl, methylamino, dimethlyamino, chloromethyl, fluoromethyl, difluoromethyl or fluoro; and R^4 is 3,5-bis-(trifluoromethyl)-phenyl, 3-chloro-5-trifluoromethyl-phenyl, 3-bromo-5-trifluoromethyl-phenyl, 3,5-dibromo-phenyl, 3,5-dichloro-phenyl, 3,4-dichloro-phenyl, 3-trifluoromethyl-phenyl, 4-bromo-3,5-dichlorophenyl, 3,5-dichloro-4-fluoro-phenyl or 3,4,5-trichloro-phenyl; especially R^4 is 3,5-dibromo-phenyl, 3,5-dichloro-phenyl, 3,5-bis-(trifluoromethyl)-phenyl, 4-bromo-3,5-dichlorophenyl, 3,4,5-trichloro-phenyl,

3,5-dichloro-4-fluorophenyl, pyridyl, or 3-5-substituted pyridyl wherein the substituents are selected from bromo, chloro, fluoro or trifluoro; more preferably R^4 is 3,5-dibromo-phenyl, 3,5-dichloro-phenyl, 3,5-bis-(trifluoromethyl)-phenyl, 4-bromo-3,5-dichlorophenyl, 3,4,5-trichloro-phenyl, 3,5-dichloro-4-fluorophenyl.

Embodiment E17 of formula (I) provides compounds of formula (I) wherein A^2, A^3 and A^4 are each CH; R^1 is hydrogen; R^3 is chlorodifluoromethyl or trifluoromethyl; n is 2; A^1 is CR^5, wherein R^5 is chloro; R^2 is methyl, ethyl, cyclopropyl, methylamino, dimethlyamino, chloromethyl, fluoromethyl, difluoromethyl or fluoro; and R^4 is phenyl, pyridyl, mono-, di- or tri-substituted phenyl where the substituents are independently selected from chloro, bromo, fluoro, or trifluoromethyl, or mono- or di-substituted pyridyl where the substituents are independently selected from chloro, bromo, fluoro, or trifluoromethyl.

Embodiment E18 of formula (I) provides compounds of formula (I) wherein A^2, A^3 and A^4 are each CH; R^1 is hydrogen; R^3 is trifluoromethyl; n is 2; A^1 is CR^5, wherein R^5 is chloro; R^2 is methyl, ethyl, cyclopropyl, methylamino, dimethlyamino, chloromethyl, fluoromethyl, difluoromethyl or fluoro; and R^4 is 3,5-dichloro-4-fluorophenyl, 3,4,5-trichloro-phenyl, 3-bromo-5-trifluoromethyl-phenyl, 3-chloro-5-trifluoromethyl-phenyl.

Embodiment E19 of formula (I) provides compounds of formula (I) wherein A^2, A^3 and A^4 are each CH; R^1 is hydrogen; R^3 is chlorodifluoromethyl or trifluoromethyl; n is 2; A^1 is CR^5, wherein R^5 is bromo; R^2 is methyl, ethyl, cyclopropyl, chloromethyl, fluoromethyl, difluoromethyl, iso-propyl, methylamino, dimethlyamino, fluoro, cyclobutyl, 3,3,3,-trifluoropropyl ,or 2,2,2-trifluoroethyl, or methoxyethyl; and R^4 is 3,5-bis-(trifluoromethyl)-phenyl, 3-chloro-5-trifluoromethyl-phenyl, 3-bromo-5-trifluoromethyl-phenyl, 3,5-dibromo-phenyl, 3,5-dichloro-phenyl, 3,4-dichloro-phenyl, 3-trifluoromethyl-phenyl, 4-bromo-3,5-dichlorophenyl, 3,5-dichloro-4-fluoro-phenyl or 3,4,5-trichloro-phenyl; especially R^4 is 3,5-dibromo-phenyl, 3,5-dichloro-phenyl, 3,5-bis-(trifluoromethyl)-phenyl, 4-bromo-3,5-dichlorophenyl, 3,4,5-trichloro-phenyl, 3,5-dichloro-4-fluorophenyl, pyridyl, or 3-5-substituted pyridyl wherein the substituents are selected from bromo, chloro, fluoro or trifluoro; more preferably R^4 is 3,5-dibromo-phenyl, 3,5-dichloro-phenyl, 3,5-bis-(trifluoromethyl)-phenyl, 4-bromo-3,5-dichlorophenyl, 3,4,5-trichloro-phenyl, 3,5-dichloro-4-fluorophenyl.

Embodiment E20 of formula (I) provides compounds of formula (I) wherein A^2, A^3 and A^4 are each CH; R^1 is hydrogen; R^3 is trifluoromethyl; n is 2; A^1 is CR^5, wherein R^5 is bromo; R^2 is methyl, ethyl, cyclopropyl, methylamino, dimethlyamino, chloromethyl, fluoromethyl, difluoromethyl or fluoro; and R^4 is 3,5-bis-(trifluoromethyl)-phenyl, 3-chloro-5-trifluoromethyl-phenyl, 3-bromo-5-trifluoromethyl-phenyl, 3,5-dibromo-phenyl, 3,5-dichloro-phenyl, 3,4-dichloro-phenyl, 3-trifluoromethyl-phenyl, 4-bromo-3,5-dichlorophenyl, 3,5-dichloro-4-fluoro-phenyl or 3,4,5-trichloro-phenyl; especially R^4 is 3,5-dibromo-phenyl, 3,5-dichloro-phenyl, 3,5-bis-(trifluoromethyl)-phenyl, 4-bromo-3,5-dichlorophenyl, 3,4,5-trichloro-phenyl, 3,5-dichloro-4-fluorophenyl, pyridyl, or 3-5-substituted pyridyl wherein the substituents are selected from bromo, chloro, fluoro or trifluoro; more preferably R^4 is 3,5-dibromo-phenyl, 3,5-dichloro-phenyl, 3,5-bis-(trifluoromethyl)-phenyl, 4-bromo-3,5-dichlorophenyl, 3,4,5-trichloro-phenyl, 3,5-dichloro-4-fluorophenyl.

Embodiment E21 of formula (I) provides compounds of formula (I) wherein A^2, A^3 and A^4 are each CH; R^1 is hydrogen; R^3 is chlorodifluoromethyl or trifluoromethyl; n is 2; A^1 is CR^5, wherein R^5 is bromo; R^2 is methyl, ethyl, cyclopropyl, methylamino, dimethlyamino, chloromethyl, fluoromethyl, difluoromethyl or fluoro; and R^4 is phenyl, pyridyl, mono-, di- or tri-substituted phenyl where the substituents are independently selected from chloro, bromo, fluoro, or trifluoromethyl, or mono- or di-substituted pyridyl where the substituents are independently selected from chloro, bromo, fluoro, or trifluoromethyl.

Embodiment E22 of formula (I) provides compounds of formula (I) wherein A^2, A^3 and A^4 are each CH; R^1 is hydrogen; R^3 is trifluoromethyl; n is 2; A^1 is CR^5, wherein R^5 is bromo; R^2 is methyl, ethyl, cyclopropyl, methylamino, dimethlyamino, chloromethyl, fluoromethyl, difluoromethyl or fluoro; and R^4 is 3,5-dichloro-4-fluorophenyl, 3,4,5-trichloro-phenyl, 3-bromo-5-trifluoromethyl-phenyl, 3-chloro-5-trifluoromethyl-phenyl.

Embodiment E23 of formula (I) provides compounds of formula (I) wherein A^2, A^3 and A^4 are each CH; R^1 is hydrogen; R^3 is chlorodifluoromethyl or trifluoromethyl; n is 2; A^1 is CR^5, wherein R^5 is methyl; R^2 is methyl, ethyl, cyclopropyl, chloromethyl, fluoromethyl, difluoromethyl, iso-propyl, methylamino, dimethlyamino, fluoro, cyclobutyl, 3,3,3,-trifluoropropyl ,or 2,2,2-trifluoroethyl, or methoxyethyl; and R^4 is 3,5-bis-(trifluoromethyl)-phenyl, 3-chloro-5-trifluoromethyl-phenyl, 3-bromo-5-trifluoromethyl-phenyl, 3,5-dibromo-phenyl, 3,5-dichloro-phenyl, 3,4-dichloro-phenyl, 3-trifluoromethyl-phenyl, 4-bromo-3,5-dichlorophenyl, 3,5-dichloro-4-fluoro-phenyl or 3,4,5-trichloro-phenyl; especially R^4 is 3,5-dibromo-phenyl, 3,5-dichloro-phenyl, 3,5-bis-(trifluoromethyl)-phenyl, 4-bromo-3,5-dichlorophenyl, 3,4,5-trichloro-phenyl, 3,5-dichloro-4-fluorophenyl, pyridyl, or 3-5-substituted pyridyl wherein the substituents are selected from bromo, chloro, fluoro or trifluoro; more preferably R^4 is 3,5-dibromo-phenyl, 3,5-dichloro-phenyl, 3,5-bis-(trifluoromethyl)-phenyl, 4-bromo-3,5-dichlorophenyl, 3,4,5-trichloro-phenyl, 3,5-dichloro-4-fluorophenyl.

Embodiment E24 of formula (I) provides compounds of formula (I) wherein A^2, A^3 and A^4 are each CH; R^1 is hydrogen; R^3 is trifluoromethyl; n is 2; A^1 is CR^5, wherein R^5 is methyl; R^2 is methyl, ethyl, cyclopropyl, methylamino, dimethlyamino, chloromethyl, fluoromethyl, difluoromethyl or fluoro; and R^4 is 3,5-bis-(trifluoromethyl)-phenyl, 3-chloro-5-trifluoromethyl-phenyl, 3-bromo-5-trifluoromethyl-phenyl, 3,5-dibromo-phenyl, 3,5-dichloro-phenyl, 3,4-dichloro-phenyl, 3-trifluoromethyl-phenyl, 4-bromo-3,5-dichlorophenyl, 3,5-dichloro-4-fluoro-phenyl or 3,4,5-trichloro-phenyl; especially R^4 is 3,5-dibromo-phenyl, 3,5-dichloro-phenyl, 3,5-bis-(trifluoromethyl)-phenyl, 4-bromo-3,5-dichlorophenyl, 3,4,5-trichloro-phenyl, 3,5-dichloro-4-fluorophenyl, pyridyl, or 3-5-substituted pyridyl wherein the substituents are selected from bromo, chloro, fluoro or trifluoro; more preferably R^4 is 3,5-dibromo-phenyl, 3,5-dichloro-phenyl, 3,5-bis-(trifluoromethyl)-phenyl, 4-bromo-3,5-dichlorophenyl, 3,4,5-trichloro-phenyl, 3,5-dichloro-4-fluorophenyl.

Embodiment E25 of formula (I) provides compounds of formula (I) wherein A^2, A^3 and A^4 are each CH; R^1 is hydrogen; R^3 is chlorodifluoromethyl or trifluoromethyl; n is 2; A^1 is CR^5, wherein R^5 is methyl; R^2 is methyl, ethyl, cyclopropyl, methylamino, dimethlyamino, chloromethyl, fluoromethyl, difluoromethyl or fluoro; and R^4 is phenyl, pyridyl, mono-, di- or tri-substituted phenyl where the substituents are independently selected from chloro, bromo, fluoro, or trifluoromethyl, or mono- or di-substituted pyridyl where the substituents are independently selected from chloro, bromo, fluoro, or trifluoromethyl.

Embodiment E26 of formula (I) provides compounds of formula (I) wherein A^2, A^3 and A^4 are each CH; R^1 is hydrogen; R^3 is trifluoromethyl; n is 2; A^1 is CR^5, wherein R^5 is methyl; R^2 is methyl, ethyl, cyclopropyl, methylamino, dimethlyamino, chloromethyl, fluoromethyl, difluoromethyl or fluoro; and R^4 is 3,5-dichloro-4-fluorophenyl, 3,4,5-trichloro-phenyl, 3-bromo-5-trifluoromethyl-phenyl, 3-chloro-5-trifluoromethyl-phenyl.

Embodiment E27 of formula (I) provides compounds of formula (I) wherein A^2, A^3 and A^4 are each CH; R^1 is hydrogen; R^3 is chlorodifluoromethyl or trifluoromethyl; n is 2; A^1 is CR^5, wherein R^5 is trifluoromethyl; R^2 is methyl, ethyl, cyclopropyl, chloromethyl, fluoromethyl, difluoromethyl, iso-propyl, methylamino, dimethlyamino, fluoro, cyclobutyl, 3,3,3,-trifluoropropyl ,or 2,2,2-trifluoroethyl, or methoxyethyl; and R^4 is 3,5-bis-(trifluoromethyl)-phenyl, 3-chloro-5-trifluoromethyl-phenyl, 3-bromo-5-

trifluoromethyl-phenyl, 3,5-dibromo-phenyl, 3,5-dichloro-phenyl, 3,4-dichloro-phenyl, 3-trifluoromethyl-phenyl, 4-bromo-3,5-dichlorophenyl, 3,5-dichloro-4-fluoro-phenyl or 3,4,5-trichloro-phenyl; especially R^4 is 3,5-dibromo-phenyl, 3,5-dichloro-phenyl, 3,5-bis-(trifluoromethyl)-phenyl, 4-bromo-3,5-dichlorophenyl, 3,4,5-trichloro-phenyl, 3,5-dichloro-4-fluorophenyl, pyridyl, or 3-5-substituted pyridyl wherein the substituents are selected from bromo, chloro, fluoro or trifluoro; more preferably R^4 is 3,5-dibromo-phenyl, 3,5-dichloro-phenyl, 3,5-bis-(trifluoromethyl)-phenyl, 4-bromo-3,5-dichlorophenyl, 3,4,5-trichloro-phenyl, 3,5-dichloro-4-fluorophenyl.

Embodiment E28 of formula (I) provides compounds of formula (I) wherein A^2, A^3 and A^4 are each CH; R^1 is hydrogen; R^3 is trifluoromethyl; n is 2; A^1 is CR^5, wherein R^5 is trifluoromethyl; R^2 is methyl, ethyl, cyclopropyl, methylamino, dimethlyamino, chloromethyl, fluoromethyl, difluoromethyl or fluoro; and R^4 is 3,5-bis-(trifluoromethyl)-phenyl, 3-chloro-5-trifluoromethyl-phenyl, 3-bromo-5-trifluoromethyl-phenyl, 3,5-dibromo-phenyl, 3,5-dichloro-phenyl, 3,4-dichloro-phenyl, 3-trifluoromethyl-phenyl, 4-bromo-3,5-dichlorophenyl, 3,5-dichloro-4-fluoro-phenyl or 3,4,5-trichloro-phenyl; especially R^4 is 3,5-dibromo-phenyl, 3,5-dichloro-phenyl, 3,5-bis-(trifluoromethyl)-phenyl, 4-bromo-3,5-dichlorophenyl, 3,4,5-trichloro-phenyl, 3,5-dichloro-4-fluorophenyl, pyridyl, or 3-5-substituted pyridyl wherein the substituents are selected from bromo, chloro, fluoro or trifluoro; more preferably R^4 is 3,5-dibromo-phenyl, 3,5-dichloro-phenyl, 3,5-bis-(trifluoromethyl)-phenyl, 4-bromo-3,5-dichlorophenyl, 3,4,5-trichloro-phenyl, 3,5-dichloro-4-fluorophenyl.

Embodiment E29 of formula (I) provides compounds of formula (I) wherein A^2, A^3 and A^4 are each CH; R^1 is hydrogen; R^3 is chlorodifluoromethyl or trifluoromethyl; n is 2; A^1 is CR^5, wherein R^5 is trifluoromethyl; R^2 is methyl, ethyl, cyclopropyl, methylamino, dimethlyamino, chloromethyl, fluoromethyl, difluoromethyl or fluoro; and R^4 is phenyl, pyridyl, mono-, di- or tri-substituted phenyl where the substituents are independently selected from chloro, bromo, fluoro, or trifluoromethyl, or mono- or di-substituted pyridyl where the substituents are independently selected from chloro, bromo, fluoro, or trifluoromethyl.

Embodiment E30 of formula (I) provides compounds of formula (I) wherein A^2, A^3 and A^4 are each CH; R^1 is hydrogen; R^3 is trifluoromethyl; n is 2; A^1 is CR^5, wherein R^5 is trifluoromethyl; R^2 is methyl, ethyl, cyclopropyl, methylamino, dimethlyamino, chloromethyl, fluoromethyl, difluoromethyl or fluoro; and R^4 is 3,5-dichloro-4-fluorophenyl, 3,4,5-trichloro-phenyl, 3-bromo-5-trifluoromethyl-phenyl, 3-chloro-5-trifluoromethyl-phenyl.

One preferred embodiment of formula (I) provides compounds of formula (I) wherein

A^1, A^2, A^3 and A^4 are independently of one another C-H, C-R^5, or nitrogen;

R^1 is hydrogen;

R^2 is C_1-C_8alkyl or C_1-C_8alkyl substituted by one to three R^{6a}, C_1-C_8haloalkyl or C_1-C_8haloalkyl substituted by one to three R^{6a}, C_3-C_8cycloalkyl or C_3-C_8cycloalkyl substituted by one to three R^{6b}, phenyl, phenyl substituted by one to three R^7, phenyl-C_1-C_4alkyl, phenyl-C_1-C_4alkyl wherein the phenyl moiety is substituted by one to three R^7, 5-6 membered heteroaryl, 5-6 membered heteroaryl substituted by one to three R^7, -N(R^8)(R^9) or fluoro;

R^3 is C_1-C_8haloalkyl;

R^4 is phenyl or phenyl substituted by one to three R^7;

R^5 is independently halogen, cyano, nitro, C_1-C_8alkyl, C_3-C_8cycloalkyl, C_1-C_8haloalkyl, C_2-C_8alkenyl;

R^{6a} is independently C_1-C_8alkoxy, or C_1-C_8haloalkoxy;

R^{6b} is independently oxo, amino, C_1-C_8alkylamino, N,N-C_1-C_8dialkylamino, C_1-C_8alkoxy, C_1-C_8haloalkoxy, phenyl, phenyl substituted by one to three R^7, 5-6 membered heteroaryl or 5-6 membered heteroaryl substituted by one to three R^7;

R^7 is independently halogen, cyano, C_1-C_8alkyl, C_1-C_8haloalkyl, C_1-C_8alkoxy, or C_1-C_8haloalkoxy;

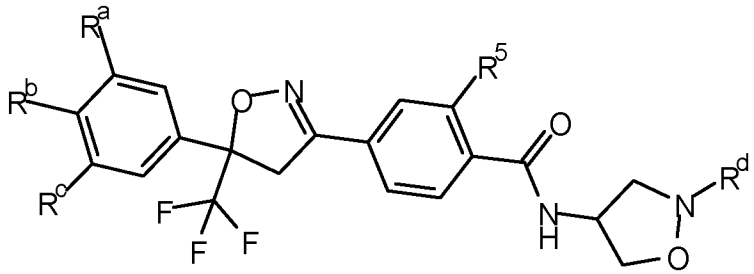
R^8 and R^9 are independently hydrogen, cyano-C_1-C_8alkyl, C_1-C_8alkyl, C_1-C_8alkyl substituted by one to three R^{6a}, C_2-C_8alkenyl or C_2-C_8alkenyl substituted by one to three R^{6a}, phenyl-C_1-C_4alkyl, phenyl-C_1-C_4alkyl wherein the phenyl moiety is substituted by one to three R^7, -$S(O)_2R^{10}$;

R^{10} is hydrogen, cyano-C_1-C_8alkyl, C_1-C_8alkyl or C_1-C_8alkyl substituted by one to three R^{6a}, phenyl, phenyl substituted by one to three R^7, 5-6 membered heteroaryl, 5-6 membered heteroaryl substituted by one to three R^7;

n is 2;

or a tautomer, isomer, enantiomer, salt or *N*-oxide thereof.

Equally especially preferred compounds of formula (I) are represented by the compounds of formula (Ib)



(Ib)

wherein

R^a is hydrogen, halogen, cyano, C_1-C_8alkyl, C_1-C_8haloalkyl, or C_1-C_8haloalkoxy;

R^b is hydrogen, halogen, cyano, C_1-C_8alkyl, C_1-C_8haloalkyl, or C_1-C_8haloalkoxy;

R^c is hydrogen, halogen, cyano, C_1-C_8alkyl, C_1-C_8haloalkyl, or C_1-C_8haloalkoxy;

R^5 is halogen, cyano, C_1-C_8alkyl, C_3-C_8cycloalkyl, C_1-C_8haloalkyl, C_2-C_8alkenyl;

R^d is $S(O)_2$-R^2;

R^2 is C_1-C_8alkyl or C_1-C_8alkyl substituted by one to three R^{6a}, C_1-C_8haloalkyl or C_1-C_8haloalkyl substituted by one to three R^{6a}, C_3-C_8cycloalkyl or C_3-C_8cycloalkyl substituted by one to three R^{6b}, phenyl, phenyl substituted by one to three R^7, phenyl-C_1-C_4alkyl, phenyl-C_1-C_4alkyl wherein the phenyl moiety is substituted by one to three R^7, 5-6 membered heteroaryl, 5-6 membered heteroaryl substituted by one to three R^7, -$N(R^8)(R^9)$, halogen;

R^5 is independently halogen, cyano, nitro, C_1-C_8alkyl, C_3-C_8cycloalkyl, C_1-C_8haloalkyl, C_2-C_8alkenyl;

R^{6a} is independently C_1-C_8alkoxy, or C_1-C_8haloalkoxy;

R^{6b} is independently oxo, amino, C_1-C_8alkylamino, N,N-C_1-C_8dialkylamino, C_1-C_8alkoxy, C_1-C_8haloalkoxy, phenyl, phenyl substituted by one to three R^7, 5-6 membered heteroaryl or 5-6 membered heteroaryl substituted by one to three R^7;

R^7 is independently halogen, cyano, C_1-C_8alkyl, C_1-C_8haloalkyl, C_1-C_8alkoxy, or C_1-C_8haloalkoxy;

R^8 and R^9 are independently hydrogen, cyano-C_1-C_8alkyl, C_1-C_8alkyl, C_1-C_8alkyl substituted by one to three R^{6a}, C_2-C_8alkenyl or C_2-C_8alkenyl substituted by one to three R^{6a}, phenyl-C_1-C_4alkyl, phenyl-C_1-C_4alkyl wherein the phenyl moiety is substituted by one to three R^7, -$S(O)_2R^{10}$;

R^{10} is hydrogen, cyano-C_1-C_8alkyl, C_1-C_8alkyl or C_1-C_8alkyl substituted by one to three R^{6a}, phenyl, phenyl substituted by one to three R^7, 5-6 membered heteroaryl, 5-6 membered heteroaryl substituted by one to three R^7. Preferably at least one of the R^a, R^b and R^c is not hydrogen.

More preferably

R^a is hydrogen, halogen, cyano, C_1-C_8alkyl, C_1-C_8haloalkyl, or C_1-C_8haloalkoxy;

R^b is hydrogen, halogen, cyano, C_1-C_8alkyl, C_1-C_8haloalkyl, or C_1-C_8haloalkoxy;

R^c is hydrogen, halogen, cyano, C_1-C_8alkyl, C_1-C_8haloalkyl, or C_1-C_8haloalkoxy;

R^5 is halogen, cyano, C_1-C_8alkyl, C_3-C_8cycloalkyl, C_1-C_8haloalkyl, C_2-C_8alkenyl;

R^d is SO_2-CH_3, SO_2-4-chlorophenyl, SO_2-propyl, SO_2-CH_2Cl, SO_2-CH_2F, SO_2-CHF_2, SO_2-cyclopropyl, SO_2-CH_2CH_2-Cl, SO_2-CH_2CF_3, SO_2-2-thienyl, SO_2-$N(CH_3)_2$, SO_2-$CH_2CH_2CF_3$, SO_2-cyclobutyl, SO_2-2-propyl, SO_2-CH_2CH_2-O-CH_3, $SO_2CH_2CH_3$, SO_2F, SO_2-NH_2, SO_2-$NH(CH_3)$, SO_2-$N(CH_3)(CH_2CH_3)$, SO_2-$N(CH_3)(C(=O)CH_3)$, SO_2-$N(CH_3)C(=O)N(CH_3)_2$, SO_2-$N(CH_3)C(=O)OCH_2CH_3$, SO_2-$N(CH_3)C(=O)OCH_3$, SO_2-$N(CH_3)C(=O)$(3-pyridyl), SO_2-$N(CH_3)SO_2N(CH_3)_2$, SO_2-$N(CH_3)C(=O)Ph$, SO_2-$N(CH_3)CN$, SO_2-$N(CH_3)CH_2CHCH_2$, SO_2-$N(CH_3)CH_2COCH_2$, SO_2-$N(CH_3)CH_2CH_2CH_3$, SO_2-$N(CH_3)CH_2CH_2CH_2CH_3$, SO_2-$N(CH_3)CH_2Ph$, SO_2-$N(CH_3)CH_2CN$, SO_2-$N(CH_3)CH_2CO2CH_2CH_3$, SO_2-$N(CH_3)CH_2CH_2OCH_3$, SO_2-$N(CH_2CH_3)CO2C(CH_3)_3$, SO_2-$N(CH_3)SO_2CH_3$, SO_2-$NHCH_2CH_3$, SO_2-$N(CH_3)CH_2OCH_3$, SO_2-$NHC(CH_3)_3$, SO_2-$N(CH_2CH_3)2$, SO_2-$N(CH_2)_4$, SO_2-$N(CH_3)C(CH_3)_3$, SO_2-$NHCH(CH_3)_2$, SO_2-$NHC(=O)CH_3$, SO_2-$NHSO_2CH_3$, SO_2-$N(CH_3)CH(CH_3)_2$, SO_2-$N(CH_2CH_3)CH(CH_3)_2$ or SO_2-$NHCH_2CHCH_2$. Preferably at least one of the R^a, R^b and R^c is not hydrogen. More preferably at least two of the R^a, R^b and R^c are not hydrogen.

Equally more preferably

R^a is H, Cl, Br, F, CF_3, CH_3 or OCF_3;

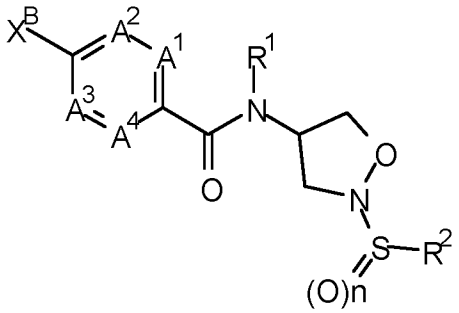
R^b is H, Cl, Br, F, CF_3, CH_3 or OCF_3;

R^c is H, Cl, Br, F, CF_3, CH_3 or OCF_3;

R^5 is CH_3, Cl, Br, CN, cyclopropyl, CF_3, $CHCH_2$;

R^d is SO_2-CH_3, SO_2-4-chlorophenyl, SO_2-propyl, SO_2-CH_2Cl, SO_2-CH_2F, SO_2-CHF_2, SO2-cyclopropyl, SO_2-CH_2CH_2-Cl, SO_2-CH_2CF_3, SO_2-2-thienyl, SO_2-$N(CH_3)_2$, SO_2-$CH_2CH_2CF_3$, SO_2-cyclobutyl, SO_2-2-propyl, SO_2-CH_2CH_2-O-CH_3, $SO_2CH_2CH_3$, SO_2F, SO_2-NH_2, SO_2-$NH(CH_3)$, SO_2-$N(CH_3)(CH_2CH_3)$, SO_2-$N(CH_3)(C(=O)CH_3)$, SO_2-$N(CH_3)C(=O)N(CH_3)_2$, SO_2-$N(CH_3)C(=O)OCH_2CH_3$, SO_2-$N(CH_3)C(=O)OCH_3$, SO_2-$N(CH_3)C(=O)$(3-pyridyl), SO_2-$N(CH_3)SO_2N(CH_3)_2$, SO_2-$N(CH_3)C(=O)Ph$, SO_2-$N(CH_3)CN$, SO_2-$N(CH_3)CH_2CHCH_2$, SO_2-$N(CH_3)CH_2COCH_2$, SO_2-$N(CH_3)CH_2CH_2CH_3$, SO_2-$N(CH_3)CH_2CH_2CH_2CH_3$, SO_2-$N(CH_3)CH_2Ph$, SO_2-$N(CH_3)CH_2CN$, SO_2-$N(CH_3)CH_2CO2CH_2CH_3$, SO_2-$N(CH_3)CH_2CH_2OCH_3$, SO_2-$N(CH_2CH_3)CO2C(CH_3)_3$, SO_2-$N(CH_3)SO_2CH_3$, SO_2-$NHCH_2CH_3$, SO_2-$N(CH_3)CH_2OCH_3$, SO_2-$NHC(CH_3)_3$, SO_2-$N(CH_2CH_3)2$, SO_2-$N(CH_2)_4$, SO_2-$N(CH_3)C(CH_3)_3$, SO_2-$NHCH(CH_3)_2$, SO_2-$NHC(=O)CH_3$, SO_2-$NHSO_2CH_3$, SO_2-$N(CH_3)CH(CH_3)_2$, SO_2-$N(CH_2CH_3)CH(CH_3)_2$ or SO_2-$NHCH_2CHCH_2$. Preferably at least one of the R^a, R^b and R^c is not hydrogen. More preferably at least two of the R^a, R^b and R^c are not hydrogen.

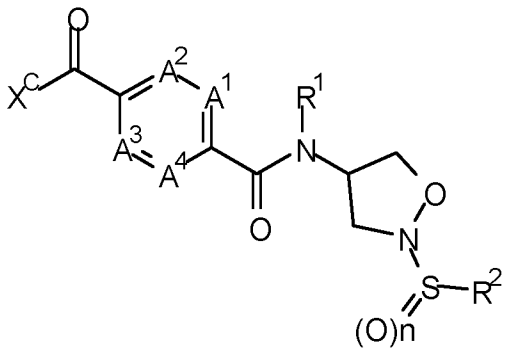
The present invention also provides intermediates useful for the preparation of compounds of formula (I). Certain intermediates are novel and as such form a further aspect of the invention. One group of novel intermediates are compounds of formula (Int-I)



(Int-I)

wherein A^1, A^2, A^3, A^4, R^1, R^2 and n are as defined for a compound of formula (I) and X^B is a halogen, such as bromo, or X^B is cyano, formyl, CH=N-OH or acetyl; or a salt or *N*-oxide thereof. The preferences for A^1, A^2, A^3, A^4, R^1, R^2 and n are the same as the preferences set out for the corresponding substituents of a compound of formula (I).

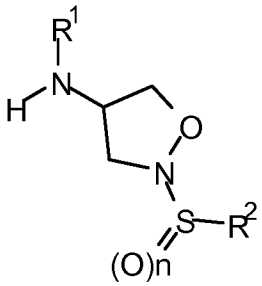
Another group of novel intermediates are compounds of formula (Int-II)



(Int-II)

wherein A^1, A^2, A^3, A^4, R^1, R^2 and n are as defined for a compound of formula (I); X^C is CH_2-halogen, wherein halogen is preferably bromo or chloro, $CH=C(R^3)R^4$ or $CH_2C(OH)(R^3)R^4$ wherein R^3 and R^4 are as defined for a compound of formula (I); or a salt or *N*-oxide thereof. The preferences for A^1, A^2, A^3, A^4, R^1, R^2 and n are the same as the preferences set out for the corresponding substituents of a compound of formula (I).

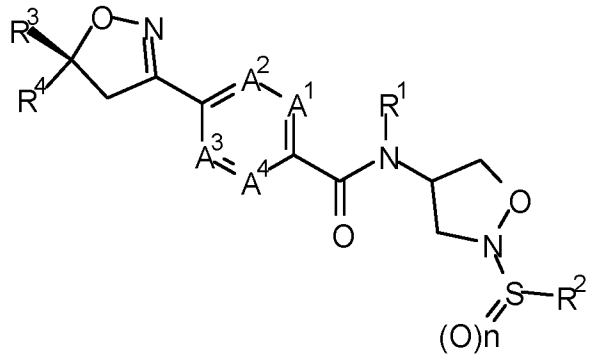
Another group of novel intermediates are compounds of formula (Int-III)



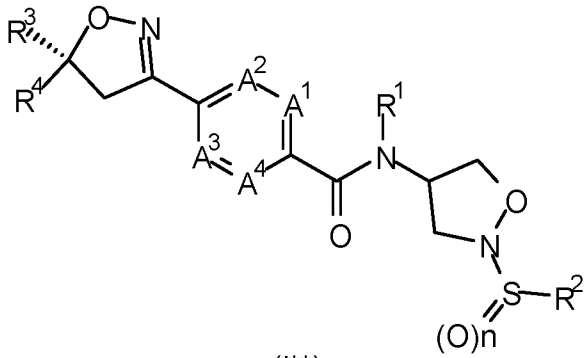
(Int-III)

wherein R^1, R^2 and n are as defined for a compound of formula (I); or a salt or *N*-oxide thereof. The preferences for R^1, R^2 and n are the same as the preferences set out for the corresponding substituents of a compound of formula (I).

Compounds of formula (I) include at least one chiral centre and may exist as compounds of formula (I*) or compounds of formula (I**):



(I*)

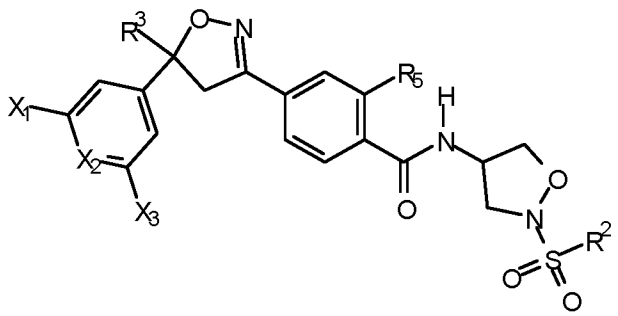


(I**)

Generally compounds of formula (I**) are more biologically active than compounds of formula (I*). The invention includes mixtures of compounds (I*) and (I**) in any ratio e.g. in a molar ratio of 1:99 to 99:1, e.g. 10:1 to 1:10, e.g. a substantially 50:50 molar ratio. In an enantiomerically (or epimerically) enriched mixture of formula (I**), the molar proportion of compound (I**) compared to the total amount of both enantiomers (or epimers) is for example greater than 50%, e.g. at least 55, 60, 65, 70, 75, 80, 85, 90, 95, 96, 97, 98, or at least 99%. Likewise, in enantiomerically (or epimerically) enriched mixture of formula (I*), the molar proportion of the compound of formula (I*) compared to the total amount of both enantiomers (or epimers) is for example greater than 50%, e.g. at least 55, 60, 65, 70, 75, 80, 85, 90, 95, 96, 97, 98, or at least 99%. Enantiomerically (or epimerically) enriched mixtures of formula (I**) are preferred.

Tables 1 to 96: Compounds of formula (Ia)

The invention is further illustrated by making available the following individual compounds of formula (Ia) listed below in Tables 1 to 96.



(Ia)

Each of Tables 1 to 96, which follow the Table P below, make available 250 compounds of the formula (Ia) in which X_3, R^3, X_1 and R^5 are the substituents defined in Table P and R^2 and X_2 are the substituents defined in the relevant Table 1 to 96. Thus Table 1 individualises 250 compounds of formula (Ia) wherein for each row of Table P, the R^2 and X_2 substituents are as defined in Table 1; similarly, Table 2 individualises 250 compounds of formula (Ia) wherein for each row of Table P, the R^2 and X_2 substituents are as defined in Table 2; and so on for Tables 3 to 96.

Each compound disclosed in Tables 1 to 96 represents a disclosure of a compound according to the compound of formula (I*), and a disclosure according to the compound of formula (I**) as well as mixtures thereof.

Table P

	X_3	R^3	X_1	R^5
1	H	CF_3	H	Me
2	Cl	CF_3	H	Me
3	Br	CF_3	H	Me
4	F	CF_3	H	Me
5	CF_3	CF_3	H	Me
6	H	CF_2Cl	H	Me
7	Cl	CF_2Cl	H	Me
8	Br	CF_2Cl	H	Me
9	F	CF_2Cl	H	Me
10	CF_3	CF_2Cl	H	Me
11	H	CF_3	Cl	Me
12	Cl	CF_3	Cl	Me
13	Br	CF_3	Cl	Me
14	F	CF_3	Cl	Me
15	CF_3	CF_3	Cl	Me
16	H	CF_2Cl	Cl	Me
17	Cl	CF_2Cl	Cl	Me
18	Br	CF_2Cl	Cl	Me
19	F	CF_2Cl	Cl	Me
20	CF_3	CF_2Cl	Cl	Me
21	H	CF_3	Br	Me
22	Cl	CF_3	Br	Me
23	Br	CF_3	Br	Me
24	F	CF_3	Br	Me
25	CF_3	CF_3	Br	Me
26	H	CF_2Cl	Br	Me
27	Cl	CF_2Cl	Br	Me
28	Br	CF_2Cl	Br	Me
29	F	CF_2Cl	Br	Me
30	CF_3	CF_2Cl	Br	Me
31	H	CF_3	F	Me
32	Cl	CF_3	F	Me
33	Br	CF_3	F	Me
34	F	CF_3	F	Me
35	CF_3	CF_3	F	Me
36	H	CF_2Cl	F	Me
37	Cl	CF_2Cl	F	Me
38	Br	CF_2Cl	F	Me
39	F	CF_2Cl	F	Me
40	CF_3	CF_2Cl	F	Me
41	H	CF_3	CF_3	Me
42	Cl	CF_3	CF_3	Me
43	Br	CF_3	CF_3	Me
44	F	CF_3	CF_3	Me
45	CF_3	CF_3	CF_3	Me
46	H	CF_2Cl	CF_3	Me
47	Cl	CF_2Cl	CF_3	Me
48	Br	CF_2Cl	CF_3	Me
49	F	CF_2Cl	CF_3	Me
50	CF_3	CF_2Cl	CF_3	Me
51	H	CF_3	H	Cl
52	Cl	CF_3	H	Cl
53	Br	CF_3	H	Cl
54	F	CF_3	H	Cl
55	CF_3	CF_3	H	Cl
56	H	CF_2Cl	H	Cl
57	Cl	CF_2Cl	H	Cl
58	Br	CF_2Cl	H	Cl
59	F	CF_2Cl	H	Cl
60	CF_3	CF_2Cl	H	Cl
61	H	CF_3	Cl	Cl
62	Cl	CF_3	Cl	Cl
63	Br	CF_3	Cl	Cl
64	F	CF_3	Cl	Cl
65	CF_3	CF_3	Cl	Cl
66	H	CF_2Cl	Cl	Cl
67	Cl	CF_2Cl	Cl	Cl
68	Br	CF_2Cl	Cl	Cl
69	F	CF_2Cl	Cl	Cl
70	CF_3	CF_2Cl	Cl	Cl
71	H	CF_3	Br	Cl
72	Cl	CF_3	Br	Cl
73	Br	CF_3	Br	Cl
74	F	CF_3	Br	Cl
75	CF_3	CF_3	Br	Cl
76	H	CF_2Cl	Br	Cl
77	Cl	CF_2Cl	Br	Cl

	X_3	R^3	X_1	R^5
78	Br	CF_2Cl	Br	Cl
79	F	CF_2Cl	Br	Cl
80	CF_3	CF_2Cl	Br	Cl
81	H	CF_3	F	Cl
82	Cl	CF_3	F	Cl
83	Br	CF_3	F	Cl
84	F	CF_3	F	Cl
85	CF_3	CF_3	F	Cl
86	H	CF_2Cl	F	Cl
87	Cl	CF_2Cl	F	Cl
88	Br	CF_2Cl	F	Cl
89	F	CF_2Cl	F	Cl
90	CF_3	CF_2Cl	F	Cl
91	H	CF_3	CF_3	Cl
92	Cl	CF_3	CF_3	Cl
93	Br	CF_3	CF_3	Cl
94	F	CF_3	CF_3	Cl
95	CF_3	CF_3	CF_3	Cl
96	H	CF_2Cl	CF_3	Cl
97	Cl	CF_2Cl	CF_3	Cl
98	Br	CF_2Cl	CF_3	Cl
99	F	CF_2Cl	CF_3	Cl
100	CF_3	CF_2Cl	CF_3	Cl
101	H	CF_3	H	Br
102	Cl	CF_3	H	Br
103	Br	CF_3	H	Br
104	F	CF_3	H	Br
105	CF_3	CF_3	H	Br
106	H	CF_2Cl	H	Br
107	Cl	CF_2Cl	H	Br
108	Br	CF_2Cl	H	Br
109	F	CF_2Cl	H	Br
110	CF_3	CF_2Cl	H	Br
111	H	CF_3	Cl	Br
112	Cl	CF_3	Cl	Br
113	Br	CF_3	Cl	Br
114	F	CF_3	Cl	Br
115	CF_3	CF_3	Cl	Br
116	H	CF_2Cl	Cl	Br

	X_3	R^3	X_1	R^5
117	Cl	CF_2Cl	Cl	Br
118	Br	CF_2Cl	Cl	Br
119	F	CF_2Cl	Cl	Br
120	CF_3	CF_2Cl	Cl	Br
121	H	CF_3	Br	Br
122	Cl	CF_3	Br	Br
123	Br	CF_3	Br	Br
124	F	CF_3	Br	Br
125	CF_3	CF_3	Br	Br
126	H	CF_2Cl	Br	Br
127	Cl	CF_2Cl	Br	Br
128	Br	CF_2Cl	Br	Br
129	F	CF_2Cl	Br	Br
130	CF_3	CF_2Cl	Br	Br
131	H	CF_3	F	Br
132	Cl	CF_3	F	Br
133	Br	CF_3	F	Br
134	F	CF_3	F	Br
135	CF_3	CF_3	F	Br
136	H	CF_2Cl	F	Br
137	Cl	CF_2Cl	F	Br
138	Br	CF_2Cl	F	Br
139	F	CF_2Cl	F	Br
140	CF_3	CF_2Cl	F	Br
141	H	CF_3	CF_3	Br
142	Cl	CF_3	CF_3	Br
143	Br	CF_3	CF_3	Br
144	F	CF_3	CF_3	Br
145	CF_3	CF_3	CF_3	Br
146	H	CF_2Cl	CF_3	Br
147	Cl	CF_2Cl	CF_3	Br
148	Br	CF_2Cl	CF_3	Br
149	F	CF_2Cl	CF_3	Br
150	CF_3	CF_2Cl	CF_3	Br
151	H	CF_3	H	CF_3
152	Cl	CF_3	H	CF_3
153	Br	CF_3	H	CF_3
154	F	CF_3	H	CF_3
155	CF_3	CF_3	H	CF_3

	X_3	R^3	X_1	R^5
156	H	CF_2Cl	H	CF_3
157	Cl	CF_2Cl	H	CF_3
158	Br	CF_2Cl	H	CF_3
159	F	CF_2Cl	H	CF_3
160	CF_3	CF_2Cl	H	CF_3
161	H	CF_3	Cl	CF_3
162	Cl	CF_3	Cl	CF_3
163	Br	CF_3	Cl	CF_3
164	F	CF_3	Cl	CF_3
165	CF_3	CF_3	Cl	CF_3
166	H	CF_2Cl	Cl	CF_3
167	Cl	CF_2Cl	Cl	CF_3
168	Br	CF_2Cl	Cl	CF_3
169	F	CF_2Cl	Cl	CF_3
170	CF_3	CF_2Cl	Cl	CF_3
171	H	CF_3	Br	CF_3
172	Cl	CF_3	Br	CF_3
173	Br	CF_3	Br	CF_3
174	F	CF_3	Br	CF_3
175	CF_3	CF_3	Br	CF_3
176	H	CF_2Cl	Br	CF_3
177	Cl	CF_2Cl	Br	CF_3
178	Br	CF_2Cl	Br	CF_3
179	F	CF_2Cl	Br	CF_3
180	CF_3	CF_2Cl	Br	CF_3
181	H	CF_3	F	CF_3
182	Cl	CF_3	F	CF_3
183	Br	CF_3	F	CF_3
184	F	CF_3	F	CF_3
185	CF_3	CF_3	F	CF_3
186	H	CF_2Cl	F	CF_3
187	Cl	CF_2Cl	F	CF_3
188	Br	CF_2Cl	F	CF_3
189	F	CF_2Cl	F	CF_3
190	CF_3	CF_2Cl	F	CF_3
191	H	CF_3	CF_3	CF_3
192	Cl	CF_3	CF_3	CF_3
193	Br	CF_3	CF_3	CF_3
194	F	CF_3	CF_3	CF_3

	X_3	R^3	X_1	R^5
195	CF_3	CF_3	CF_3	CF_3
196	H	CF_2Cl	CF_3	CF_3
197	Cl	CF_2Cl	CF_3	CF_3
198	Br	CF_2Cl	CF_3	CF_3
199	F	CF_2Cl	CF_3	CF_3
200	CF_3	CF_2Cl	CF_3	CF_3
201	H	CF_3	H	F
202	Cl	CF_3	H	F
203	Br	CF_3	H	F
204	F	CF_3	H	F
205	CF_3	CF_3	H	F
206	H	CF_2Cl	H	F
207	Cl	CF_2Cl	H	F
208	Br	CF_2Cl	H	F
209	F	CF_2Cl	H	F
210	CF_3	CF_2Cl	H	F
211	H	CF_3	Cl	F
212	Cl	CF_3	Cl	F
213	Br	CF_3	Cl	F
214	F	CF_3	Cl	F
215	CF_3	CF_3	Cl	F
216	H	CF_2Cl	Cl	F
217	Cl	CF_2Cl	Cl	F
218	Br	CF_2Cl	Cl	F
219	F	CF_2Cl	Cl	F
220	CF_3	CF_2Cl	Cl	F
221	H	CF_3	Br	F
222	Cl	CF_3	Br	F
223	Br	CF_3	Br	F
224	F	CF_3	Br	F
225	CF_3	CF_3	Br	F
226	H	CF_2Cl	Br	F
227	Cl	CF_2Cl	Br	F
228	Br	CF_2Cl	Br	F
229	F	CF_2Cl	Br	F
230	CF_3	CF_2Cl	Br	F
231	H	CF_3	F	F
232	Cl	CF_3	F	F
233	Br	CF_3	F	F

	X_3	R^3	X_1	R^5
234	F	CF_3	F	F
235	CF_3	CF_3	F	F
236	H	CF_2Cl	F	F
237	Cl	CF_2Cl	F	F
238	Br	CF_2Cl	F	F
239	F	CF_2Cl	F	F
240	CF_3	CF_2Cl	F	F
241	H	CF_3	CF_3	F
242	Cl	CF_3	CF_3	F
243	Br	CF_3	CF_3	F
244	F	CF_3	CF_3	F
245	CF_3	CF_3	CF_3	F
246	H	CF_2Cl	CF_3	F
247	Cl	CF_2Cl	CF_3	F
248	Br	CF_2Cl	CF_3	F
249	F	CF_2Cl	CF_3	F
250	CF_3	CF_2Cl	CF_3	F

Table 1

Table 1 provides 250 compounds of formula (Ia) wherein X_2 is N, R^2 is Me, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 2

Table 2 provides 250 compounds of formula (Ia) wherein X_2 is CH, R^2 is Me, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 3

Table 3 provides 250 compounds of formula (Ia) wherein X_2 is C-F, R^2 is Me, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 4

Table 4 provides 250 compounds of formula (Ia) wherein X_2 is C-Br, R^2 is Me, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 5

Table 5 provides 250 compounds of formula (Ia) wherein X_2 is C-Cl, R^2 is Me, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 6

Table 6 provides 250 compounds of formula (Ia) wherein X_2 is C-CF_3, R^2 is Me, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 7

Table 7 provides 250 compounds of formula (Ia) wherein X_2 is N, R^2 is Et, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 8

Table 8 provides 250 compounds of formula (Ia) wherein X_2 is CH, R^2 is Et, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 9

Table 9 provides 250 compounds of formula (Ia) wherein X_2 is C-F, R^2 is Et, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 10

Table 10 provides 250 compounds of formula (Ia) wherein X_2 is C-Br, R^2 is Et, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 11

Table 11 provides 250 compounds of formula (Ia) wherein X_2 is C-Cl, R^2 is Et, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 12

Table 12 provides 250 compounds of formula (Ia) wherein X_2 is C-CF_3, R^2 is Et, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 13

Table 13 provides 250 compounds of formula (Ia) wherein X_2 is N, R^2 is Pr, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 14

Table 14 provides 250 compounds of formula (Ia) wherein X_2 is CH, R^2 is Pr, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 15

Table 15 provides 250 compounds of formula (Ia) wherein X_2 is C-F, R^2 is Pr, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 16

Table 16 provides 250 compounds of formula (Ia) wherein X_2 is C-Br, R^2 is Pr, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 17

Table 17 provides 250 compounds of formula (Ia) wherein X_2 is C-Cl, R^2 is Pr, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 18

Table 18 provides 250 compounds of formula (Ia) wherein X_2 is C-CF_3, R^2 is Pr, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 19

Table 19 provides 250 compounds of formula (Ia) wherein X_2 is N, R^2 is $N(Et)_2$, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 20

Table 20 provides 250 compounds of formula (Ia) wherein X_2 is CH, R^2 is $N(Et)_2$, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 21

Table 21 provides 250 compounds of formula (Ia) wherein X_2 is C-F, R^2 is $N(Et)_2$, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 22

Table 22 provides 250 compounds of formula (Ia) wherein X_2 is C-Br, R^2 is $N(Et)_2$, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 23

Table 23 provides 250 compounds of formula (Ia) wherein X_2 is C-Cl, R^2 is $N(Et)_2$, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 24

Table 24 provides 250 compounds of formula (Ia) wherein X_2 is C-CF_3, R^2 is $N(Et)_2$, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 25

Table 25 provides 250 compounds of formula (Ia) wherein X_2 is N, R^2 is iPr, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 26

Table 26 provides 250 compounds of formula (Ia) wherein X_2 is CH, R^2 is iPr, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 27

Table 27 provides 250 compounds of formula (Ia) wherein X_2 is C-F, R^2 is iPr, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 28

Table 28 provides 250 compounds of formula (Ia) wherein X_2 is C-Br, R^2 is iPr, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 29

Table 29 provides 250 compounds of formula (Ia) wherein X_2 is C-Cl, R^2 is iPr, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 30

Table 30 provides 250 compounds of formula (Ia) wherein X_2 is C-CF_3, R^2 is iPr, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 31

Table 31 provides 250 compounds of formula (Ia) wherein X_2 is N, R^2 is $N(Me)_2$, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 32

Table 32 provides 250 compounds of formula (Ia) wherein X_2 is CH, R^2 is $N(Me)_2$, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 33

Table 33 provides 250 compounds of formula (Ia) wherein X_2 is C-F, R^2 is $N(Me)_2$, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 34

Table 34 provides 250 compounds of formula (Ia) wherein X_2 is C-Br, R^2 is $N(Me)_2$, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 35

Table 35 provides 250 compounds of formula (Ia) wherein X_2 is C-Cl, R^2 is $N(Me)_2$, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 36

Table 36 provides 250 compounds of formula (Ia) wherein X_2 is C-CF_3, R^2 is $N(Me)_2$, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 37

Table 37 provides 250 compounds of formula (Ia) wherein X_2 is N, R^2 is cBu, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 38

Table 38 provides 250 compounds of formula (Ia) wherein X_2 is CH, R^2 is cBu, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 39

Table 39 provides 250 compounds of formula (Ia) wherein X_2 is C-F, R^2 is cBu, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 40

Table 40 provides 250 compounds of formula (Ia) wherein X_2 is C-Br, R^2 is cBu, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 41

Table 41 provides 250 compounds of formula (Ia) wherein X_2 is C-Cl, R^2 is cBu, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 42

Table 42 provides 250 compounds of formula (Ia) wherein X_2 is C-CF_3, R^2 is cBu, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 43

Table 43 provides 250 compounds of formula (Ia) wherein X_2 is N, R^2 is NHEt, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 44

Table 44 provides 250 compounds of formula (Ia) wherein X_2 is CH, R^2 is NHEt, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 45

Table 45 provides 250 compounds of formula (Ia) wherein X_2 is C-F, R^2 is NHEt, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 46

Table 46 provides 250 compounds of formula (Ia) wherein X_2 is C-Br, R^2 is NHEt, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 47

Table 47 provides 250 compounds of formula (Ia) wherein X_2 is C-Cl, R^2 is NHEt, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 48

Table 48 provides 250 compounds of formula (Ia) wherein X_2 is C-CF_3, R^2 is NHEt, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 49

Table 49 provides 250 compounds of formula (Ia) wherein X_2 is N, R^2 is CH_2CF_3, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 50

Table 50 provides 250 compounds of formula (Ia) wherein X_2 is CH, R^2 is CH_2CF_3, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 51

Table 51 provides 250 compounds of formula (Ia) wherein X_2 is C-F, R^2 is CH_2CF_3, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 52

Table 52 provides 250 compounds of formula (Ia) wherein X_2 is C-Br, R^2 is CH_2CF_3, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 53

Table 53 provides 250 compounds of formula (Ia) wherein X_2 is C-Cl, R^2 is CH_2CF_3, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 54

Table 54 provides 250 compounds of formula (Ia) wherein X_2 is C-CF_3, R^2 is CH_2CF_3, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 55

Table 55 provides 250 compounds of formula (Ia) wherein X_2 is N, R^2 is NHMe, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 56

Table 56 provides 250 compounds of formula (Ia) wherein X_2 is CH, R^2 is NHMe, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 57

Table 57 provides 250 compounds of formula (Ia) wherein X_2 is C-F, R^2 is NHMe, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 58

Table 58 provides 250 compounds of formula (Ia) wherein X_2 is C-Br, R^2 is NHMe, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 59

Table 59 provides 250 compounds of formula (Ia) wherein X_2 is C-Cl, R^2 is NHMe, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 60

Table 60 provides 250 compounds of formula (Ia) wherein X_2 is C-CF_3, R^2 is NHMe, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 61

Table 61 provides 250 compounds of formula (Ia) wherein X_2 is N, R^2 is NMeEt, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 62

Table 62 provides 250 compounds of formula (Ia) wherein X_2 is CH, R^2 is NMeEt, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 63

Table 63 provides 250 compounds of formula (Ia) wherein X_2 is C-F, R^2 is NMeEt, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 64

Table 64 provides 250 compounds of formula (Ia) wherein X_2 is C-Br, R^2 is NMeEt, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 65

Table 65 provides 250 compounds of formula (Ia) wherein X_2 is C-Cl, R^2 is NMeEt, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 66

Table 66 provides 250 compounds of formula (Ia) wherein X_2 is C-CF_3, R^2 is NMeEt, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 67

Table 67 provides 250 compounds of formula (Ia) wherein X_2 is N, R^2 is cPr, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 68

Table 68 provides 250 compounds of formula (Ia) wherein X_2 is CH, R^2 is cPr, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 69

Table 69 provides 250 compounds of formula (Ia) wherein X_2 is C-F, R^2 is cPr, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 70

Table 70 provides 250 compounds of formula (Ia) wherein X_2 is C-Br, R^2 is cPr, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 71

Table 71 provides 250 compounds of formula (Ia) wherein X_2 is C-Cl, R^2 is cPr, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 72

Table 72 provides 250 compounds of formula (Ia) wherein X_2 is C-CF_3, R^2 is cPr, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 73

Table 73 provides 250 compounds of formula (Ia) wherein X_2 is N, R^2 is CH_2Cl, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 74

Table 74 provides 250 compounds of formula (Ia) wherein X_2 is CH, R^2 is CH_2Cl, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 75

Table 75 provides 250 compounds of formula (Ia) wherein X_2 is C-F, R^2 is CH_2Cl, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 76

Table 76 provides 250 compounds of formula (Ia) wherein X_2 is C-Br, R^2 is CH_2Cl, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 77

Table 77 provides 250 compounds of formula (Ia) wherein X_2 is C-Cl, R^2 is CH_2Cl, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 78

Table 78 provides 250 compounds of formula (Ia) wherein X_2 is C-CF_3, R^2 is CH_2Cl, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 79

Table 79 provides 250 compounds of formula (Ia) wherein X_2 is N, R^2 is CH_2F, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 80

Table 80 provides 250 compounds of formula (Ia) wherein X_2 is CH, R^2 is CH_2F, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 81

Table 81 provides 250 compounds of formula (Ia) wherein X_2 is C-F, R^2 is CH_2F, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 82

Table 82 provides 250 compounds of formula (Ia) wherein X_2 is C-Br, R^2 is CH_2F, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 83

Table 83 provides 250 compounds of formula (Ia) wherein X_2 is C-Cl, R^2 is CH_2F, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 84

Table 84 provides 250 compounds of formula (Ia) wherein X_2 is C-CF_3, R^2 is CH_2F, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 85

Table 85 provides 250 compounds of formula (Ia) wherein X_2 is N, R^2 is CHF_2, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 86

Table 86 provides 250 compounds of formula (Ia) wherein X_2 is CH, R^2 is CHF_2, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 87

Table 87 provides 250 compounds of formula (Ia) wherein X_2 is C-F, R^2 is CHF_2, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 88

Table 88 provides 250 compounds of formula (Ia) wherein X_2 is C-Br, R^2 is CHF_2, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 89

Table 89 provides 250 compounds of formula (Ia) wherein X_2 is C-Cl, R^2 is CHF_2, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 90

Table 90 provides 250 compounds of formula (Ia) wherein X_2 is C-CF_3, R^2 is CHF_2, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 91

Table 91 provides 250 compounds of formula (Ia) wherein X_2 is N, R^2 is F, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 92

Table 92 provides 250 compounds of formula (Ia) wherein X_2 is CH, R^2 is F, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 93

Table 93 provides 250 compounds of formula (Ia) wherein X_2 is C-F, R^2 is F, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 94

Table 94 provides 250 compounds of formula (Ia) wherein X_2 is C-Br, R^2 is F, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 95

Table 95 provides 250 compounds of formula (Ia) wherein X_2 is C-Cl, R^2 is F, and X_3, R^3, X_1, R^5 are as defined in Table P.

Table 96

Table 96 provides 250 compounds of formula (Ia) wherein X_2 is C-CF_3, R^2 is F, and X_3, R^3, X_1, R^5 are as defined in Table P.

Examples of compounds of formula (Int-I) made available are those where X^B is bromo, chloro, iodo, cyano, formyl, CH=NOH or acetyl, A^2, A^3 and A^4 are each CH, R^1 is hydrogen, n is 2, A^1 is CR^5, and wherein R^5 and R^2 each correspond to a substitutent R^5 and R^2 respectively as defined in each of Tables 1 to 96 above in context of formula (Ia), So for example, Table 1 individualises a compound of formula

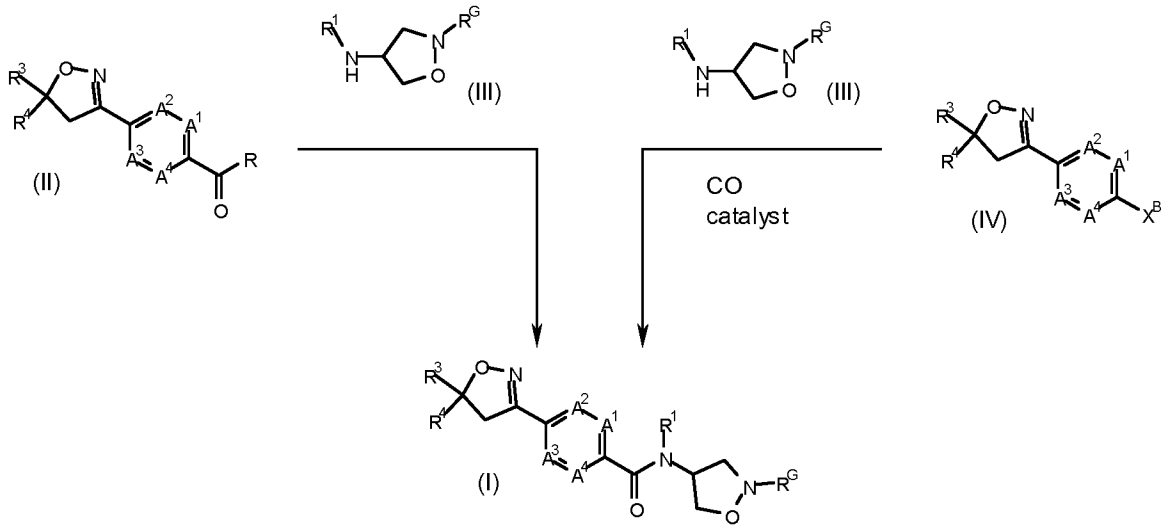
(Int-I) wherein X^B is bromo, chloro, iodo, cyano, formyl, CH=NOH or acetyl, A2, A3 and A4 are each CH, R^1 is hydrogen, n is 2, A^1 is CR^5, and wherein R^5 and R^2 are each as defined in Table 1; similarly, Table 2 individualises a compound of formula (Int-I) wherein X^B is bromo, chloro, iodo, cyano, formyl, CH=NOH or acetyl, A^2, A^3 and A^4 are each CH, R^1 is hydrogen, n is 2, A^1 is CR^5, and wherein R^5 and R^2 are each as defined in Table 2; and so on for Tables 3 to 96.

Examples of compounds of formula (Int-II) made available are those where X^c is CH_2Cl, CH_2Br, $CH=C(CF_3)$(3-chloro-5-trifluoromethyl-phenyl), $CH=C(CF_3)$(3-bromo-5-trifluoromethyl-phenyl), $CH=C(CF_3)$(3,5-dichloro-4-fluoro-phenyl), $CH=C(CF_3)$(3,4,5-trichloro-phenyl), $CH_2C(OH)(CF_3)$(3-chloro-5-trifluoromethyl-phenyl), $CH_2C(OH)(CF_3)$(3-bromo-5-trifluoromethyl-phenyl), $CH_2C(OH)(CF_3)$(3,5-dichloro-4-fluoro-phenyl) or $CH_2C(OH)(CF_3)$(3,4,5-trichloro-phenyl), A2, A3 and A4 are each CH, R^1 is hydrogen, n is 2, A1 is CR^5, and wherein R^5 and R^2 each correspond to a substitutent R^5 and R^2 respectively as defined in each of Tables 1 to 96 above in context of formula (Ia), So for example, Table 1 individualises a compound of formula (Int-II) wherein X^c is CH_2Cl, CH_2Br, $CH=C(CF_3)$(3-chloro-5-trifluoromethyl-phenyl), $CH=C(CF_3)$(3-bromo-5-trifluoromethyl-phenyl), $CH=C(CF_3)$(3,5-dichloro-4-fluoro-phenyl), $CH=C(CF_3)$(3,4,5-trichloro-phenyl), $CH_2C(OH)(CF_3)$(3-chloro-5-trifluoromethyl-phenyl), $CH_2C(OH)(CF_3)$(3-bromo-5-trifluoromethyl-phenyl), $CH_2C(OH)(CF_3)$(3,5-dichloro-4-fluoro-phenyl) or $CH_2C(OH)(CF_3)$(3,4,5-trichloro-phenyl), A2, A3 and A4 are each CH, R^1 is hydrogen, n is 2, A1 is CR^5, and wherein R^5 and R^2 are each as defined in Table 1; similarly, Table 2 individualises a compound of formula (Int-II) wherein X^c is CH_2Cl, CH_2Br, $CH=C(CF_3)$(3-chloro-5-trifluoromethyl-phenyl), $CH=C(CF_3)$(3-bromo-5-trifluoromethyl-phenyl), $CH=C(CF_3)$(3,5-dichloro-4-fluoro-phenyl), $CH=C(CF_3)$(3,4,5-trichloro-phenyl), $CH_2C(OH)(CF_3)$(3-chloro-5-trifluoromethyl-phenyl), $CH_2C(OH)(CF_3)$(3-bromo-5-trifluoromethyl-phenyl), $CH_2C(OH)(CF_3)$(3,5-dichloro-4-fluoro-phenyl) or $CH_2C(OH)(CF_3)$(3,4,5-trichloro-phenyl), A2, A3 and A4 are each CH, R^1 is hydrogen, n is 2, A1 is CR^5, and wherein R^5 and R^2 are each as defined in Table 2; and so on for Tables 3 to 96.

Examples of compounds of formula (Int-III) made available are those where R^1 is hydrogen, n is 2, and wherein R^2 corresponds to a substitutent R^2 as defined in each of Tables 1 to 96 above in context of formula (Ia), So for example, Table 1 individualises a compound of formula (Int-III) wherein R^1 is hydrogen, n is 2, and R^2 is as defined in Table 1; similarly, Table 2 individualises a compound of formula (Int-III) wherein R^1 is hydrogen, n is 2, and wherein R^2 is as defined in Table 2; and so on for Tables 3 to 96.

The compounds of the invention may be made by a variety of methods as shown in Schemes 1 and 2.

Scheme 1



1) Compounds of formula (I) can be prepared by reacting a compound of formula (II) wherein R is OH, C_1-C_6alkoxy or Cl, F or Br, with an amine of formula (III) wherein R^G is $S(O)_nR^2$ or a protecting group, such as a Boc, as shown in **Scheme 1**. When R is OH such reactions are usually carried out in the presence of a coupling reagent, such as N,N'-dicyclohexylcarbodiimide ("DCC"), 1-ethyl-3-(3-dimethyl-amino-propyl)carbodiimide hydrochloride ("EDC") or bis(2-oxo-3-oxazolidinyl)phosphonic chloride ("BOP-Cl"), in the presence of a base, and optionally in the presence of a nucleophilic catalyst, such as hydroxybenzotriazole ("HOBT"). When R is Cl, such reactions are usually carried out in the presence of a base, and optionally in the presence of a nucleophilic catalyst. Alternatively, it is possible to conduct the reaction in a biphasic system comprising an organic solvent, preferably ethyl acetate, and an aqueous solvent, preferably a solution of sodium hydrogen carbonate. When R is C_1-C_6alkoxy it is sometimes possible to convert the ester directly to the amide by heating the ester and amine together in a thermal process. Suitable bases include pyridine, triethylamine, 4-(dimethylamino)-pyridine ("DMAP") or diisopropylethylamine (Hunig's base). Preferred solvents are *N,N*-dimethylacetamide, tetrahydrofuran, dioxane, 1,2-dimethoxyethane, ethyl acetate and toluene. The reaction is carried out at a temperature of from 0°C to 100°C, preferably from 15°C to 30°C, in particular at ambient temperature. Amines of formula (III) are either known in the literature or can be prepared using methods known to a person skilled in the art. Some of these methods are described in the preparation Examples.

2) Acid halides of formula (II), wherein R is Cl, F or Br, may be made from carboxylic acids of formula (II), wherein R is OH, under standard conditions, as described for example in WO2009080250.

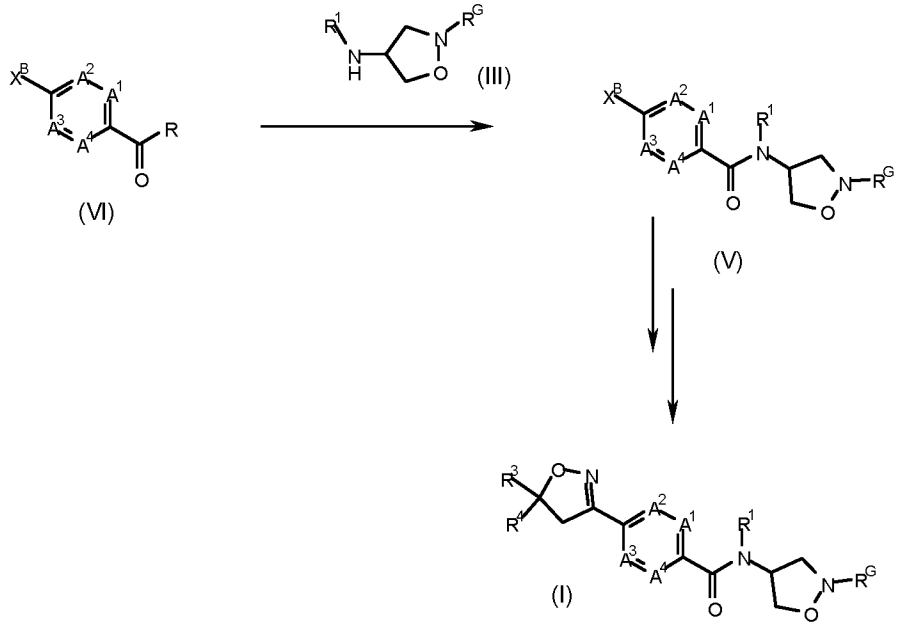
3) Carboxylic acids of formula (II), wherein R is OH, may be formed from esters of formula (II), wherein R is C_1-C_6alkoxy as described for example in WO2009080250.

4) Compounds of formula (I) can be prepared by reacting a compound of formula (IV) wherein X^B is a leaving group, for example a halogen, such as bromo, with carbon monoxide and an amine of formula (III), in the presence of a catalyst, such as palladium(II) acetate or bis(triphenylphosphine)palladium(II) dichloride, optionally in the presence of a ligand, such as triphenylphosphine, and a base, such as sodium carbonate, pyridine, triethylamine, 4-(dimethylamino)-pyridine ("DMAP") or diisopropylethylamine (Hunig's base), in a solvent, such as water, *N,N*-dimethylformamide or tetrahydrofuran. The reaction is carried out

at a temperature of from 50°C to 200°C, preferably from 100°C to 150°C. The reaction is carried out at a pressure of from 50 to 200 bar, preferably from 100 to 150 bar.

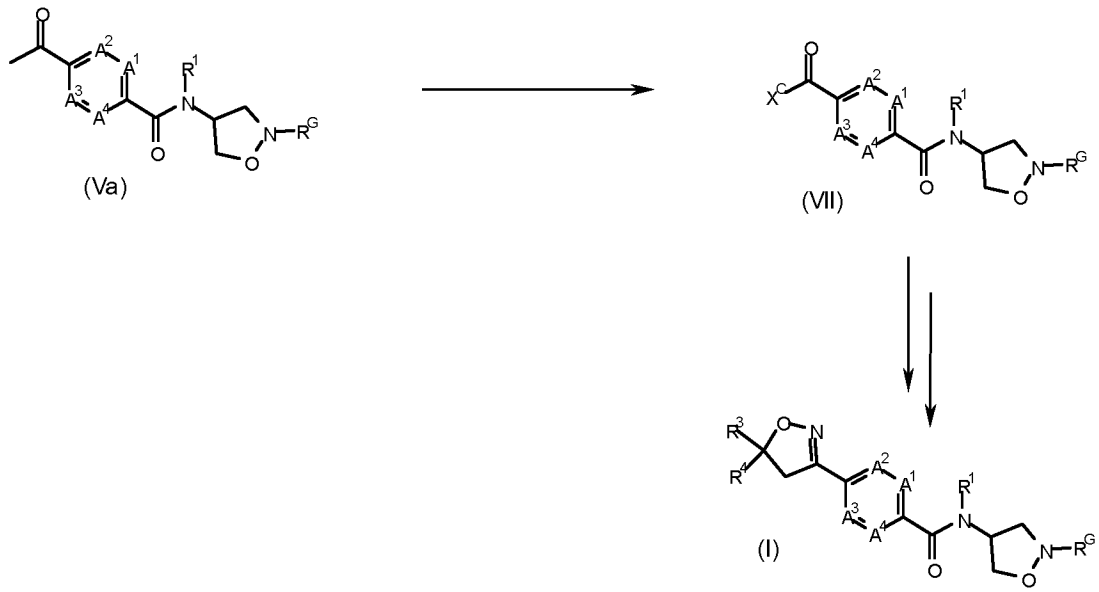
5) Compounds of formula (IV) wherein X^B is a leaving group, for example a halogen, such as bromo, can be made by a various of methods, for example as described in WO2009080250.

Scheme 2



6) Alternatively, compounds of formula (I) can be prepared by various methods from an intermediate of formula (V) as shown in **Scheme 2** wherein X^B is a leaving group, for example a halogen, such as bromo, or X^B is cyano, formyl or acetyl according to similar methods to those described in WO2009080250. An intermediate of formula (V) can be prepared for example from an intermediate of formula (VI) as described in the same reference.

Scheme 3



7) Alternatively, compounds of formula (I) can be prepared by various methods from an intermediate of formula (VII) as shown in **Scheme 3** wherein X^C is $CH=C(R^3)R^4$, or $CH_2C(OH)(R^3)R^4$

wherein R^3 and R^4 are as defined for a compound of formula (I) according to similar methods to those described in WO2009080250.

8) Compounds of formula (VII) wherein X^C is $CH=C(R^3)R^4$, or $CH_2C(OH)(R^3)R^4$ can be prepared from a compound of formula (Va) or from a compound of formula (VII) wherein X^C is CH_2-halogen using similar methods to those described in WO2009080250.

9) Compounds of formula (VII) wherein X^C is CH_2-halogen, such as bromo or chloro, can be prepared by reacting a methyl ketone of formula (Va), with a halogenating agent, such as bromine or chlorine, in a solvent, such as acetic acid, at a temperature of from 0°C to 50°C, preferably from ambient temperature to 40°C.

10) Compounds of formula (III) are either known compounds or can be be prepared by known methods to the person skilled in the art. Examples of such methods can be found in the Examples below.

The compounds of formula (I) according to the invention are preventively and/or curatively valuable active ingredients in the field of pest control, even at low rates of application, which have a very favorable biocidal spectrum and are well tolerated by warm-blooded species, fish and plants. The pests which may be combated and controlled by the use of the compounsd of the invention include those pests associated with agriculture (which term includes the growing of crops for food and fiber products), horticulture and animal husbandry, companion animals, forestry and the storage of products of vegetable origin (such as fruit, grain and timber); those pests associated with the damage of man-made structures and the transmission of diseases of man and animals; and also nuisance pests (such as flies). The active ingredients according to the invention act against all or individual developmental stages of normally sensitive, but also resistant, animal pests, such as insects or representatives of the order Acarina. The insecticidal or acaricidal activity of the active ingredients according to the invention can manifest itself directly, i. e. in destruction of the pests, which takes place either immediately or only after some time has elapsed, for example during ecdysis, or indirectly, for example in a reduced oviposition and/or hatching rate, a good activity corresponding to a destruction rate (mortality) of at least 50 to 60%.

Examples of the abovementioned animal pests are:

from the order *Acarina*, for example,

Acalitus spp, Aculus spp, Acaricalus spp, Aceria spp, Acarus siro, Amblyomma spp., Argas spp., Boophilus spp., Brevipalpus spp., Bryobia spp, Calipitrimerus spp., Chorioptes spp., Dermanyssus gallinae, Dermatophagoides spp, Eotetranychus spp, Eriophyes spp., Hemitarsonemus spp, Hyalomma spp., Ixodes spp., Olygonychus spp, Ornithodoros spp., Polyphagotarsone latus, Panonychus spp., Phyllocoptruta oleivora, Phytonemus spp, Polyphagotarsonemus spp, Psoroptes spp., Rhipicephalus spp., Rhizoglyphus spp., Sarcoptes spp., Steneotarsonemus spp, Tarsonemus spp. and Tetranychus spp.;

from the order *Anoplura*, for example,

Haematopinus spp., Linognathus spp., Pediculus spp., Pemphigus spp. and Phylloxera spp.;

from the order *Coleoptera*, for example,

Agriotes spp., Amphimallon majale, Anomala orientalis, Anthonomus spp., Aphodius spp, Astylus atromaculatus, Ataenius spp, Atomaria linearis, Chaetocnema tibialis, Cerotoma spp, Conoderus spp, Cosmopolites spp., Cotinis nitida, Curculio spp., Cyclocephala spp, Dermestes spp., Diabrotica spp., Diloboderus abderus, Epilachna spp., Eremnus spp., Heteronychus arator, Hypothenemus hampei, Lagria vilosa, Leptinotarsa decemLineata, Lissorhoptrus spp., Liogenys spp, Maecolaspis spp, Maladera

castanea, Megascelis spp, Melighetes aeneus, Melolontha spp., Myochrous armatus, Orycaephilus spp., Otiorhynchus spp., Phyllophaga spp, Phlyctinus spp., Popillia spp., Psylliodes spp., Rhyssomatus aubtilis, Rhizopertha spp., Scarabeidae, Sitophilus spp., Sitotroga spp., Somaticus spp, Sphenophorus spp, Sternechus subsignatus, Tenebrio spp., Tribolium spp. and Trogoderma spp.;

from the order *Diptera,* for example,

Aedes spp., Anopheles spp, Antherigona soccata,Bactrocea oleae, Bibio hortulanus, Bradysia spp, Calliphora erythrocephala, Ceratitis spp., Chrysomyia spp., Culex spp., Cuterebra spp., Dacus spp., Delia spp, Drosophila melanogaster, Fannia spp., Gastrophilus spp., Geomyza tripunctata, Glossina spp., Hypoderma spp., Hyppobosca spp., Liriomyza spp., Lucilia spp., Melanagromyza spp., Musca spp., Oestrus spp., Orseolia spp., Oscinella frit, Pegomyia hyoscyami, Phorbia spp., Rhagoletis spp, Rivelia quadrifasciata, Scatella spp, Sciara spp., Stomoxys spp., Tabanus spp., Tannia spp. and Tipula spp.;

from the order *Hemiptera,* for example,

Acanthocoris scabrator, Acrosternum spp, Adelphocoris lineolatus, Amblypelta nitida, Bathycoelia thalassina, Blissus spp, Cimex spp., Clavigralla tomentosicollis, Creontiades spp, Distantiella theobroma, Dichelops furcatus, Dysdercus spp., Edessa spp, Euchistus spp., Eurydema pulchrum, Eurygaster spp., Halyomorpha halys, Horcias nobilellus, Leptocorisa spp., Lygus spp, Margarodes spp, Murgantia histrionic, Neomegalotomus spp, Nesidiocoris tenuis, Nezara spp., Nysius simulans, Oebalus insularis, Piesma spp., Piezodorus spp, Rhodnius spp., Sahlbergella singularis, Scaptocoris castanea, Scotinophara spp. , Thyanta spp , Triatoma spp., Vatiga illudens;

Acyrthosium pisum, Adalges spp, Agalliana ensigera, Agonoscena targionii, Aleurodicus spp, Aleurocanthus spp, Aleurolobus barodensis, Aleurothrixus floccosus, Aleyrodes brassicae, Amarasca biguttula, Amritodus atkinsoni, Aonidiella spp., Aphididae, Aphis spp., Aspidiotus spp., Aulacorthum solani, Bactericera cockerelli, Bemisia spp, Brachycaudus spp, Brevicoryne brassicae, Cacopsylla spp, Cavariella aegopodii Scop., Ceroplaster spp., Chrysomphalus aonidium, Chrysomphalus dictyospermi, Cicadella spp, Cofana spectra, Cryptomyzus spp, Cicadulina spp, Coccus hesperidum, Dalbulus maidis, Dialeurodes spp, Diaphorina citri, Diuraphis noxia, Dysaphis spp, Empoasca spp., Eriosoma larigerum, Erythroneura spp., Gascardia spp., Glycaspis brimblecombei, Hyadaphis pseudobrassicae, Hyalopterus spp, Hyperomyzus pallidus, Idioscopus clypealis, Jacobiasca lybica, Laodelphax spp., Lecanium corni, Lepidosaphes spp., Lopaphis erysimi, Lyogenys maidis, Macrosiphum spp., Mahanarva spp, Metcalfa pruinosa, Metopolophium dirhodum, Myndus crudus, Myzus spp., Neotoxoptera sp, Nephotettix spp., Nilaparvata spp., Nippolachnus piri Mats, Odonaspis ruthae, Oregma lanigera Zehnter, Parabemisia myricae, Paratrioza cockerelli, Parlatoria spp., Pemphigus spp., Peregrinus maidis, Perkinsiella spp, Phorodon humuli, Phylloxera spp, Planococcus spp., Pseudaulacaspis spp., Pseudococcus spp., Pseudatomoscelis seriatus, Psylla spp., Pulvinaria aethiopica, Quadraspidiotus spp., Quesada gigas, Recilia dorsalis, Rhopalosiphum spp., Saissetia spp., Scaphoideus spp., Schizaphis spp., Sitobion spp., Sogatella furcifera, Spissistilus festinus, Tarophagus Proserpina, Toxoptera spp, Trialeurodes spp, Tridiscus sporoboli, Trionymus spp, Trioza erytreae , Unaspis citri, Zygina flammigera, Zyginidia scutellaris, ;

from the order *Hymenoptera*, for example,

Acromyrmex, Arge spp, Atta spp., Cephus spp., Diprion spp., Diprionidae, Gilpinia polytoma, Hoplocampa spp., Lasius spp., Monomorium pharaonis, Neodiprion spp., Pogonomyrmex spp, Slenopsis invicta, Solenopsis spp. and Vespa spp.;

from the order *Isoptera*, for example,

Coptotermes spp, Corniternes cumulans, Incisitermes spp, Macrotermes spp, Mastotermes spp, Microtermes spp, Reticulitermes spp.; Solenopsis geminate

from the order *Lepidoptera*, for example,

Acleris spp., Adoxophyes spp., Aegeria spp., Agrotis spp., Alabama argillaceae, Amylois spp., Anticarsia gemmatalis, Archips spp., Argyresthia spp, Argyrotaenia spp., Autographa spp., Bucculatrix thurberiella, Busseola fusca, Cadra cautella, Carposina nipponensis, Chilo spp., Choristoneura spp., Chrysoteuchia topiaria, Clysia ambiguella, Cnaphalocrocis spp., Cnephasia spp., Cochylis spp., Coleophora spp., Colias lesbia, Cosmophila flava, Crambus spp, Crocidolomia binotalis, Cryptophlebia leucotreta, Cydalima perspectalis, Cydia spp., Diaphania perspectalis, Diatraea spp., Diparopsis castanea, Earias spp., Eldana saccharina, Ephestia spp., Epinotia spp, Estigmene acrea, Etiella zinckinella, Eucosma spp., Eupoecilia ambiguella, Euproctis spp., Euxoa spp., Feltia jaculiferia, Grapholita spp., Hedya nubiferana, Heliothis spp., Hellula undalis, Herpetogramma spp, Hyphantria cunea, Keiferia lycopersicella, Lasmopalpus lignosellus, Leucoptera scitella, Lithocollethis spp., Lobesia botrana, Loxostege bifidalis, Lymantria spp., Lyonetia spp., Malacosoma spp., Mamestra brassicae, Manduca sexta, Mythimna spp, Noctua spp, Operophtera spp., Orniodes indica, Ostrinia nubilalis, Pammene spp., Pandemis spp., Panolis flammea, Papaipema nebris, Pectinophora gossypiela, Perileucoptera coffeella, Pseudaletia unipuncta, Phthorimaea operculella, Pieris rapae, Pieris spp., Plutella xylostella, Prays spp., Pseudoplusia spp, Rachiplusia nu, Richia albicosta, Scirpophaga spp., Sesamia spp., Sparganothis spp., Spodoptera spp., Sylepta derogate, Synanthedon spp., Thaumetopoea spp., Tortrix spp., Trichoplusia ni, Tuta absoluta, and Yponomeuta spp.;

from the order *Mallophaga*, for example,

Damalinea spp. and Trichodectes spp.;

from the order *Orthoptera*, for example,

Blatta spp., Blattella spp., Gryllotalpa spp., Leucophaea maderae, Locusta spp., Neocurtilla hexadactyla, Periplaneta spp. , Scapteriscus spp, and Schistocerca spp.;

from the order *Psocoptera*, for example,

Liposcelis spp.;

from the order *Siphonaptera*, for example,

Ceratophyllus spp., Ctenocephalides spp. and Xenopsylla cheopis;

from the order *Thysanoptera*, for example,

Calliothrips phaseoli, Frankliniella spp., Heliothrips spp, Hercinothrips spp., Parthenothrips spp, Scirtothrips aurantii, Sericothrips variabilis, Taeniothrips spp., Thrips spp;

from the order *Thysanura*, for example, Lepisma saccharina.

The active ingredients according to the invention can be used for controlling, i. e. containing or destroying, pests of the abovementioned type which occur in particular on plants, especially on useful plants and ornamentals in agriculture, in horticulture and in forests, or on organs, such as fruits, flowers, foliage, stalks, tubers or roots, of such plants, and in some cases even plant organs which are formed at a later point in time remain protected against these pests.

Suitable target crops are, in particular, cereals, such as wheat, barley, rye, oats, rice, maize or sorghum; beet, such as sugar or fodder beet; fruit, for example pomaceous fruit, stone fruit or soft fruit, such as apples, pears, plums, peaches, almonds, cherries or berries, for example strawberries,

raspberries or blackberries; leguminous crops, such as beans, lentils, peas or soya; oil crops, such as oilseed rape, mustard, poppies, olives, sunflowers, coconut, castor, cocoa or ground nuts; cucurbits, such as pumpkins, cucumbers or melons; fibre plants, such as cotton, flax, hemp or jute; citrus fruit, such as oranges, lemons, grapefruit or tangerines; vegetables, such as spinach, lettuce, asparagus, cabbages, carrots, onions, tomatoes, potatoes or bell peppers; Lauraceae, such as avocado, Cinnamonium or camphor; and also tobacco, nuts, coffee, eggplants, sugarcane, tea, pepper, grapevines, hops, the plantain family and latex plants.

The compositions and/or methods of the present invention may be also used on any ornamental and/or vegetable crops, including flowers, shrubs, broad-leaved trees and evergreens.

For example the invention may be used on any of the following ornamental species: *Ageratum* spp., *Alonsoa* spp., *Anemone* spp., *Anisodontea capsenisis*, *Anthemis* spp., *Antirrhinum* spp., *Aster* spp., *Begonia* spp. (e.g. *B. elatior*, *B. semperflorens*, *B. tubéreux*), *Bougainvillea* spp., *Brachycome* spp., *Brassica* spp. (ornamental), *Calceolaria* spp., *Capsicum annuum*, *Catharanthus roseus*, *Canna* spp., *Centaurea* spp., *Chrysanthemum* spp., *Cineraria* spp. (*C. maritime*), *Coreopsis* spp., *Crassula coccinea*, *Cuphea ignea*, *Dahlia* spp., *Delphinium* spp., *Dicentra spectabilis*, *Dorotheantus* spp., *Eustoma grandiflorum*, *Forsythia* spp., *Fuchsia* spp., *Geranium gnaphalium*, *Gerbera* spp., *Gomphrena globosa*, *Heliotropium* spp., *Helianthus* spp., *Hibiscus* spp., *Hortensia* spp., *Hydrangea* spp., *Hypoestes phyllostachya*, *Impatiens* spp. (*I. Walleriana*), *Iresines* spp., *Kalanchoe* spp., *Lantana camara*, *Lavatera trimestris*, *Leonotis leonurus*, *Lilium* spp., *Mesembryanthemum* spp., *Mimulus* spp., *Monarda* spp., *Nemesia* spp., *Tagetes* spp., *Dianthus* spp. (carnation), *Canna* spp., *Oxalis* spp., *Bellis* spp., *Pelargonium* spp. *(P. peltatum*, *P. Zonale*), *Viola* spp. (pansy), *Petunia* spp., *Phlox* spp., *Plecthranthus* spp., *Poinsettia* spp., *Parthenocissus* spp. *(P. quinquefolia*, *P. tricuspidata)*, *Primula* spp., *Ranunculus* spp., *Rhododendron* spp., *Rosa* spp. (rose), *Rudbeckia* spp., *Saintpaulia* spp., *Salvia* spp., *Scaevola aemola*, *Schizanthus wisetonensis*, *Sedum* spp., *Solanum* spp., *Surfinia* spp., *Tagetes* spp., *Nicotinia* spp., *Verbena* spp., *Zinnia* spp. and other bedding plants.

For example the invention may be used on any of the following vegetable species: *Allium* spp. (*A. sativum, A.. cepa, A. oschaninii, A. Porrum, A. ascalonicum, A. fistulosum*), *Anthriscus cerefolium, Apium graveolus, Asparagus officinalis, Beta vulgarus, Brassica* spp. (*B. Oleracea, B. Pekinensis, B. rapa*), *Capsicum annuum, Cicer arietinum, Cichorium endivia, Cichorum* spp. (*C. intybus, C. endivia*), *Citrillus lanatus*, *Cucumis* spp. (*C. sativus, C. melo*), *Cucurbita* spp. (*C. pepo, C. maxima*), *Cyanara* spp. (*C. scolymus, C. cardunculus*), *Daucus carota, Foeniculum vulgare, Hypericum* spp., *Lactuca sativa, Lycopersicon* spp. (*L. esculentum, L. lycopersicum*), *Mentha* spp., *Ocimum basilicum, Petroselinum crispum, Phaseolus* spp. (*P. vulgaris, P. coccineus*), *Pisum sativum, Raphanus sativus, Rheum rhaponticum, Rosemarinus* spp., *Salvia* spp., *Scorzonera hispanica, Solanum melongena, Spinacea oleracea, Valerianella* spp. (*V. locusta*, *V. eriocarpa*) and *Vicia faba*.

Preferred ornamental species include African violet, *Begonia*, *Dahlia*, *Gerbera*, *Hydrangea*, *Verbena*, *Rosa*, *Kalanchoe*, *Poinsettia*, *Aster*, *Centaurea*, *Coreopsis*, *Delphinium*, *Monarda*, *Phlox*, *Rudbeckia*, *Sedum, Petunia, Viola, Impatiens, Geranium, Chrysanthemum, Ranunculus, Fuchsia, Salvia, Hortensia*, rosemary, sage, St. Johnswort, mint, sweet pepper, tomato and cucumber.

The active ingredients according to the invention are especially suitable for controlling Aphis craccivora, Diabrotica balteata, Heliothis virescens, Myzus persicae, Plutella xylostella and Spodoptera littoralis in cotton, vegetable, maize, rice and soya crops. The active ingredients according to the

invention are further especially suitable for controlling Mamestra (preferably in vegetables), Cydia pomonella (preferably in apples), Empoasca(preferably in vegetables, vineyards), Leptinotarsa (preferably in potatos) and Chilo supressalis (preferably in rice).

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In a further aspect, the invention may also relate to a method of controlling damage to plant and parts thereof by plant parasitic nematodes (Endoparasitic-, Semiendoparasitic- and Ectoparasitic nematodes), especially plant parasitic nematodes such as root knot nematodes, Meloidogyne hapla, Meloidogyne incognita, Meloidogyne javanica, Meloidogyne arenaria and other Meloidogyne species; cyst-forming nematodes, Globodera rostochiensis and other Globodera species; Heterodera avenae, Heterodera glycines, Heterodera schachtii, Heterodera trifolii, and other Heterodera species; Seed gall nematodes, Anguina species; Stem and foliar nematodes, Aphelenchoides species; Sting nematodes, Belonolaimus longicaudatus and other Belonolaimus species; Pine nematodes, Bursaphelenchus xylophilus and other Bursaphelenchus species; Ring nematodes, Criconema species, Criconemella species, Criconemoides species, Mesocriconema species; Stem and bulb nematodes, Ditylenchus destructor, Ditylenchus dipsaci and other Ditylenchus species; Awl nematodes, Dolichodorus species; Spiral nematodes, Heliocotylenchus multicinctus and other Helicotylenchus species; Sheath and sheathoid nematodes, Hemicycliophora species and Hemicriconemoides species; Hirshmanniella species; Lance nematodes, Hoploaimus species; false rootknot nematodes, Nacobbus species; Needle nematodes, Longidorus elongatus and other Longidorus species; Pin nematodes, Pratylenchus species; Lesion nematodes, Pratylenchus neglectus, Pratylenchus penetrans, Pratylenchus curvitatus, Pratylenchus goodeyi and other Pratylenchus species; Burrowing nematodes, Radopholus similis and other Radopholus species; Reniform nematodes, Rotylenchus robustus, Rotylenchus reniformis and other Rotylenchus species; Scutellonema species; Stubby root nematodes, Trichodorus primitivus and other Trichodorus species, Paratrichodorus species; Stunt nematodes, Tylenchorhynchus claytoni, Tylenchorhynchus dubius and other Tylenchorhynchus species; Citrus nematodes, Tylenchulus species; Dagger nematodes, Xiphinema species; and other plant parasitic nematode species, such as Subanguina spp., Hypsoperine spp., Macroposthonia spp., Melinius spp., Punctodera spp., and Quinisulcius spp..

The compounds of the invention may also have activity against the molluscs. Examples of which include, for example, Ampullariidae; Arion (A. ater, A. circumscriptus, A. hortensis, A. rufus); Bradybaenidae (Bradybaena fruticum); Cepaea (C. hortensis, C. Nemoralis); ochlodina; Deroceras (D. agrestis, D. empiricorum, D. laeve, D. reticulatum); Discus (D. rotundatus); Euomphalia; Galba (G. trunculata); Helicelia (H. itala, H. obvia); Helicidae Helicigona arbustorum); Helicodiscus; Helix (H. aperta); Limax (L. cinereoniger, L. flavus, L. marginatus, L. maximus, L. tenellus); Lymnaea; Milax (M. gagates, M. marginatus, M. sowerbyi); Opeas; Pomacea (P. canaticulata); Vallonia and Zanitoides.

Crops are to be understood as also including those crops which have been rendered tolerant to herbicides like bromoxynil or classes of herbicides such as ALS-, EPSPS-, GS-, HPPD- and PPO-inhibitors. An example of a crop that has been rendered tolerant to imidazolinones, e.g. imazamox, by

conventional methods of breeding is Clearfield® summer canola. Examples of crops that have been rendered tolerant to herbicides by genetic engineering methods include e.g. glyphosate- and glufosinate-resistant maize varieties commercially available under the trade names RoundupReady®, Herculex I® and LibertyLink®.

Crops are also to be understood as being those which naturally are or have been rendered resistant to harmful insects. This includes plants transformed by the use of recombinant DNA techniques, for example, to be capable of synthesising one or more selectively acting toxins, such as are known, for example, from toxin-producing bacteria. Examples of toxins which can be expressed include δ-endotoxins, vegetative insecticidal proteins (Vip), insecticidal proteins of bacteria colonising nematodes, and toxins produced by scorpions, arachnids, wasps and fungi.

An example of a crop that has been modified to express the *Bacillus thuringiensis* toxin is the Bt maize KnockOut® (Syngenta Seeds). An example of a crop comprising more than one gene that codes for insecticidal resistance and thus expresses more than one toxin is VipCot® (Syngenta Seeds). Crops or seed material thereof can also be resistant to multiple types of pests (so-called stacked transgenic events when created by genetic modification). For example, a plant can have the ability to express an insecticidal protein while at the same time being herbicide tolerant, for example Herculex I® (Dow AgroSciences, Pioneer Hi-Bred International).

Further areas of use of the compositions according to the invention are the protection of stored goods and store rooms and the protection of raw materials, such as wood, textiles, floor coverings or buildings, and also in the hygiene sector, especially the protection of humans, domestic animals and productive livestock against pests of the mentioned type.

The present invention also provides a method for controlling pests (such as mosquitoes and other disease vectors; see also http://www.who.int/malaria/vector_control/irs/en/). In one embodiment, the method for controlling pests comprises applying the compositions of the invention to the target pests, to their locus or to a surface or substrate by brushing, rolling, spraying, spreading or dipping. By way of example, an IRS (indoor residual spraying) application of a surface such as a wall, ceiling or floor surface is contemplated by the method of the invention. In another embodiment, it is contemplated to apply such compositions to a substrate such as non-woven or a fabric material in the form of (or which can be used in the manufacture of) netting, clothing, bedding, curtains and tents.

In one embodiment, the method for controlling such pests comprises applying a pesticidally effective amount of the compositions of the invention to the target pests, to their locus, or to a surface or substrate so as to provide effective residual pesticidal activity on the surface or substrate. Such application may be made by brushing, rolling, spraying, spreading or dipping the pesticidal composition of the invention. By way of example, an IRS application of a surface such as a wall, ceiling or floor surface is contemplated by the method of the invention so as to provide effective residual pesticidal activity on the surface. In another embodiment, it is contemplated to apply such compositions for residual control of pests on a substrate such as a fabric material in the form of (or which can be used in the manufacture of) netting, clothing, bedding, curtains and tents.

Substrates including non-woven, fabrics or netting to be treated may be made of natural fibres such as cotton, raffia, jute, flax, sisal, hessian, or wool, or synthetic fibres such as polyamide, polyester,

polypropylene, polyacrylonitrile or the like. The polyesters are particularly suitable. The methods of textile treatment are known, e.g. WO2008151984, WO2003034823, US5631072, WO2005064072, WO2006128870, EP1724392, WO2005113886 or WO2007090739.

Further areas of use of the compositions according to the invention are the field of tree injection/trunk treatment for all ornamental trees as well all sort of fruit and nut trees.

In the field of tree injection/trunk treatment, the compounds according to the present invention are especially suitable against wood-boring insects from the order *Lepidoptera* as mentioned above and from the order *Coleoptera*, especially against woodborers listed in the following tables X and Y:

Table X. Examples of exotic woodborers of economic importance.

Family	Species	Host or Crop Infested
Buprestidae	*Agrilus planipennis*	Ash
Cerambycidae	*Anoplura glabripennis*	Hardwoods
Scolytidae	*Xylosandrus crassiusculus*	Hardwoods
	X. mutilatus	Hardwoods
	Tomicus piniperda	Conifers

Table Y. Examples of native woodborers of economic importance.

Family	Species	Host or Crop Infested
Buprestidae	*Agrilus anxius*	Birch
	Agrilus politus	Willow, Maple
	Agrilus sayi	Bayberry, Sweetfern
	Agrilus vittaticolllis	Apple, Pear, Cranberry, Serviceberry, Hawthorn
	Chrysobothris femorata	Apple, Apricot, Beech, Boxelder, Cherry, Chestnut, Currant, Elm, Hawthorn, Hackberry, Hickory, Horsechestnut, Linden, Maple, Mountain-ash, Oak, Pecan, Pear, Peach, Persimmon, Plum, Poplar, Quince, Redbud, Serviceberry, Sycamore, Walnut, Willow
	Texania campestris	Basswood, Beech, Maple, Oak, Sycamore, Willow, Yellow-poplar
Cerambycidae	*Goes pulverulentus*	Beech, Elm, Nuttall, Willow, Black oak, Cherrybark oak, Water oak, Sycamore
	Goes tigrinus	Oak
	Neoclytus acuminatus	Ash, Hickory, Oak, Walnut, Birch, Beech, Maple, Eastern hophornbeam, Dogwood,

Family	Species	Host or Crop Infested
		Persimmon, Redbud, Holly, Hackberry, Black locust, Honeylocust, Yellow-poplar, Chestnut, Osage-orange, Sassafras, Lilac, Mountain-mahogany, Pear, Cherry, Plum, Peach, Apple, Elm, Basswood, Sweetgum
	Neoptychodes trilineatus	Fig, Alder, Mulberry, Willow, Netleaf hackberry
	Oberea ocellata	Sumac, Apple, Peach, Plum, Pear, Currant, Blackberry
	Oberea tripunctata	Dogwood, Viburnum, Elm, Sourwood, Blueberry, Rhododendron, Azalea, Laurel, Poplar, Willow, Mulberry
	Oncideres cingulata	Hickory, Pecan, Persimmon, Elm, Sourwood, Basswood, Honeylocust, Dogwood, Eucalyptus, Oak, Hackberry, Maple, Fruit trees
	Saperda calcarata	Poplar
	Strophiona nitens	Chestnut, Oak, Hickory, Walnut, Beech, Maple
Scolytidae	*Corthylus columbianus*	Maple, Oak, Yellow-poplar, Beech, Boxelder, Sycamore, Birch, Basswood, Chestnut, Elm
	Dendroctonus frontalis	Pine
	Dryocoetes betulae	Birch, Sweetgum, Wild cherry, Beech, Pear
	Monarthrum fasciatum	Oak, Maple, Birch, Chestnut, Sweetgum, Blackgum, Poplar, Hickory, Mimosa, Apple, Peach, Pine
	Phloeotribus liminaris	Peach, Cherry, Plum, Black cherry, Elm, Mulberry, Mountain-ash
	Pseudopityophthorus pruinosus	Oak, American beech, Black cherry, Chickasaw plum, Chestnut, Maple, Hickory, Hornbeam, Hophornbeam
Sesiidae	*Paranthrene simulans*	Oak, American chestnut
	Sannina uroceriformis	Persimmon
	Synanthedon exitiosa	Peach, Plum, Nectarine, Cherry,

Family	Species	Host or Crop Infested
		Apricot, Almond, Black cherry
	Synanthedon pictipes	Peach, Plum, Cherry, Beach, Black Cherry
	Synanthedon rubrofascia	Tupelo
	Synanthedon scitula	Dogwood, Pecan, Hickory, Oak, Chestnut, Beech, Birch, Black cherry, Elm, Mountain-ash, Viburnum, Willow, Apple, Loquat, Ninebark, Bayberry
	Vitacea polistiformis	Grape

The present invention may be also used to control any insect pests that may be present in turfgrass, including for example beetles, caterpillars, fire ants, ground pearls, millipedes, sow bugs, mites, mole crickets, scales, mealybugs ticks, spittlebugs, southern chinch bugs and white grubs. The present invention may be used to control insect pests at various stages of their life cycle, including eggs, larvae, nymphs and adults.

In particular, the present invention may be used to control insect pests that feed on the roots of turfgrass including white grubs (such as *Cyclocephala spp.* (e.g. masked chafer, *C. lurida*), *Rhizotrogus spp.* (e.g. European chafer, *R. majalis*), *Cotinus spp.* (e.g. Green June beetle, *C. nitida*), *Popillia spp.* (e.g. Japanese beetle, *P. japonica*), *Phyllophaga spp.* (e.g. May/June beetle), *Ataenius spp.* (e.g. Black turfgrass ataenius, *A. spretulus*), *Maladera spp.* (e.g. Asiatic garden beetle, *M. castanea*) and *Tomarus spp.*), ground pearls (*Margarodes* spp.), mole crickets (tawny, southern, and short-winged; *Scapteriscus* spp., *Gryllotalpa africana*) and leatherjackets (European crane fly, *Tipula spp.*).

The present invention may also be used to control insect pests of turfgrass that are thatch dwelling, including armyworms (such as fall armyworm *Spodoptera frugiperda*, and common armyworm *Pseudaletia unipuncta),* cutworms, billbugs (*Sphenophorus spp.*, such as *S. venatus verstitus* and *S. parvulus)*, and sod webworms (such as *Crambus spp.* and the tropical sod webworm, *Herpetogramma phaeopteralis)*.

The present invention may also be used to control insect pests of turfgrass that live above the ground and feed on the turfgrass leaves, including chinch bugs (such as southern chinch bugs, *Blissus insularis),* Bermudagrass mite (*Eriophyes cynodoniensis)*, rhodesgrass mealybug (*Antonina graminis),* two-lined spittlebug (*Propsapia bicincta),* leafhoppers, cutworms (*Noctuidae* family), and greenbugs.

The present invention may also be used to control other pests of turfgrass such as red imported fire ants (*Solenopsis invicta)* that create ant mounds in turf.

In the hygiene sector, the compositions according to the invention are active against ectoparasites such as hard ticks, soft ticks, mange mites, harvest mites, flies (biting and licking), parasitic fly larvae, lice, hair lice, bird lice and fleas.

Examples of such parasites are:

Of the order Anoplurida: Haematopinus spp., Linognathus spp., Pediculus spp. and Phtirus spp., Solenopotes spp..

Of the order Mallophagida: Trimenopon spp., Menopon spp., Trinoton spp., Bovicola spp., Werneckiella spp., Lepikentron spp., Damalina spp., Trichodectes spp. and Felicola spp..

Of the order Diptera and the suborders Nematocerina and Brachycerina, for example Aedes spp., Anopheles spp., Culex spp., Simulium spp., Eusimulium spp., Phlebotomus spp., Lutzomyia spp., Culicoides spp., Chrysops spp., Hybomitra spp., Atylotus spp., Tabanus spp., Haematopota spp., Philipomyia spp., Braula spp., Musca spp., Hydrotaea spp., Stomoxys spp., Haematobia spp., Morellia spp., Fannia spp., Glossina spp., Calliphora spp., Lucilia spp., Chrysomyia spp., Wohlfahrtia spp., Sarcophaga spp., Oestrus spp., Hypoderma spp., Gasterophilus spp., Hippobosca spp., Lipoptena spp. and Melophagus spp..

Of the order Siphonapterida, for example Pulex spp., Ctenocephalides spp., Xenopsylla spp., Ceratophyllus spp..

Of the order Heteropterida, for example Cimex spp., Triatoma spp., Rhodnius spp., Panstrongylus spp..

Of the order Blattarida, for example Blatta orientalis, Periplaneta americana, Blattelagermanica and Supella spp..

Of the subclass Acaria (Acarida) and the orders Meta- and Meso-stigmata, for example Argas spp., Ornithodorus spp., Otobius spp., Ixodes spp., Amblyomma spp., Boophilus spp., Dermacentor spp., Haemophysalis spp., Hyalomma spp., Rhipicephalus spp., Dermanyssus spp., Raillietia spp., Pneumonyssus spp., Sternostoma spp. and Varroa spp..

Of the orders Actinedida (Prostigmata) and Acaridida (Astigmata), for example Acarapis spp., Cheyletiella spp., Ornithocheyletia spp., Myobia spp., Psorergatesspp., Demodex spp., Trombicula spp., Listrophorus spp., Acarus spp., Tyrophagus spp., Caloglyphus spp., Hypodectes spp., Pterolichus spp., Psoroptes spp., Chorioptes spp., Otodectes spp., Sarcoptes spp., Notoedres spp., Knemidocoptes spp., Cytodites spp. and Laminosioptes spp..

The compositions according to the invention are also suitable for protecting against insect infestation in the case of materials such as wood, textiles, plastics, adhesives, glues, paints, paper and card, leather, floor coverings and buildings.

The compositions according to the invention can be used, for example, against the following pests: beetles such as Hylotrupes bajulus, Chlorophorus pilosis, Anobium punctatum, Xestobium rufovillosum, Ptilinuspecticornis, Dendrobium pertinex, Ernobius mollis, Priobium carpini, Lyctus brunneus, Lyctus africanus, Lyctus planicollis, Lyctus linearis, Lyctus pubescens, Trogoxylon aequale, Minthesrugicollis, Xyleborus spec.,Tryptodendron spec., Apate monachus, Bostrychus capucins, Heterobostrychus brunneus, Sinoxylon spec. and Dinoderus minutus, and also hymenopterans such as Sirex juvencus, Urocerus gigas, Urocerus gigas taignus and Urocerus augur, and termites such as Kalotermes flavicollis, Cryptotermes brevis, Heterotermes indicola, Reticulitermes flavipes, Reticulitermes santonensis, Reticulitermes lucifugus, Mastotermes darwiniensis, Zootermopsis nevadensis and Coptotermes formosanus, and bristletails such as Lepisma saccharina.

The compounds according to the invention can be used as pesticidal agents in unmodified form, but they are generally formulated into compositions in various ways using formulation adjuvants, such as carriers, solvents and surface-active substances. The formulations can be in various physical forms, e.g. in the form of dusting powders, gels, wettable powders, water-dispersible granules, water-dispersible tablets, effervescent pellets, emulsifiable concentrates, microemulsifiable concentrates, oil-in-water

emulsions, oil-flowables, aqueous dispersions, oily dispersions, suspo-emulsions, capsule suspensions, emulsifiable granules, soluble liquids, water-soluble concentrates (with water or a water-miscible organic solvent as carrier), impregnated polymer films or in other forms known e.g. from the Manual on Development and Use of FAO and WHO Specifications for Pesticides, United Nations, First Edition, Second Revision (2010). Such formulations can either be used directly or diluted prior to use. The dilutions can be made, for example, with water, liquid fertilisers, micronutrients, biological organisms, oil or solvents.

The formulations can be prepared e.g. by mixing the active ingredient with the formulation adjuvants in order to obtain compositions in the form of finely divided solids, granules, solutions, dispersions or emulsions. The active ingredients can also be formulated with other adjuvants, such as finely divided solids, mineral oils, oils of vegetable or animal origin, modified oils of vegetable or animal origin, organic solvents, water, surface-active substances or combinations thereof.

The active ingredients can also be contained in very fine microcapsules. Microcapsules contain the active ingredients in a porous carrier. This enables the active ingredients to be released into the environment in controlled amounts (e.g. slow-release). Microcapsules usually have a diameter of from 0.1 to 500 microns. They contain active ingredients in an amount of about from 25 to 95 % by weight of the capsule weight. The active ingredients can be in the form of a monolithic solid, in the form of fine particles in solid or liquid dispersion or in the form of a suitable solution. The encapsulating membranes can comprise, for example, natural or synthetic rubbers, cellulose, styrene/butadiene copolymers, polyacrylonitrile, polyacrylate, polyesters, polyamides, polyureas, polyurethane or chemically modified polymers and starch xanthates or other polymers that are known to the person skilled in the art. Alternatively, very fine microcapsules can be formed in which the active ingredient is contained in the form of finely divided particles in a solid matrix of base substance, but the microcapsules are not themselves encapsulated.

The formulation adjuvants that are suitable for the preparation of the compositions according to the invention are known *per se*. As liquid carriers there may be used: water, toluene, xylene, petroleum ether, vegetable oils, acetone, methyl ethyl ketone, cyclohexanone, acid anhydrides, acetonitrile, acetophenone, amyl acetate, 2-butanone, butylene carbonate, chlorobenzene, cyclohexane, cyclohexanol, alkyl esters of acetic acid, diacetone alcohol, 1,2-dichloropropane, diethanolamine, p-diethylbenzene, diethylene glycol, diethylene glycol abietate, diethylene glycol butyl ether, diethylene glycol ethyl ether, diethylene glycol methyl ether, *N,N*-dimethylformamide, dimethyl sulfoxide, 1,4-dioxane, dipropylene glycol, dipropylene glycol methyl ether, dipropylene glycol dibenzoate, diproxitol, alkylpyrrolidone, ethyl acetate, 2-ethyl-hexanol, ethylene carbonate, 1,1,1-trichloroethane, 2-heptanone, alpha-pinene, d-limonene, ethyl lactate, ethylene glycol, ethylene glycol butyl ether, ethylene glycol methyl ether, gamma-butyrolactone, glycerol, glycerol acetate, glycerol diacetate, glycerol triacetate, hexadecane, hexylene glycol, isoamyl acetate, isobornyl acetate, isooctane, isophorone, isopropylbenzene, isopropyl myristate, lactic acid, laurylamine, mesityl oxide, methoxypropanol, methyl isoamyl ketone, methyl isobutyl ketone, methyl laurate, methyl octanoate, methyl oleate, methylene chloride, m-xylene, *n*-hexane, *n*-octylamine, octadecanoic acid, octylamine acetate, oleic acid, oleylamine, o-xylene, phenol, polyethylene glycol, propionic acid, propyl lactate, propylene carbonate, propylene glycol, propylene glycol methyl ether, p-xylene, toluene, triethyl phosphate, triethylene glycol, xylenesulfonic acid, paraffin, mineral oil, trichloroethylene, perchloroethylene, ethyl acetate, amyl acetate, butyl acetate, propylene glycol methyl ether, diethylene

glycol methyl ether, methanol, ethanol, isopropanol, and alcohols of higher molecular weight, such as amyl alcohol, tetrahydrofurfuryl alcohol, hexanol, octanol, ethylene glycol, propylene glycol, glycerol, *N*-methyl-2-pyrrolidone and the like.

Suitable solid carriers are, for example, talc, titanium dioxide, pyrophyllite clay, silica, attapulgite clay, kieselguhr, limestone, calcium carbonate, bentonite, calcium montmorillonite, cottonseed husks, wheat flour, soybean flour, pumice, wood flour, ground walnut shells, lignin and similar substances.

A large number of surface-active substances can advantageously be used in both solid and liquid formulations, especially in those formulations which can be diluted with a carrier prior to use. Surface-active substances may be anionic, cationic, non-ionic or polymeric and they can be used as emulsifiers, wetting agents or suspending agents or for other purposes. Typical surface-active substances include, for example, salts of alkyl sulfates, such as diethanolammonium lauryl sulfate; salts of alkylarylsulfonates, such as calcium dodecylbenzenesulfonate; alkylphenol/alkylene oxide addition products, such as nonylphenol ethoxylate; alcohol/alkylene oxide addition products, such as tridecylalcohol ethoxylate; soaps, such as sodium stearate; salts of alkylnaphthalenesulfonates, such as sodium dibutylnaphthalenesulfonate; dialkyl esters of sulfosuccinate salts, such as sodium di(2-ethylhexyl)sulfosuccinate; sorbitol esters, such as sorbitol oleate; quaternary amines, such as lauryltrimethylammonium chloride, polyethylene glycol esters of fatty acids, such as polyethylene glycol stearate; block copolymers of ethylene oxide and propylene oxide; and salts of mono- and di-alkylphosphate esters; and also further substances described e.g. in McCutcheon's Detergents and Emulsifiers Annual, MC Publishing Corp., Ridgewood New Jersey (1981).

Further adjuvants that can be used in pesticidal formulations include crystallisation inhibitors, viscosity modifiers, suspending agents, dyes, anti-oxidants, foaming agents, light absorbers, mixing auxiliaries, antifoams, complexing agents, neutralising or pH-modifying substances and buffers, corrosion inhibitors, fragrances, wetting agents, take-up enhancers, micronutrients, plasticisers, glidants, lubricants, dispersants, thickeners, antifreezes, microbicides, and liquid and solid fertilisers.

The compositions according to the invention can include an additive comprising an oil of vegetable or animal origin, a mineral oil, alkyl esters of such oils or mixtures of such oils and oil derivatives. The amount of oil additive in the composition according to the invention is generally from 0.01 to 10 %, based on the mixture to be applied. For example, the oil additive can be added to a spray tank in the desired concentration after a spray mixture has been prepared. Preferred oil additives comprise mineral oils or an oil of vegetable origin, for example rapeseed oil, olive oil or sunflower oil, emulsified vegetable oil, alkyl esters of oils of vegetable origin, for example the methyl derivatives, or an oil of animal origin, such as fish oil or beef tallow. Preferred oil additives comprise alkyl esters of C_8-C_{22} fatty acids, especially the methyl derivatives of C_{12}-C_{18} fatty acids, for example the methyl esters of lauric acid, palmitic acid and oleic acid (methyl laurate, methyl palmitate and methyl oleate, respectively). Many oil derivatives are known from the Compendium of Herbicide Adjuvants, 10th Edition, Southern Illinois University, 2010.

The inventive compositions generally comprise from 0.1 to 99 % by weight, especially from 0.1 to 95 % by weight, of compounds of the present invention and from 1 to 99.9 % by weight of a formulation adjuvant which preferably includes from 0 to 25 % by weight of a surface-active substance. Whereas commercial products may preferably be formulated as concentrates, the end user will normally employ dilute formulations.

The rates of application vary within wide limits and depend on the nature of the soil, the method of application, the crop plant, the pest to be controlled, the prevailing climatic conditions, and other factors governed by the method of application, the time of application and the target crop. As a general guideline compounds may be applied at a rate of from 1 to 2000 l/ha, especially from 10 to 1000 l/ha.

Preferred formulations can have the following compositions (weight %):

Emulsifiable concentrates:

active ingredient:	1 to 95 %, preferably 60 to 90 %
surface-active agent:	1 to 30 %, preferably 5 to 20 %
liquid carrier:	1 to 80 %, preferably 1 to 35 %

Dusts:

active ingredient:	0.1 to 10 %, preferably 0.1 to 5 %
solid carrier:	99.9 to 90 %, preferably 99.9 to 99 %

Suspension concentrates:

active ingredient:	5 to 75 %, preferably 10 to 50 %
water:	94 to 24 %, preferably 88 to 30 %
surface-active agent:	1 to 40 %, preferably 2 to 30 %

Wettable powders:

active ingredient:	0.5 to 90 %, preferably 1 to 80 %
surface-active agent:	0.5 to 20 %, preferably 1 to 15 %
solid carrier:	5 to 95 %, preferably 15 to 90 %

Granules:

active ingredient:	0.1 to 30 %, preferably 0.1 to 15 %
solid carrier:	99.5 to 70 %, preferably 97 to 85 %

The following Examples further illustrate, but do not limit, the invention.

Wettable powders	a)	b)	c)
active ingredients	25 %	50 %	75 %
sodium lignosulfonate	5 %	5 %	-
sodium lauryl sulfate	3 %	-	5 %
sodium diisobutylnaphthalenesulfonate	-	6 %	10 %
phenol polyethylene glycol ether (7-8 mol of ethylene oxide)	-	2 %	-
highly dispersed silicic acid	5 %	10 %	10 %
Kaolin	62 %	27 %	-

The combination is thoroughly mixed with the adjuvants and the mixture is thoroughly ground in a suitable mill, affording wettable powders that can be diluted with water to give suspensions of the desired concentration.

Powders for dry seed treatment	a)	b)	c)
active ingredients	25 %	50 %	75 %
light mineral oil	5 %	5 %	5 %
highly dispersed silicic acid	5 %	5 %	-
Kaolin	65 %	40 %	-
Talcum	-		20 %

The combination is thoroughly mixed with the adjuvants and the mixture is thoroughly ground in a suitable mill, affording powders that can be used directly for seed treatment.

Emulsifiable concentrate	
active ingredients	10 %
octylphenol polyethylene glycol ether (4-5 mol of ethylene oxide)	3 %
calcium dodecylbenzenesulfonate	3 %
castor oil polyglycol ether (35 mol of ethylene oxide)	4 %
Cyclohexanone	30 %
xylene mixture	50 %

Emulsions of any required dilution, which can be used in plant protection, can be obtained from this concentrate by dilution with water.

Dusts	a)	b)	c)
Active ingredients	5 %	6 %	4 %
Talcum	95 %	-	-
Kaolin	-	94 %	-
mineral filler	-	-	96 %

Ready-for-use dusts are obtained by mixing the combination with the carrier and grinding the mixture in a suitable mill. Such powders can also be used for dry dressings for seed.

Extruder granules	
Active ingredients	15 %
sodium lignosulfonate	2 %
carboxymethylcellulose	1 %
Kaolin	82 %

The combination is mixed and ground with the adjuvants, and the mixture is moistened with water. The mixture is extruded and then dried in a stream of air.

Coated granules	
Active ingredients	8 %
polyethylene glycol (mol. wt. 200)	3 %
Kaolin	89 %

The finely ground combination is uniformly applied, in a mixer, to the kaolin moistened with polyethylene glycol. Non-dusty coated granules are obtained in this manner.

Suspension concentrate

active ingredients	40 %
propylene glycol	10 %
nonylphenol polyethylene glycol ether (15 mol of ethylene oxide)	6 %
Sodium lignosulfonate	10 %
carboxymethylcellulose	1 %
silicone oil (in the form of a 75 % emulsion in water)	1 %
Water	32 %

The finely ground combination is intimately mixed with the adjuvants, giving a suspension concentrate from which suspensions of any desired dilution can be obtained by dilution with water. Using such dilutions, living plants as well as plant propagation material can be treated and protected against infestation by microorganisms, by spraying, pouring or immersion.

Flowable concentrate for seed treatment

active ingredients	40 %
propylene glycol	5 %
copolymer butanol PO/EO	2 %
Tristyrenephenole with 10-20 moles EO	2 %
1,2-benzisothiazolin-3-one (in the form of a 20% solution in water)	0.5 %
monoazo-pigment calcium salt	5 %
Silicone oil (in the form of a 75 % emulsion in water)	0.2 %
Water	45.3 %

The finely ground combination is intimately mixed with the adjuvants, giving a suspension concentrate from which suspensions of any desired dilution can be obtained by dilution with water. Using such dilutions, living plants as well as plant propagation material can be treated and protected against infestation by microorganisms, by spraying, pouring or immersion.

Slow Release Capsule Suspension

28 parts of the combination are mixed with 2 parts of an aromatic solvent and 7 parts of toluene diisocyanate/polymethylene-polyphenylisocyanate-mixture (8:1). This mixture is emulsified in a mixture of 1.2 parts of polyvinylalcohol, 0.05 parts of a defoamer and 51.6 parts of water until the desired particle size is achieved. To this emulsion a mixture of 2.8 parts 1,6-diaminohexane in 5.3 parts of water is added. The mixture is agitated until the polymerization reaction is completed. The obtained capsule suspension is stabilized by adding 0.25 parts of a thickener and 3 parts of a dispersing agent. The capsule suspension formulation contains 28% of the active ingredients. The medium capsule diameter is 8-15 microns. The resulting formulation is applied to seeds as an aqueous suspension in an apparatus suitable for that purpose.

Formulation types include an emulsion concentrate (EC), a suspension concentrate (SC), a suspo-emulsion (SE), a capsule suspension (CS), a water dispersible granule (WG), an emulsifiable granule (EG), an emulsion, water in oil (EO), an emulsion, oil in water (EW), a micro-emulsion (ME), an oil dispersion (OD), an oil miscible flowable (OF), an oil miscible liquid (OL), a soluble concentrate (SL), an

ultra-low volume suspension (SU), an ultra-low volume liquid (UL), a technical concentrate (TK), a dispersible concentrate (DC), a wettable powder (WP), a soluble granule (SG) or any technically feasible formulation in combination with agriculturally acceptable adjuvants.

The activity of the compositions according to the invention can be broadened considerably, and adapted to prevailing circumstances, by adding other insecticidally, acaricidally and/or fungicidally active ingredients. The mixtures of the compounds of formula (I) with other insecticidally, acaricidally and/or fungicidally active ingredients may also have further surprising advantages which can also be described, in a wider sense, as synergistic activity. For example, better tolerance by plants, reduced phytotoxicity, insects can be controlled in their different development stages or better behaviour during their production, for example during grinding or mixing, during their storage or during their use.

Suitable additions to active ingredients here are, for example, representatives of the following classes of active ingredients: organophosphorus compounds, nitrophenol derivatives, thioureas, juvenile hormones, formamidines, benzophenone derivatives, ureas, pyrrole derivatives, carbamates, pyrethroids, chlorinated hydrocarbons, acylureas, pyridylmethyleneamino derivatives, macrolides, neonicotinoids and Bacillus thuringiensis preparations.

The following mixtures of the compounds of formula (I) with active ingredients are preferred (the abbreviation "TX" means "one compound selected from the group consisting of the compounds described in Tables 1 to 96 and Table P of the present invention"):

an adjuvant selected from the group of substances consisting of petroleum oils (alternative name) (628) + TX,

an acaricide selected from the group of substances consisting of 1,1-bis(4-chlorophenyl)-2-ethoxyethanol (IUPAC name) (910) + TX, 2,4-dichlorophenyl benzenesulfonate (IUPAC/Chemical Abstracts name) (1059) + TX, 2-fluoro-*N*-methyl-*N*-1-naphthylacetamide (IUPAC name) (1295) + TX, 4-chlorophenyl phenyl sulfone (IUPAC name) (981) + TX, abamectin (1) + TX, acequinocyl (3) + TX, acetoprole [CCN] + TX, acrinathrin (9) + TX, aldicarb (16) + TX, aldoxycarb (863) + TX, alpha-cypermethrin (202) + TX, amidithion (870) + TX, amidoflumet [CCN] + TX, amidothioate (872) + TX, amiton (875) + TX, amiton hydrogen oxalate (875) + TX, amitraz (24) + TX, aramite (881) + TX, arsenous oxide (882) + TX, AVI 382 (compound code) + TX, AZ 60541 (compound code) + TX, azinphos-ethyl (44) + TX, azinphos-methyl (45) + TX, azobenzene (IUPAC name) (888) + TX, azocyclotin (46) + TX, azothoate (889) + TX, benomyl (62) + TX, benoxafos (alternative name) [CCN] + TX, benzoximate (71) + TX, benzyl benzoate (IUPAC name) [CCN] + TX, bifenazate (74) + TX, bifenthrin (76) + TX, binapacryl (907) + TX, brofenvalerate (alternative name) + TX, bromocyclen (918) + TX, bromophos (920) + TX, bromophos-ethyl (921) + TX, bromopropylate (94) + TX, buprofezin (99) + TX, butocarboxim (103) + TX, butoxycarboxim (104) + TX, butylpyridaben (alternative name) + TX, calcium polysulfide (IUPAC name) (111) + TX, camphechlor (941) + TX, carbanolate (943) + TX, carbaryl (115) + TX, carbofuran (118) + TX, carbophenothion (947) + TX, CGA 50'439 (development code) (125) + TX, chinomethionat (126) + TX, chlorbenside (959) + TX, chlordimeform (964) + TX, chlordimeform hydrochloride (964) + TX, chlorfenapyr (130) + TX, chlorfenethol (968) + TX, chlorfenson (970) + TX, chlorfensulfide (971) + TX, chlorfenvinphos (131) + TX, chlorobenzilate (975) + TX, chloromebuform (977) + TX, chloromethiuron (978) + TX, chloropropylate (983) + TX, chlorpyrifos (145) + TX, chlorpyrifos-methyl (146) + TX, chlorthiophos (994) + TX, cinerin I (696) + TX, cinerin II (696) + TX, cinerins (696) + TX, clofentezine (158) + TX,

closantel (alternative name) [CCN] + TX, coumaphos (174) + TX, crotamiton (alternative name) [CCN] + TX, crotoxyphos (1010) + TX, cufraneb (1013) + TX, cyanthoate (1020) + TX, cyflumetofen (CAS Reg. No.: 400882-07-7) + TX, cyhalothrin (196) + TX, cyhexatin (199) + TX, cypermethrin (201) + TX, DCPM (1032) + TX, DDT (219) + TX, demephion (1037) + TX, demephion-O (1037) + TX, demephion-S (1037) + TX, demeton (1038) + TX, demeton-methyl (224) + TX, demeton-O (1038) + TX, demeton-O-methyl (224) + TX, demeton-S (1038) + TX, demeton-S-methyl (224) + TX, demeton-S-methylsulfon (1039) + TX, diafenthiuron (226) + TX, dialifos (1042) + TX, diazinon (227) + TX, dichlofluanid (230) + TX, dichlorvos (236) + TX, dicliphos (alternative name) + TX, dicofol (242) + TX, dicrotophos (243) + TX, dienochlor (1071) + TX, dimefox (1081) + TX, dimethoate (262) + TX, dinactin (alternative name) (653) + TX, dinex (1089) + TX, dinex-diclexine (1089) + TX, dinobuton (269) + TX, dinocap (270) + TX, dinocap-4 [CCN] + TX, dinocap-6 [CCN] + TX, dinocton (1090) + TX, dinopenton (1092) + TX, dinosulfon (1097) + TX, dinoterbon (1098) + TX, dioxathion (1102) + TX, diphenyl sulfone (IUPAC name) (1103) + TX, disulfiram (alternative name) [CCN] + TX, disulfoton (278) + TX, DNOC (282) + TX, dofenapyn (1113) + TX, doramectin (alternative name) [CCN] + TX, endosulfan (294) + TX, endothion (1121) + TX, EPN (297) + TX, eprinomectin (alternative name) [CCN] + TX, ethion (309) + TX, ethoate-methyl (1134) + TX, etoxazole (320) + TX, etrimfos (1142) + TX, fenazaflor (1147) + TX, fenazaquin (328) + TX, fenbutatin oxide (330) + TX, fenothiocarb (337) + TX, fenpropathrin (342) + TX, fenpyrad (alternative name) + TX, fenpyroximate (345) + TX, fenson (1157) + TX, fentrifanil (1161) + TX, fenvalerate (349) + TX, fipronil (354) + TX, fluacrypyrim (360) + TX, fluazuron (1166) + TX, flubenzimine (1167) + TX, flucycloxuron (366) + TX, flucythrinate (367) + TX, fluenetil (1169) + TX, flufenoxuron (370) + TX, flumethrin (372) + TX, fluorbenside (1174) + TX, fluvalinate (1184) + TX, FMC 1137 (development code) (1185) + TX, formetanate (405) + TX, formetanate hydrochloride (405) + TX, formothion (1192) + TX, formparanate (1193) + TX, gamma-HCH (430) + TX, glyodin (1205) + TX, halfenprox (424) + TX, heptenophos (432) + TX, hexadecyl cyclopropanecarboxylate (IUPAC/Chemical Abstracts name) (1216) + TX, hexythiazox (441) + TX, iodomethane (IUPAC name) (542) + TX, isocarbophos (alternative name) (473) + TX, isopropyl *O*-(methoxyaminothiophosphoryl)salicylate (IUPAC name) (473) + TX, ivermectin (alternative name) [CCN] + TX, jasmolin I (696) + TX, jasmolin II (696) + TX, jodfenphos (1248) + TX, lindane (430) + TX, lufenuron (490) + TX, malathion (492) + TX, malonoben (1254) + TX, mecarbam (502) + TX, mephosfolan (1261) + TX, mesulfen (alternative name) [CCN] + TX, methacrifos (1266) + TX, methamidophos (527) + TX, methidathion (529) + TX, methiocarb (530) + TX, methomyl (531) + TX, methyl bromide (537) + TX, metolcarb (550) + TX, mevinphos (556) + TX, mexacarbate (1290) + TX, milbemectin (557) + TX, milbemycin oxime (alternative name) [CCN] + TX, mipafox (1293) + TX, monocrotophos (561) + TX, morphothion (1300) + TX, moxidectin (alternative name) [CCN] + TX, naled (567) + TX, NC-184 (compound code) + TX, NC-512 (compound code) + TX, nifluridide (1309) + TX, nikkomycins (alternative name) [CCN] + TX, nitrilacarb (1313) + TX, nitrilacarb 1:1 zinc chloride complex (1313) + TX, NNI-0101 (compound code) + TX, NNI-0250 (compound code) + TX, omethoate (594) + TX, oxamyl (602) + TX, oxydeprofos (1324) + TX, oxydisulfoton (1325) + TX, pp'-DDT (219) + TX, parathion (615) + TX, permethrin (626) + TX, petroleum oils (alternative name) (628) + TX, phenkapton (1330) + TX, phenthoate (631) + TX, phorate (636) + TX, phosalone (637) + TX, phosfolan (1338) + TX, phosmet (638) + TX, phosphamidon (639) + TX, phoxim (642) + TX, pirimiphos-methyl (652) + TX, polychloroterpenes (traditional name) (1347) + TX, polynactins

(alternative name) (653) + TX, proclonol (1350) + TX, profenofos (662) + TX, promacyl (1354) + TX, propargite (671) + TX, propetamphos (673) + TX, propoxur (678) + TX, prothidathion (1360) + TX, prothoate (1362) + TX, pyrethrin I (696) + TX, pyrethrin II (696) + TX, pyrethrins (696) + TX, pyridaben (699) + TX, pyridaphenthion (701) + TX, pyrimidifen (706) + TX, pyrimitate (1370) + TX, quinalphos (711) + TX, quintiofos (1381) + TX, R-1492 (development code) (1382) + TX, RA-17 (development code) (1383) + TX, rotenone (722) + TX, schradan (1389) + TX, sebufos (alternative name) + TX, selamectin (alternative name) [CCN] + TX, SI-0009 (compound code) + TX, sophamide (1402) + TX, spirodiclofen (738) + TX, spiromesifen (739) + TX, SSI-121 (development code) (1404) + TX, sulfiram (alternative name) [CCN] + TX, sulfluramid (750) + TX, sulfotep (753) + TX, sulfur (754) + TX, SZI-121 (development code) (757) + TX, tau-fluvalinate (398) + TX, tebufenpyrad (763) + TX, TEPP (1417) + TX, terbam (alternative name) + TX, tetrachlorvinphos (777) + TX, tetradifon (786) + TX, tetranactin (alternative name) (653) + TX, tetrasul (1425) + TX, thiafenox (alternative name) + TX, thiocarboxime (1431) + TX, thiofanox (800) + TX, thiometon (801) + TX, thioquinox (1436) + TX, thuringiensin (alternative name) [CCN] + TX, triamiphos (1441) + TX, triarathene (1443) + TX, triazophos (820) + TX, triazuron (alternative name) + TX, trichlorfon (824) + TX, trifenofos (1455) + TX, trinactin (alternative name) (653) + TX, vamidothion (847) + TX, vaniliprole [CCN] and YI-5302 (compound code) + TX,

an algicide selected from the group of substances consisting of bethoxazin [CCN] + TX, copper dioctanoate (IUPAC name) (170) + TX, copper sulfate (172) + TX, cybutryne [CCN] + TX, dichlone (1052) + TX, dichlorophen (232) + TX, endothal (295) + TX, fentin (347) + TX, hydrated lime [CCN] + TX, nabam (566) + TX, quinoclamine (714) + TX, quinonamid (1379) + TX, simazine (730) + TX, triphenyltin acetate (IUPAC name) (347) and triphenyltin hydroxide (IUPAC name) (347) + TX,

an anthelmintic selected from the group of substances consisting of abamectin (1) + TX, crufomate (1011) + TX, doramectin (alternative name) [CCN] + TX, emamectin (291) + TX, emamectin benzoate (291) + TX, eprinomectin (alternative name) [CCN] + TX, ivermectin (alternative name) [CCN] + TX, milbemycin oxime (alternative name) [CCN] + TX, moxidectin (alternative name) [CCN] + TX, piperazine [CCN] + TX, selamectin (alternative name) [CCN] + TX, spinosad (737) and thiophanate (1435) + TX,

an avicide selected from the group of substances consisting of chloralose (127) + TX, endrin (1122) + TX, fenthion (346) + TX, pyridin-4-amine (IUPAC name) (23) and strychnine (745) + TX,

a bactericide selected from the group of substances consisting of 1-hydroxy-1*H*-pyridine-2-thione (IUPAC name) (1222) + TX, 4-(quinoxalin-2-ylamino)benzenesulfonamide (IUPAC name) (748) + TX, 8-hydroxyquinoline sulfate (446) + TX, bronopol (97) + TX, copper dioctanoate (IUPAC name) (170) + TX, copper hydroxide (IUPAC name) (169) + TX, cresol [CCN] + TX, dichlorophen (232) + TX, dipyrithione (1105) + TX, dodicin (1112) + TX, fenaminosulf (1144) + TX, formaldehyde (404) + TX, hydrargaphen (alternative name) [CCN] + TX, kasugamycin (483) + TX, kasugamycin hydrochloride hydrate (483) + TX, nickel bis(dimethyldithiocarbamate) (IUPAC name) (1308) + TX, nitrapyrin (580) + TX, octhilinone (590) + TX, oxolinic acid (606) + TX, oxytetracycline (611) + TX, potassium hydroxyquinoline sulfate (446) + TX, probenazole (658) + TX, streptomycin (744) + TX, streptomycin sesquisulfate (744) + TX, tecloftalam (766) + TX, and thiomersal (alternative name) [CCN] + TX,

a biological agent selected from the group of substances consisting of *Adoxophyes orana* GV (alternative name) (12) + TX, *Agrobacterium radiobacter* (alternative name) (13) + TX, *Amblyseius* spp.

(alternative name) (19) + TX, *Anagrapha falcifera* NPV (alternative name) (28) + TX, *Anagrus atomus* (alternative name) (29) + TX, *Aphelinus abdominalis* (alternative name) (33) + TX, *Aphidius colemani* (alternative name) (34) + TX, *Aphidoletes aphidimyza* (alternative name) (35) + TX, *Autographa californica* NPV (alternative name) (38) + TX, *Bacillus firmus* (alternative name) (48) + TX, *Bacillus sphaericus* Neide (scientific name) (49) + TX, *Bacillus thuringiensis* Berliner (scientific name) (51) + TX, *Bacillus thuringiensis* subsp. *aizawai* (scientific name) (51) + TX, *Bacillus thuringiensis* subsp. *israelensis* (scientific name) (51) + TX, *Bacillus thuringiensis* subsp. *japonensis* (scientific name) (51) + TX, *Bacillus thuringiensis* subsp. *kurstaki* (scientific name) (51) + TX, *Bacillus thuringiensis* subsp. *tenebrionis* (scientific name) (51) + TX, *Beauveria bassiana* (alternative name) (53) + TX, *Beauveria brongniartii* (alternative name) (54) + TX, *Chrysoperla carnea* (alternative name) (151) + TX, *Cryptolaemus montrouzieri* (alternative name) (178) + TX, *Cydia pomonella* GV (alternative name) (191) + TX, *Dacnusa sibirica* (alternative name) (212) + TX, *Diglyphus isaea* (alternative name) (254) + TX, *Encarsia formosa* (scientific name) (293) + TX, *Eretmocerus eremicus* (alternative name) (300) + TX, *Helicoverpa zea* NPV (alternative name) (431) + TX, *Heterorhabditis bacteriophora* and *H. megidis* (alternative name) (433) + TX, *Hippodamia convergens* (alternative name) (442) + TX, *Leptomastix dactylopii* (alternative name) (488) + TX, *Macrolophus caliginosus* (alternative name) (491) + TX, *Mamestra brassicae* NPV (alternative name) (494) + TX, *Metaphycus helvolus* (alternative name) (522) + TX, *Metarhizium anisopliae* var. *acridum* (scientific name) (523) + TX, *Metarhizium anisopliae* var. *anisopliae* (scientific name) (523) + TX, *Neodiprion sertifer* NPV and *N. lecontei* NPV (alternative name) (575) + TX, *Orius* spp. (alternative name) (596) + TX, *Paecilomyces fumosoroseus* (alternative name) (613) + TX, *Phytoseiulus persimilis* (alternative name) (644) + TX, *Spodoptera exigua* multicapsid nuclear polyhedrosis virus (scientific name) (741) + TX, *Steinernema bibionis* (alternative name) (742) + TX, *Steinernema carpocapsae* (alternative name) (742) + TX, *Steinernema feltiae* (alternative name) (742) + TX, *Steinernema glaseri* (alternative name) (742) + TX, *Steinernema riobrave* (alternative name) (742) + TX, *Steinernema riobravis* (alternative name) (742) + TX, *Steinernema scapterisci* (alternative name) (742) + TX, *Steinernema* spp. (alternative name) (742) + TX, *Trichogramma* spp. (alternative name) (826) + TX, *Typhlodromus occidentalis* (alternative name) (844) and *Verticillium lecanii* (alternative name) (848) + TX,

a soil sterilant selected from the group of substances consisting of iodomethane (IUPAC name) (542) and methyl bromide (537) + TX,

a chemosterilant selected from the group of substances consisting of apholate [CCN] + TX, bisazir (alternative name) [CCN] + TX, busulfan (alternative name) [CCN] + TX, diflubenzuron (250) + TX, dimatif (alternative name) [CCN] + TX, hemel [CCN] + TX, hempa [CCN] + TX, metepa [CCN] + TX, methiotepa [CCN] + TX, methyl apholate [CCN] + TX, morzid [CCN] + TX, penfluron (alternative name) [CCN] + TX, tepa [CCN] + TX, thiohempa (alternative name) [CCN] + TX, thiotepa (alternative name) [CCN] + TX, tretamine (alternative name) [CCN] and uredepa (alternative name) [CCN] + TX,

an insect pheromone selected from the group of substances consisting of (*E*)-dec-5-en-1-yl acetate with (*E*)-dec-5-en-1-ol (IUPAC name) (222) + TX, (*E*)-tridec-4-en-1-yl acetate (IUPAC name) (829) + TX, (*E*)-6-methylhept-2-en-4-ol (IUPAC name) (541) + TX, (*E,Z*)-tetradeca-4,10-dien-1-yl acetate (IUPAC name) (779) + TX, (*Z*)-dodec-7-en-1-yl acetate (IUPAC name) (285) + TX, (*Z*)-hexadec-11-enal (IUPAC name) (436) + TX, (*Z*)-hexadec-11-en-1-yl acetate (IUPAC name) (437) + TX, (*Z*)-hexadec-13-en-11-yn-1-yl acetate (IUPAC name) (438) + TX, (*Z*)-icos-13-en-10-one (IUPAC name) (448) + TX, (Z)-

tetradec-7-en-1-al (IUPAC name) (782) + TX, *(Z)*-tetradec-9-en-1-ol (IUPAC name) (783) + TX, (Z)-tetradec-9-en-1-yl acetate (IUPAC name) (784) + TX, (7*E*,9*Z*)-dodeca-7,9-dien-1-yl acetate (IUPAC name) (283) + TX, (9*Z*,11*E*)-tetradeca-9,11-dien-1-yl acetate (IUPAC name) (780) + TX, (9*Z*,12*E*)-tetradeca-9,12-dien-1-yl acetate (IUPAC name) (781) + TX, 14-methyloctadec-1-ene (IUPAC name) (545) + TX, 4-methylnonan-5-ol with 4-methylnonan-5-one (IUPAC name) (544) + TX, alpha-multistriatin (alternative name) [CCN] + TX, brevicomin (alternative name) [CCN] + TX, codlelure (alternative name) [CCN] + TX, codlemone (alternative name) (167) + TX, cuelure (alternative name) (179) + TX, disparlure (277) + TX, dodec-8-en-1-yl acetate (IUPAC name) (286) + TX, dodec-9-en-1-yl acetate (IUPAC name) (287) + TX, dodeca-8 + TX, 10-dien-1-yl acetate (IUPAC name) (284) + TX, dominicalure (alternative name) [CCN] + TX, ethyl 4-methyloctanoate (IUPAC name) (317) + TX, eugenol (alternative name) [CCN] + TX, frontalin (alternative name) [CCN] + TX, gossyplure (alternative name) (420) + TX, grandlure (421) + TX, grandlure I (alternative name) (421) + TX, grandlure II (alternative name) (421) + TX, grandlure III (alternative name) (421) + TX, grandlure IV (alternative name) (421) + TX, hexalure [CCN] + TX, ipsdienol (alternative name) [CCN] + TX, ipsenol (alternative name) [CCN] + TX, japonilure (alternative name) (481) + TX, lineatin (alternative name) [CCN] + TX, litlure (alternative name) [CCN] + TX, looplure (alternative name) [CCN] + TX, medlure [CCN] + TX, megatomoic acid (alternative name) [CCN] + TX, methyl eugenol (alternative name) (540) + TX, muscalure (563) + TX, octadeca-2,13-dien-1-yl acetate (IUPAC name) (588) + TX, octadeca-3,13-dien-1-yl acetate (IUPAC name) (589) + TX, orfralure (alternative name) [CCN] + TX, oryctalure (alternative name) (317) + TX, ostramone (alternative name) [CCN] + TX, siglure [CCN] + TX, sordidin (alternative name) (736) + TX, sulcatol (alternative name) [CCN] + TX, tetradec-11-en-1-yl acetate (IUPAC name) (785) + TX, trimedlure (839) + TX, trimedlure A (alternative name) (839) + TX, trimedlure B_1 (alternative name) (839) + TX, trimedlure B_2 (alternative name) (839) + TX, trimedlure C (alternative name) (839) and trunc-call (alternative name) [CCN] + TX,

an insect repellent selected from the group of substances consisting of 2-(octylthio)ethanol (IUPAC name) (591) + TX, butopyronoxyl (933) + TX, butoxy(polypropylene glycol) (936) + TX, dibutyl adipate (IUPAC name) (1046) + TX, dibutyl phthalate (1047) + TX, dibutyl succinate (IUPAC name) (1048) + TX, diethyltoluamide [CCN] + TX, dimethyl carbate [CCN] + TX, dimethyl phthalate [CCN] + TX, ethyl hexanediol (1137) + TX, hexamide [CCN] + TX, methoquin-butyl (1276) + TX, methylneodecanamide [CCN] + TX, oxamate [CCN] and picaridin [CCN] + TX,

an insecticide selected from the group of substances consisting of 1-dichloro-1-nitroethane (IUPAC/Chemical Abstracts name) (1058) + TX, 1,1-dichloro-2,2-bis(4-ethylphenyl)ethane (IUPAC name) (1056), + TX, 1,2-dichloropropane (IUPAC/Chemical Abstracts name) (1062) + TX, 1,2-dichloropropane with 1,3-dichloropropene (IUPAC name) (1063) + TX, 1-bromo-2-chloroethane (IUPAC/Chemical Abstracts name) (916) + TX, 2,2,2-trichloro-1-(3,4-dichlorophenyl)ethyl acetate (IUPAC name) (1451) + TX, 2,2-dichlorovinyl 2-ethylsulfinylethyl methyl phosphate (IUPAC name) (1066) + TX, 2-(1,3-dithiolan-2-yl)phenyl dimethylcarbamate (IUPAC/ Chemical Abstracts name) (1109) + TX, 2-(2-butoxyethoxy)ethyl thiocyanate (IUPAC/Chemical Abstracts name) (935) + TX, 2-(4,5-dimethyl-1,3-dioxolan-2-yl)phenyl methylcarbamate (IUPAC/ Chemical Abstracts name) (1084) + TX, 2-(4-chloro-3,5-xylyloxy)ethanol (IUPAC name) (986) + TX, 2-chlorovinyl diethyl phosphate (IUPAC name) (984) + TX, 2-imidazolidone (IUPAC name) (1225) + TX, 2-isovalerylindan-1,3-dione (IUPAC name) (1246) + TX, 2-methyl(prop-2-ynyl)aminophenyl methylcarbamate (IUPAC name) (1284) + TX, 2-thiocyanatoethyl

laurate (IUPAC name) (1433) + TX, 3-bromo-1-chloroprop-1-ene (IUPAC name) (917) + TX, 3-methyl-1-phenylpyrazol-5-yl dimethylcarbamate (IUPAC name) (1283) + TX, 4-methyl(prop-2-ynyl)amino-3,5-xylyl methylcarbamate (IUPAC name) (1285) + TX, 5,5-dimethyl-3-oxocyclohex-1-enyl dimethylcarbamate (IUPAC name) (1085) + TX, abamectin (1) + TX, acephate (2) + TX, acetamiprid (4) + TX, acethion (alternative name) [CCN] + TX, acetoprole [CCN] + TX, acrinathrin (9) + TX, acrylonitrile (IUPAC name) (861) + TX, alanycarb (15) + TX, aldicarb (16) + TX, aldoxycarb (863) + TX, aldrin (864) + TX, allethrin (17) + TX, allosamidin (alternative name) [CCN] + TX, allyxycarb (866) + TX, alpha-cypermethrin (202) + TX, alpha-ecdysone (alternative name) [CCN] + TX, aluminium phosphide (640) + TX, amidithion (870) + TX, amidothioate (872) + TX, aminocarb (873) + TX, amiton (875) + TX, amiton hydrogen oxalate (875) + TX, amitraz (24) + TX, anabasine (877) + TX, athidathion (883) + TX, AVI 382 (compound code) + TX, AZ 60541 (compound code) + TX, azadirachtin (alternative name) (41) + TX, azamethiphos (42) + TX, azinphos-ethyl (44) + TX, azinphos-methyl (45) + TX, azothoate (889) + TX, *Bacillus thuringiensis* delta endotoxins (alternative name) (52) + TX, barium hexafluorosilicate (alternative name) [CCN] + TX, barium polysulfide (IUPAC/Chemical Abstracts name) (892) + TX, barthrin [CCN] + TX, Bayer 22/190 (development code) (893) + TX, Bayer 22408 (development code) (894) + TX, bendiocarb (58) + TX, benfuracarb (60) + TX, bensultap (66) + TX, beta-cyfluthrin (194) + TX, beta-cypermethrin (203) + TX, bifenthrin (76) + TX, bioallethrin (78) + TX, bioallethrin *S*-cyclopentenyl isomer (alternative name) (79) + TX, bioethanomethrin [CCN] + TX, biopermethrin (908) + TX, bioresmethrin (80) + TX, bis(2-chloroethyl) ether (IUPAC name) (909) + TX, bistrifluron (83) + TX, borax (86) + TX, brofenvalerate (alternative name) + TX, bromfenvinfos (914) + TX, bromocyclen (918) + TX, bromo-DDT (alternative name) [CCN] + TX, bromophos (920) + TX, bromophos-ethyl (921) + TX, bufencarb (924) + TX, buprofezin (99) + TX, butacarb (926) + TX, butathiofos (927) + TX, butocarboxim (103) + TX, butonate (932) + TX, butoxycarboxim (104) + TX, butylpyridaben (alternative name) + TX, cadusafos (109) + TX, calcium arsenate [CCN] + TX, calcium cyanide (444) + TX, calcium polysulfide (IUPAC name) (111) + TX, camphechlor (941) + TX, carbanolate (943) + TX, carbaryl (115) + TX, carbofuran (118) + TX, carbon disulfide (IUPAC/Chemical Abstracts name) (945) + TX, carbon tetrachloride (IUPAC name) (946) + TX, carbophenothion (947) + TX, carbosulfan (119) + TX, cartap (123) + TX, cartap hydrochloride (123) + TX, cevadine (alternative name) (725) + TX, chlorbicyclen (960) + TX, chlordane (128) + TX, chlordecone (963) + TX, chlordimeform (964) + TX, chlordimeform hydrochloride (964) + TX, chlorethoxyfos (129) + TX, chlorfenapyr (130) + TX, chlorfenvinphos (131) + TX, chlorfluazuron (132) + TX, chlormephos (136) + TX, chloroform [CCN] + TX, chloropicrin (141) + TX, chlorphoxim (989) + TX, chlorprazophos (990) + TX, chlorpyrifos (145) + TX, chlorpyrifos-methyl (146) + TX, chlorthiophos (994) + TX, chromafenozide (150) + TX, cinerin I (696) + TX, cinerin II (696) + TX, cinerins (696) + TX, cis-resmethrin (alternative name) + TX, cismethrin (80) + TX, clocythrin (alternative name) + TX, cloethocarb (999) + TX, closantel (alternative name) [CCN] + TX, clothianidin (165) + TX, copper acetoarsenite [CCN] + TX, copper arsenate [CCN] + TX, copper oleate [CCN] + TX, coumaphos (174) + TX, coumithoate (1006) + TX, crotamiton (alternative name) [CCN] + TX, crotoxyphos (1010) + TX, crufomate (1011) + TX, cryolite (alternative name) (177) + TX, CS 708 (development code) (1012) + TX, cyanofenphos (1019) + TX, cyanophos (184) + TX, cyanthoate (1020) + TX, cyclethrin [CCN] + TX, cycloprothrin (188) + TX, cyfluthrin (193) + TX, cyhalothrin (196) + TX, cypermethrin (201) + TX, cyphenothrin (206) + TX, cyromazine (209) + TX, cythioate

(alternative name) [CCN] + TX, *d*-limonene (alternative name) [CCN] + TX, *d*-tetramethrin (alternative name) (788) + TX, DAEP (1031) + TX, dazomet (216) + TX, DDT (219) + TX, decarbofuran (1034) + TX, deltamethrin (223) + TX, demephion (1037) + TX, demephion-O (1037) + TX, demephion-S (1037) + TX, demeton (1038) + TX, demeton-methyl (224) + TX, demeton-O (1038) + TX, demeton-O-methyl (224) + TX, demeton-S (1038) + TX, demeton-S-methyl (224) + TX, demeton-S-methylsulphon (1039) + TX, diafenthiuron (226) + TX, dialifos (1042) + TX, diamidafos (1044) + TX, diazinon (227) + TX, dicapthon (1050) + TX, dichlofenthion (1051) + TX, dichlorvos (236) + TX, dicliphos (alternative name) + TX, dicresyl (alternative name) [CCN] + TX, dicrotophos (243) + TX, dicyclanil (244) + TX, dieldrin (1070) + TX, diethyl 5-methylpyrazol-3-yl phosphate (IUPAC name) (1076) + TX, diflubenzuron (250) + TX, dilor (alternative name) [CCN] + TX, dimefluthrin [CCN] + TX, dimefox (1081) + TX, dimetan (1085) + TX, dimethoate (262) + TX, dimethrin (1083) + TX, dimethylvinphos (265) + TX, dimetilan (1086) + TX, dinex (1089) + TX, dinex-diclexine (1089) + TX, dinoprop (1093) + TX, dinosam (1094) + TX, dinoseb (1095) + TX, dinotefuran (271) + TX, diofenolan (1099) + TX, dioxabenzofos (1100) + TX, dioxacarb (1101) + TX, dioxathion (1102) + TX, disulfoton (278) + TX, dithicrofos (1108) + TX, DNOC (282) + TX, doramectin (alternative name) [CCN] + TX, DSP (1115) + TX, ecdysterone (alternative name) [CCN] + TX, EI 1642 (development code) (1118) + TX, emamectin (291) + TX, emamectin benzoate (291) + TX, EMPC (1120) + TX, empenthrin (292) + TX, endosulfan (294) + TX, endothion (1121) + TX, endrin (1122) + TX, EPBP (1123) + TX, EPN (297) + TX, epofenonane (1124) + TX, eprinomectin (alternative name) [CCN] + TX, esfenvalerate (302) + TX, etaphos (alternative name) [CCN] + TX, ethiofencarb (308) + TX, ethion (309) + TX, ethiprole (310) + TX, ethoate-methyl (1134) + TX, ethoprophos (312) + TX, ethyl formate (IUPAC name) [CCN] + TX, ethyl-DDD (alternative name) (1056) + TX, ethylene dibromide (316) + TX, ethylene dichloride (chemical name) (1136) + TX, ethylene oxide [CCN] + TX, etofenprox (319) + TX, etrimfos (1142) + TX, EXD (1143) + TX, famphur (323) + TX, fenamiphos (326) + TX, fenazaflor (1147) + TX, fenchlorphos (1148) + TX, fenethacarb (1149) + TX, fenfluthrin (1150) + TX, fenitrothion (335) + TX, fenobucarb (336) + TX, fenoxacrim (1153) + TX, fenoxycarb (340) + TX, fenpirithrin (1155) + TX, fenpropathrin (342) + TX, fenpyrad (alternative name) + TX, fensulfothion (1158) + TX, fenthion (346) + TX, fenthion-ethyl [CCN] + TX, fenvalerate (349) + TX, fipronil (354) + TX, flonicamid (358) + TX, flubendiamide (CAS. Reg. No.: 272451-65-7) + TX, flucofuron (1168) + TX, flucycloxuron (366) + TX, flucythrinate (367) + TX, fluenetil (1169) + TX, flufenerim [CCN] + TX, flufenoxuron (370) + TX, flufenprox (1171) + TX, flumethrin (372) + TX, fluvalinate (1184) + TX, FMC 1137 (development code) (1185) + TX, fonofos (1191) + TX, formetanate (405) + TX, formetanate hydrochloride (405) + TX, formothion (1192) + TX, formparanate (1193) + TX, fosmethilan (1194) + TX, fospirate (1195) + TX, fosthiazate (408) + TX, fosthietan (1196) + TX, furathiocarb (412) + TX, furethrin (1200) + TX, gamma-cyhalothrin (197) + TX, gamma-HCH (430) + TX, guazatine (422) + TX, guazatine acetates (422) + TX, GY-81 (development code) (423) + TX, halfenprox (424) + TX, halofenozide (425) + TX, HCH (430) + TX, HEOD (1070) + TX, heptachlor (1211) + TX, heptenophos (432) + TX, heterophos [CCN] + TX, hexaflumuron (439) + TX, HHDN (864) + TX, hydramethylnon (443) + TX, hydrogen cyanide (444) + TX, hydroprene (445) + TX, hyquincarb (1223) + TX, imidacloprid (458) + TX, imiprothrin (460) + TX, indoxacarb (465) + TX, iodomethane (IUPAC name) (542) + TX, IPSP (1229) + TX, isazofos (1231) + TX, isobenzan (1232) + TX, isocarbophos (alternative name) (473) + TX, isodrin (1235) + TX, isofenphos (1236) + TX, isolane (1237) + TX,

isoprocarb (472) + TX, isopropyl *O*-(methoxyaminothiophosphoryl)salicylate (IUPAC name) (473) + TX, isoprothiolane (474) + TX, isothioate (1244) + TX, isoxathion (480) + TX, ivermectin (alternative name) [CCN] + TX, jasmolin I (696) + TX, jasmolin II (696) + TX, jodfenphos (1248) + TX, juvenile hormone I (alternative name) [CCN] + TX, juvenile hormone II (alternative name) [CCN] + TX, juvenile hormone III (alternative name) [CCN] + TX, kelevan (1249) + TX, kinoprene (484) + TX, lambda-cyhalothrin (198) + TX, lead arsenate [CCN] + TX, lepimectin (CCN) + TX, leptophos (1250) + TX, lindane (430) + TX, lirimfos (1251) + TX, lufenuron (490) + TX, lythidathion (1253) + TX, *m*-cumenyl methylcarbamate (IUPAC name) (1014) + TX, magnesium phosphide (IUPAC name) (640) + TX, malathion (492) + TX, malonoben (1254) + TX, mazidox (1255) + TX, mecarbam (502) + TX, mecarphon (1258) + TX, menazon (1260) + TX, mephosfolan (1261) + TX, mercurous chloride (513) + TX, mesulfenfos (1263) + TX, metaflumizone (CCN) + TX, metam (519) + TX, metam-potassium (alternative name) (519) + TX, metam-sodium (519) + TX, methacrifos (1266) + TX, methamidophos (527) + TX, methanesulfonyl fluoride (IUPAC/Chemical Abstracts name) (1268) + TX, methidathion (529) + TX, methiocarb (530) + TX, methocrotophos (1273) + TX, methomyl (531) + TX, methoprene (532) + TX, methoquin-butyl (1276) + TX, methothrin (alternative name) (533) + TX, methoxychlor (534) + TX, methoxyfenozide (535) + TX, methyl bromide (537) + TX, methyl isothiocyanate (543) + TX, methylchloroform (alternative name) [CCN] + TX, methylene chloride [CCN] + TX, metofluthrin [CCN] + TX, metolcarb (550) + TX, metoxadiazone (1288) + TX, mevinphos (556) + TX, mexacarbate (1290) + TX, milbemectin (557) + TX, milbemycin oxime (alternative name) [CCN] + TX, mipafox (1293) + TX, mirex (1294) + TX, monocrotophos (561) + TX, morphothion (1300) + TX, moxidectin (alternative name) [CCN] + TX, naftalofos (alternative name) [CCN] + TX, naled (567) + TX, naphthalene (IUPAC/Chemical Abstracts name) (1303) + TX, NC-170 (development code) (1306) + TX, NC-184 (compound code) + TX, nicotine (578) + TX, nicotine sulfate (578) + TX, nifluridide (1309) + TX, nitenpyram (579) + TX, nithiazine (1311) + TX, nitrilacarb (1313) + TX, nitrilacarb 1:1 zinc chloride complex (1313) + TX, NNI-0101 (compound code) + TX, NNI-0250 (compound code) + TX, nornicotine (traditional name) (1319) + TX, novaluron (585) + TX, noviflumuron (586) + TX, *O*-5-dichloro-4-iodophenyl *O*-ethyl ethylphosphonothioate (IUPAC name) (1057) + TX, *O,O*-diethyl *O*-4-methyl-2-oxo-2*H*-chromen-7-yl phosphorothioate (IUPAC name) (1074) + TX, *O,O*-diethyl *O*-6-methyl-2-propylpyrimidin-4-yl phosphorothioate (IUPAC name) (1075) + TX, *O,O,O',O'*-tetrapropyl dithiopyrophosphate (IUPAC name) (1424) + TX, oleic acid (IUPAC name) (593) + TX, omethoate (594) + TX, oxamyl (602) + TX, oxydemeton-methyl (609) + TX, oxydeprofos (1324) + TX, oxydisulfoton (1325) + TX, pp'-DDT (219) + TX, para-dichlorobenzene [CCN] + TX, parathion (615) + TX, parathion-methyl (616) + TX, penfluron (alternative name) [CCN] + TX, pentachlorophenol (623) + TX, pentachlorophenyl laurate (IUPAC name) (623) + TX, permethrin (626) + TX, petroleum oils (alternative name) (628) + TX, PH 60-38 (development code) (1328) + TX, phenkapton (1330) + TX, phenothrin (630) + TX, phenthoate (631) + TX, phorate (636) + TX, phosalone (637) + TX, phosfolan (1338) + TX, phosmet (638) + TX, phosnichlor (1339) + TX, phosphamidon (639) + TX, phosphine (IUPAC name) (640) + TX, phoxim (642) + TX, phoxim-methyl (1340) + TX, pirimetaphos (1344) + TX, pirimicarb (651) + TX, pirimiphos-ethyl (1345) + TX, pirimiphos-methyl (652) + TX, polychlorodicyclopentadiene isomers (IUPAC name) (1346) + TX, polychloroterpenes (traditional name) (1347) + TX, potassium arsenite [CCN] + TX, potassium thiocyanate [CCN] + TX, prallethrin (655) + TX, precocene I (alternative name) [CCN] + TX, precocene II (alternative name) [CCN] + TX,

precocene III (alternative name) [CCN] + TX, primidophos (1349) + TX, profenofos (662) + TX, profluthrin [CCN] + TX, promacyl (1354) + TX, promecarb (1355) + TX, propaphos (1356) + TX, propetamphos (673) + TX, propoxur (678) + TX, prothidathion (1360) + TX, prothiofos (686) + TX, prothoate (1362) + TX, protrifenbute [CCN] + TX, pymetrozine (688) + TX, pyraclofos (689) + TX, pyrazophos (693) + TX, pyresmethrin (1367) + TX, pyrethrin I (696) + TX, pyrethrin II (696) + TX, pyrethrins (696) + TX, pyridaben (699) + TX, pyridalyl (700) + TX, pyridaphenthion (701) + TX, pyrimidifen (706) + TX, pyrimitate (1370) + TX, pyriproxyfen (708) + TX, quassia (alternative name) [CCN] + TX, quinalphos (711) + TX, quinalphos-methyl (1376) + TX, quinothion (1380) + TX, quintiofos (1381) + TX, R-1492 (development code) (1382) + TX, rafoxanide (alternative name) [CCN] + TX, resmethrin (719) + TX, rotenone (722) + TX, RU 15525 (development code) (723) + TX, RU 25475 (development code) (1386) + TX, ryania (alternative name) (1387) + TX, ryanodine (traditional name) (1387) + TX, sabadilla (alternative name) (725) + TX, schradan (1389) + TX, sebufos (alternative name) + TX, selamectin (alternative name) [CCN] + TX, SI-0009 (compound code) + TX, SI-0205 (compound code) + TX, SI-0404 (compound code) + TX, SI-0405 (compound code) + TX, silafluofen (728) + TX, SN 72129 (development code) (1397) + TX, sodium arsenite [CCN] + TX, sodium cyanide (444) + TX, sodium fluoride (IUPAC/Chemical Abstracts name) (1399) + TX, sodium hexafluorosilicate (1400) + TX, sodium pentachlorophenoxide (623) + TX, sodium selenate (IUPAC name) (1401) + TX, sodium thiocyanate [CCN] + TX, sophamide (1402) + TX, spinosad (737) + TX, spiromesifen (739) + TX, spirotetrmat (CCN) + TX, sulcofuron (746) + TX, sulcofuron-sodium (746) + TX, sulfluramid (750) + TX, sulfotep (753) + TX, sulfuryl fluoride (756) + TX, sulprofos (1408) + TX, tar oils (alternative name) (758) + TX, tau-fluvalinate (398) + TX, tazimcarb (1412) + TX, TDE (1414) + TX, tebufenozide (762) + TX, tebufenpyrad (763) + TX, tebupirimfos (764) + TX, teflubenzuron (768) + TX, tefluthrin (769) + TX, temephos (770) + TX, TEPP (1417) + TX, terallethrin (1418) + TX, terbam (alternative name) + TX, terbufos (773) + TX, tetrachloroethane [CCN] + TX, tetrachlorvinphos (777) + TX, tetramethrin (787) + TX, theta-cypermethrin (204) + TX, thiacloprid (791) + TX, thiafenox (alternative name) + TX, thiamethoxam (792) + TX, thicrofos (1428) + TX, thiocarboxime (1431) + TX, thiocyclam (798) + TX, thiocyclam hydrogen oxalate (798) + TX, thiodicarb (799) + TX, thiofanox (800) + TX, thiometon (801) + TX, thionazin (1434) + TX, thiosultap (803) + TX, thiosultap-sodium (803) + TX, thuringiensin (alternative name) [CCN] + TX, tolfenpyrad (809) + TX, tralomethrin (812) + TX, transfluthrin (813) + TX, transpermethrin (1440) + TX, triamiphos (1441) + TX, triazamate (818) + TX, triazophos (820) + TX, triazuron (alternative name) + TX, trichlorfon (824) + TX, trichlormetaphos-3 (alternative name) [CCN] + TX, trichloronat (1452) + TX, trifenofos (1455) + TX, triflumuron (835) + TX, trimethacarb (840) + TX, triprene (1459) + TX, vamidothion (847) + TX, vaniliprole [CCN] + TX, veratridine (alternative name) (725) + TX, veratrine (alternative name) (725) + TX, XMC (853) + TX, xylylcarb (854) + TX, YI-5302 (compound code) + TX, zeta-cypermethrin (205) + TX, zetamethrin (alternative name) + TX, zinc phosphide (640) + TX, zolaprofos (1469) and ZXI 8901 (development code) (858) + TX, cyantraniliprole [736994-63-19 + TX, chlorantraniliprole [500008-45-7] + TX, cyenopyrafen [560121-52-0] + TX, cyflumetofen [400882-07-7] + TX, pyrifluquinazon [337458-27-2] + TX, spinetoram [187166-40-1 + 187166-15-0] + TX, spirotetramat [203313-25-1] + TX, sulfoxaflor [946578-00-3] + TX, flufiprole [704886-18-0] + TX, meperfluthrin [915288-13-0] + TX, tetramethylfluthrin [84937-88-2] + TX, triflumezopyrim (disclosed in WO 2012/092115) + TX, fluxametamide (WO 2007/026965) + TX, epsilon-metofluthrin [240494-71-7] + TX, epsilon-momfluorothrin

[1065124-65-3] + TX, fluazaindolizine [1254304-22-7] + TX, chloroprallethrin [399572-87-3] + TX, fluxametamide [928783-29-3] + TX, cyhalodiamide [1262605-53-7] + TX, tioxazafen [330459-31-9] + TX, broflanilide [1207727-04-5] + TX, flufiprole [704886-18-0] + TX, cyclaniliprole [1031756-98-5] + TX, tetraniliprole [1229654-66-3] + TX, guadipyr (described in WO2010/060231) + TX, cycloxaprid (described in WO2005/077934) + TX,

a molluscicide selected from the group of substances consisting of bis(tributyltin) oxide (IUPAC name) (913) + TX, bromoacetamide [CCN] + TX, calcium arsenate [CCN] + TX, cloethocarb (999) + TX, copper acetoarsenite [CCN] + TX, copper sulfate (172) + TX, fentin (347) + TX, ferric phosphate (IUPAC name) (352) + TX, metaldehyde (518) + TX, methiocarb (530) + TX, niclosamide (576) + TX, niclosamide-olamine (576) + TX, pentachlorophenol (623) + TX, sodium pentachlorophenoxide (623) + TX, tazimcarb (1412) + TX, thiodicarb (799) + TX, tributyltin oxide (913) + TX, trifenmorph (1454) + TX, trimethacarb (840) + TX, triphenyltin acetate (IUPAC name) (347) and triphenyltin hydroxide (IUPAC name) (347) + TX, pyriprole [394730-71-3] + TX,

a nematicide selected from the group of substances consisting of AKD-3088 (compound code) + TX, 1,2-dibromo-3-chloropropane (IUPAC/Chemical Abstracts name) (1045) + TX, 1,2-dichloropropane (IUPAC/ Chemical Abstracts name) (1062) + TX, 1,2-dichloropropane with 1,3-dichloropropene (IUPAC name) (1063) + TX, 1,3-dichloropropene (233) + TX, 3,4-dichlorotetrahydrothiophene 1,1-dioxide (IUPAC/Chemical Abstracts name) (1065) + TX, 3-(4-chlorophenyl)-5-methylrhodanine (IUPAC name) (980) + TX, 5-methyl-6-thioxo-1,3,5-thiadiazinan-3-ylacetic acid (IUPAC name) (1286) + TX, 6-isopentenylaminopurine (alternative name) (210) + TX, abamectin (1) + TX, acetoprole [CCN] + TX, alanycarb (15) + TX, aldicarb (16) + TX, aldoxycarb (863) + TX, AZ 60541 (compound code) + TX, benclothiaz [CCN] + TX, benomyl (62) + TX, butylpyridaben (alternative name) + TX, cadusafos (109) + TX, carbofuran (118) + TX, carbon disulfide (945) + TX, carbosulfan (119) + TX, chloropicrin (141) + TX, chlorpyrifos (145) + TX, cloethocarb (999) + TX, cytokinins (alternative name) (210) + TX, dazomet (216) + TX, DBCP (1045) + TX, DCIP (218) + TX, diamidafos (1044) + TX, dichlofenthion (1051) + TX, dicliphos (alternative name) + TX, dimethoate (262) + TX, doramectin (alternative name) [CCN] + TX, emamectin (291) + TX, emamectin benzoate (291) + TX, eprinomectin (alternative name) [CCN] + TX, ethoprophos (312) + TX, ethylene dibromide (316) + TX, fenamiphos (326) + TX, fenpyrad (alternative name) + TX, fensulfothion (1158) + TX, fosthiazate (408) + TX, fosthietan (1196) + TX, furfural (alternative name) [CCN] + TX, GY-81 (development code) (423) + TX, heterophos [CCN] + TX, iodomethane (IUPAC name) (542) + TX, isamidofos (1230) + TX, isazofos (1231) + TX, ivermectin (alternative name) [CCN] + TX, kinetin (alternative name) (210) + TX, mecarphon (1258) + TX, metam (519) + TX, metam-potassium (alternative name) (519) + TX, metam-sodium (519) + TX, methyl bromide (537) + TX, methyl isothiocyanate (543) + TX, milbemycin oxime (alternative name) [CCN] + TX, moxidectin (alternative name) [CCN] + TX, *Myrothecium verrucaria* composition (alternative name) (565) + TX, NC-184 (compound code) + TX, oxamyl (602) + TX, phorate (636) + TX, phosphamidon (639) + TX, phosphocarb [CCN] + TX, sebufos (alternative name) + TX, selamectin (alternative name) [CCN] + TX, spinosad (737) + TX, terbam (alternative name) + TX, terbufos (773) + TX, tetrachlorothiophene (IUPAC/ Chemical Abstracts name) (1422) + TX, thiafenox (alternative name) + TX, thionazin (1434) + TX, triazophos (820) + TX, triazuron (alternative name) + TX, xylenols [CCN] + TX, YI-5302 (compound code) and zeatin (alternative name) (210) + TX, fluensulfone [318290-98-1] + TX,

a nitrification inhibitor selected from the group of substances consisting of potassium ethylxanthate [CCN] and nitrapyrin (580) + TX,

a plant activator selected from the group of substances consisting of acibenzolar (6) + TX, acibenzolar-*S*-methyl (6) + TX, probenazole (658) and *Reynoutria sachalinensis* extract (alternative name) (720) + TX,

a rodenticide selected from the group of substances consisting of 2-isovalerylindan-1,3-dione (IUPAC name) (1246) + TX, 4-(quinoxalin-2-ylamino)benzenesulfonamide (IUPAC name) (748) + TX, alpha-chlorohydrin [CCN] + TX, aluminium phosphide (640) + TX, antu (880) + TX, arsenous oxide (882) + TX, barium carbonate (891) + TX, bisthiosemi (912) + TX, brodifacoum (89) + TX, bromadiolone (91) + TX, bromethalin (92) + TX, calcium cyanide (444) + TX, chloralose (127) + TX, chlorophacinone (140) + TX, cholecalciferol (alternative name) (850) + TX, coumachlor (1004) + TX, coumafuryl (1005) + TX, coumatetralyl (175) + TX, crimidine (1009) + TX, difenacoum (246) + TX, difethialone (249) + TX, diphacinone (273) + TX, ergocalciferol (301) + TX, flocoumafen (357) + TX, fluoroacetamide (379) + TX, flupropadine (1183) + TX, flupropadine hydrochloride (1183) + TX, gamma-HCH (430) + TX, HCH (430) + TX, hydrogen cyanide (444) + TX, iodomethane (IUPAC name) (542) + TX, lindane (430) + TX, magnesium phosphide (IUPAC name) (640) + TX, methyl bromide (537) + TX, norbormide (1318) + TX, phosacetim (1336) + TX, phosphine (IUPAC name) (640) + TX, phosphorus [CCN] + TX, pindone (1341) + TX, potassium arsenite [CCN] + TX, pyrinuron (1371) + TX, scilliroside (1390) + TX, sodium arsenite [CCN] + TX, sodium cyanide (444) + TX, sodium fluoroacetate (735) + TX, strychnine (745) + TX, thallium sulfate [CCN] + TX, warfarin (851) and zinc phosphide (640) + TX,

a synergist selected from the group of substances consisting of 2-(2-butoxyethoxy)ethyl piperonylate (IUPAC name) (934) + TX, 5-(1,3-benzodioxol-5-yl)-3-hexylcyclohex-2-enone (IUPAC name) (903) + TX, farnesol with nerolidol (alternative name) (324) + TX, MB-599 (development code) (498) + TX, MGK 264 (development code) (296) + TX, piperonyl butoxide (649) + TX, piprotal (1343) + TX, propyl isomer (1358) + TX, S421 (development code) (724) + TX, sesamex (1393) + TX, sesasmolin (1394) and sulfoxide (1406) + TX,

an animal repellent selected from the group of substances consisting of anthraquinone (32) + TX, chloralose (127) + TX, copper naphthenate [CCN] + TX, copper oxychloride (171) + TX, diazinon (227) + TX, dicyclopentadiene (chemical name) (1069) + TX, guazatine (422) + TX, guazatine acetates (422) + TX, methiocarb (530) + TX, pyridin-4-amine (IUPAC name) (23) + TX, thiram (804) + TX, trimethacarb (840) + TX, zinc naphthenate [CCN] and ziram (856) + TX,

a virucide selected from the group of substances consisting of imanin (alternative name) [CCN] and ribavirin (alternative name) [CCN] + TX,

a wound protectant selected from the group of substances consisting of mercuric oxide (512) + TX, octhilinone (590) and thiophanate-methyl (802) + TX,

and biologically active compounds selected from the group consisting of azaconazole (60207-31-0] + TX, bitertanol [70585-36-3] + TX, bromuconazole [116255-48-2] + TX, cyproconazole [94361-06-5] + TX, difenoconazole [119446-68-3] + TX, diniconazole [83657-24-3] + TX, epoxiconazole [106325-08-0] + TX, fenbuconazole [114369-43-6] + TX, fluquinconazole [136426-54-5] + TX, flusilazole [85509-19-9] + TX, flutriafol [76674-21-0] + TX, hexaconazole [79983-71-4] + TX, imazalil [35554-44-0] + TX, imibenconazole [86598-92-7] + TX, ipconazole [125225-28-7] + TX, metconazole [125116-

23-6] + TX, myclobutanil [88671-89-0] + TX, pefurazoate [101903-30-4] + TX, penconazole [66246-88-6] + TX, prothioconazole [178928-70-6] + TX, pyrifenox [88283-41-4] + TX, prochloraz [67747-09-5] + TX, propiconazole [60207-90-1] + TX, simeconazole [149508-90-7] + TX, tebuconazole [107534-96-3] + TX, tetraconazole [112281-77-3] + TX, triadimefon [43121-43-3] + TX, triadimenol [55219-65-3] + TX, triflumizole [99387-89-0] + TX, triticonazole [131983-72-7] + TX, ancymidol [12771-68-5] + TX, fenarimol [60168-88-9] + TX, nuarimol [63284-71-9] + TX, bupirimate [41483-43-6] + TX, dimethirimol [5221-53-4] + TX, ethirimol [23947-60-6] + TX, dodemorph [1593-77-7] + TX, fenpropidine [67306-00-7] + TX, fenpropimorph [67564-91-4] + TX, spiroxamine [118134-30-8] + TX, tridemorph [81412-43-3] + TX, cyprodinil [121552-61-2] + TX, mepanipyrim [110235-47-7] + TX, pyrimethanil [53112-28-0] + TX, fenpiclonil [74738-17-3] + TX, fludioxonil [131341-86-1] + TX, benalaxyl [71626-11-4] + TX, furalaxyl [57646-30-7] + TX, metalaxyl [57837-19-1] + TX, R-metalaxyl [70630-17-0] + TX, ofurace [58810-48-3] + TX, oxadixyl [77732-09-3] + TX, benomyl [17804-35-2] + TX, carbendazim [10605-21-7] + TX, debacarb [62732-91-6] + TX, fuberidazole [3878-19-1] + TX, thiabendazole [148-79-8] + TX, chlozolinate [84332-86-5] + TX, dichlozoline [24201-58-9] + TX, iprodione [36734-19-7] + TX, myclozoline [54864-61-8] + TX, procymidone [32809-16-8] + TX, vinclozoline [50471-44-8] + TX, boscalid [188425-85-6] + TX, carboxin [5234-68-4] + TX, fenfuram [24691-80-3] + TX, flutolanil [66332-96-5] + TX, mepronil [55814-41-0] + TX, oxycarboxin [5259-88-1] + TX, penthiopyrad [183675-82-3] + TX, thifluzamide [130000-40-7] + TX, guazatine [108173-90-6] + TX, dodine [2439-10-3] [112-65-2] (free base) + TX, iminoctadine [13516-27-3] + TX, azoxystrobin [131860-33-8] + TX, dimoxystrobin [149961-52-4] + TX, enestroburin {Proc. BCPC, Int. Congr., Glasgow, 2003, **1**, 93} + TX, fluoxastrobin [361377-29-9] + TX, kresoxim-methyl [143390-89-0] + TX, metominostrobin [133408-50-1] + TX, trifloxystrobin [141517-21-7] + TX, orysastrobin [248593-16-0] + TX, picoxystrobin [117428-22-5] + TX, pyraclostrobin [175013-18-0] + TX, ferbam [14484-64-1] + TX, mancozeb [8018-01-7] + TX, maneb [12427-38-2] + TX, metiram [9006-42-2] + TX, propineb [12071-83-9] + TX, thiram [137-26-8] + TX, zineb [12122-67-7] + TX, ziram [137-30-4] + TX, captafol [2425-06-1] + TX, captan [133-06-2] + TX, dichlofluanid [1085-98-9] + TX, fluoroimide [41205-21-4] + TX, folpet [133-07-3] + TX, tolylfluanid [731-27-1] + TX, bordeaux mixture [8011-63-0] + TX, copperhydroxid [20427-59-2] + TX, copperoxychlorid [1332-40-7] + TX, coppersulfat [7758-98-7] + TX, copperoxid [1317-39-1] + TX, mancopper [53988-93-5] + TX, oxine-copper [10380-28-6] + TX, dinocap [131-72-6] + TX, nitrothal-isopropyl [10552-74-6] + TX, edifenphos [17109-49-8] + TX, iprobenphos [26087-47-8] + TX, isoprothiolane [50512-35-1] + TX, phosdiphen [36519-00-3] + TX, pyrazophos [13457-18-6] + TX, tolclofos-methyl [57018-04-9] + TX, acibenzolar-S-methyl [135158-54-2] + TX, anilazine [101-05-3] + TX, benthiavalicarb [413615-35-7] + TX, blasticidin-S [2079-00-7] + TX, chinomethionat [2439-01-2] + TX, chloroneb [2675-77-6] + TX, chlorothalonil *[1897-45-6]* + TX, cyflufenamid *[180409-60-3]* + TX, cymoxanil *[57966-95-7]* + TX, dichlone *[117-80-6]* + TX, diclocymet [139920-32-4] + TX, diclomezine *[62865-36-5]* + TX, dicloran *[99-30-9]* + TX, diethofencarb *[87130-20-9]* + TX, dimethomorph *[110488-70-5]* + TX, SYP-LI90 (Flumorph) *[211867-47-9]* + TX, dithianon *[3347-22-6]* + TX, ethaboxam *[162650-77-3]* + TX, etridiazole *[2593-15-9]* + TX, famoxadone *[131807-57-3] + TX,* fenamidone *[161326-34-7]* + TX, fenoxanil *[115852-48-7]* + TX, fentin *[668-34-8]* + TX, ferimzone *[89269-64-7]* + TX, fluazinam *[79622-59-6]* + TX, fluopicolide [239110-15-7] + TX, flusulfamide [106917-52-6] + TX, fenhexamid [126833-17-8] + TX, fosetyl-aluminium [39148-24-8] + TX, hymexazol [10004-44-1] + TX, iprovalicarb [140923-17-7] + TX, IKF-916 (Cyazofamid) *[120116-*

88-3] + TX, kasugamycin [6980-18-3] + TX, methasulfocarb *[66952-49-6]* + TX, metrafenone *[220899-03-6]* + TX, pencycuron *[66063-05-6]* + TX, phthalide [27355-22-2] + TX, polyoxins [11113-80-7] + TX, probenazole [27605-76-1] + TX, propamocarb [25606-41-1] + TX, proquinazid [189278-12-4] + TX, pyroquilon [57369-32-1] + TX, quinoxyfen [124495-18-7] + TX, quintozene [82-68-8] + TX, sulfur [7704-34-9] + TX, tiadinil [223580-51-6] + TX, triazoxide [72459-58-6] + TX, tricyclazole [41814-78-2] + TX, triforine [26644-46-2] + TX, validamycin [37248-47-8] + TX, zoxamide (RH7281) [156052-68-5] + TX, mandipropamid [374726-62-2] + TX, isopyrazam [881685-58-1] + TX, sedaxane [874967-67-6] + TX, 3-difluoromethyl-1-methyl-1H-pyrazole-4-carboxylic acid (9-dichloromethylene-1,2,3,4-tetrahydro-1,4-methano-naphthalen-5-yl)-amide (dislosed in WO 2007/048556) + TX, 3-difluoromethyl-1-methyl-1H-pyrazole-4-carboxylic acid (3',4',5'-trifluoro-biphenyl-2-yl)-amide (disclosed in WO 2006/087343) + TX, [(3*S*,4*R*,4a*R*,6*S*,6a*S*,12*R*,12a*S*,12b*S*)-3-[(cyclopropylcarbonyl)oxy]- 1,3,4,4a,5,6,6a,12,12a,12b-decahydro-6,12-dihydroxy-4,6a,12b-trimethyl-11-oxo-9-(3-pyridinyl)-2*H*,11*H*naphtho[2,1-*b*]pyrano[3,4-*e*]pyran-4-yl]methyl-cyclopropanecarboxylate [915972-17-7] + TX,1,3,5-trimethyl-N-(2-methyl-1-oxopropyl)-N-[3-(2-methylpropyl)-4-[2,2,2-trifluoro-1-methoxy-1-(trifluoromethyl)ethyl]phenyl]-1H-pyrazole-4-carboxamide [926914-55-8] + TX; lancotrione [1486617-21-3] + TX; florpyrauxifen [943832-81-3] + TX;, ipfentrifluconazole[1417782-08-1] + TX;, mefentrifluconazole [1417782-03-6] + TX; quinofumelin [861647-84-9] + TX;, chloroprallethrin [399572-87-3] + TX; cyhalodiamide [1262605-53-7] + TX;, fluazaindolizine [1254304-22-7] + TX; fluxametamide [928783-29-3] + TX; epsilon-metofluthrin [240494-71-7] + TX; epsilon-momfluorothrin [1065124-65-3] + TX; pydiflumetofen [1228284-64-7] + TX; kappa-bifenthrin [439680-76-9] + TX; broflanilide [1207727-04-5] + TX; dicloromezotiaz [1263629-39-5] + TX; dipymetitrone [16114-35-5] + TX; pyraziflumid [942515-63-1] + TX; and kappa-tefluthrin [391634-71-2] + TX; and

microbials including: *Acinetobacter lwoffii* + TX, *Acremonium alternatum* + TX + TX, *Acremonium cephalosporium* + TX + TX, *Acremonium diospyri* + TX, *Acremonium obclavatum* + TX, *Adoxophyes orana granulovirus* (AdoxGV) (Capex®) + TX, *Agrobacterium radiobacter* strain K84 (Galltrol-A®) + TX, *Alternaria alternate* + TX, *Alternaria cassia* + TX, *Alternaria destruens* (Smolder®) + TX, *Ampelomyces quisqualis* (AQ10®) + TX, *Aspergillus flavus* AF36 (AF36®) + TX, *Aspergillus flavus* NRRL 21882 (Aflaguard®) + TX, *Aspergillus* spp. + TX, *Aureobasidium pullulans* + TX, *Azospirillum* + TX, (MicroAZ® + TX, TAZO B®) + TX, *Azotobacter* + TX, *Azotobacter chroococcum* (Azotomeal®) + TX, *Azotobacter* cysts (Bionatural Blooming Blossoms®) + TX, *Bacillus amyloliquefaciens* + TX, *Bacillus cereus* + TX, *Bacillus chitinosporus* strain CM-1 + TX, *Bacillus chitinosporus* strain AQ746 + TX, *Bacillus licheniformis* strain HB-2 (Biostart™ Rhizoboost®) + TX, *Bacillus licheniformis* strain 3086 (EcoGuard® + TX, Green Releaf®) + TX, *Bacillus circulans* + TX, *Bacillus firmus* (BioSafe® + TX, BioNem-WP® + TX, VOTiVO®) + TX, *Bacillus firmus* strain I-1582 + TX, *Bacillus macerans* + TX, *Bacillus marismortui* + TX, *Bacillus megaterium* + TX, *Bacillus mycoides* strain AQ726 + TX, *Bacillus papillae* (Milky Spore Powder®) + TX, *Bacillus pumilus* spp. + TX, *Bacillus pumilus* strain GB34 (Yield Shield®) + TX, *Bacillus pumilus* strain AQ717 + TX, *Bacillus pumilus* strain QST 2808 (Sonata® + TX, Ballad Plus®) + TX, *Bacillus spahericus* (VectoLex®) + TX, *Bacillus* spp. + TX, *Bacillus* spp. strain AQ175 + TX, *Bacillus* spp. strain AQ177 + TX, *Bacillus* spp. strain AQ178 + TX, *Bacillus subtilis* strain QST 713 (CEASE® + TX, Serenade® + TX, Rhapsody®) + TX, *Bacillus subtilis* strain QST 714 (JAZZ®) + TX, *Bacillus subtilis* strain AQ153 + TX, *Bacillus subtilis* strain AQ743 + TX, *Bacillus subtilis* strain QST3002 + TX, *Bacillus subtilis* strain QST3004 + TX, *Bacillus subtilis var. amyloliquefaciens* strain FZB24 (Taegro® + TX, Rhizopro®) + TX,

Bacillus thuringiensis Cry 2Ae + TX, *Bacillus thuringiensis* Cry1Ab + TX, *Bacillus thuringiensis aizawai* GC 91 (Agree®) + TX, *Bacillus thuringiensis israelensis* (BMP123® + TX, Aquabac® + TX, VectoBac®) + TX, *Bacillus thuringiensis kurstaki* (Javelin® + TX, Deliver® + TX, CryMax® + TX, Bonide® + TX, Scutella WP® + TX, Turilav WP ® + TX, Astuto® + TX, Dipel WP® + TX, Biobit® + TX, Foray®) + TX, *Bacillus thuringiensis kurstaki* BMP 123 (Baritone®) + TX, *Bacillus thuringiensis kurstaki* HD-1 (Bioprotec-CAF / 3P®) + TX, *Bacillus thuringiensis* strain BD#32 + TX, *Bacillus thuringiensis* strain AQ52 + TX, *Bacillus thuringiensis var. aizawai* (XenTari® + TX, DiPel®) + TX, bacteria spp. (GROWMEND® + TX, GROWSWEET® + TX, Shootup®) + TX, bacteriophage of *Clavipacter michiganensis* (AgriPhage®) + TX, Bakflor® + TX, *Beauveria bassiana* (Beaugenic® + TX, Brocaril WP®) + TX, *Beauveria bassiana* GHA (Mycotrol ES® + TX, Mycotrol O® + TX, BotaniGuard®) + TX, *Beauveria brongniartii* (Engerlingspilz® + TX, Schweizer Beauveria® + TX, Melocont®) + TX, *Beauveria* spp. + TX, *Botrytis cineria* + TX, *Bradyrhizobium japonicum* (TerraMax®) + TX, *Brevibacillus brevis* + TX, *Bacillus thuringiensis tenebrionis* (Novodor®) + TX, BtBooster + TX, *Burkholderia cepacia* (Deny® + TX, Intercept® + TX, Blue Circle®) + TX, *Burkholderia gladii* + TX, *Burkholderia gladioli* + TX, *Burkholderia* spp. + TX, Canadian thistle fungus (CBH Canadian Bioherbicide®) + TX, *Candida butyri* + TX, *Candida famata* + TX, *Candida fructus* + TX, *Candida glabrata* + TX, *Candida guilliermondii* + TX, *Candida melibiosica* + TX, *Candida oleophila* strain O + TX, *Candida parapsilosis* + TX, *Candida pelliculosa* + TX, *Candida pulcherrima* + TX, *Candida reukaufii* + TX, *Candida saitoana* (Bio-Coat® + TX, Biocure®) + TX, *Candida sake* + TX, *Candida* spp. + TX, *Candida tenius* + TX, *Cedecea dravisae* + TX, *Cellulomonas flavigena* + TX, *Chaetomium cochliodes* (Nova-Cide®) + TX, *Chaetomium globosum* (Nova-Cide®) + TX, *Chromobacterium subtsugae* strain PRAA4-1T (Grandevo®) + TX, *Cladosporium cladosporioides* + TX, *Cladosporium oxysporum* + TX, *Cladosporium chlorocephalum* + TX, *Cladosporium* spp. + TX, *Cladosporium tenuissimum* + TX, *Clonostachys rosea* (EndoFine®) + TX, *Colletotrichum acutatum* + TX, *Coniothyrium minitans* (Cotans WG®) + TX, *Coniothyrium* spp. + TX, *Cryptococcus albidus* (YIELDPLUS®) + TX, *Cryptococcus humicola* + TX, *Cryptococcus infirmo-miniatus* + TX, *Cryptococcus laurentii* + TX, *Cryptophlebia leucotreta granulovirus* (Cryptex®) + TX, *Cupriavidus campinensis* + TX, *Cydia pomonella granulovirus* (CYD-X®) + TX, *Cydia pomonella granulovirus* (Madex® + TX, Madex Plus® + TX, Madex Max/ Carpovirusine®) + TX, *Cylindrobasidium laeve* (Stumpout®) + TX, *Cylindrocladium* + TX, *Debaryomyces hansenii* + TX, *Drechslera hawaiinensis* + TX, *Enterobacter cloacae* + TX, *Enterobacteriaceae* + TX, *Entomophtora virulenta* (Vektor®) + TX, *Epicoccum nigrum* + TX, *Epicoccum purpurascens* + TX, *Epicoccum* spp. + TX, *Filobasidium floriforme* + TX, *Fusarium acuminatum* + TX, *Fusarium chlamydosporum* + TX, *Fusarium oxysporum* (Fusaclean® / Biofox C®) + TX, *Fusarium proliferatum* + TX, *Fusarium* spp. + TX, *Galactomyces geotrichum* + TX, *Gliocladium catenulatum* (Primastop® + TX, Prestop®) + TX, *Gliocladium roseum* + TX, *Gliocladium* spp. (SoilGard®) + TX, *Gliocladium virens* (Soilgard®) + TX, *Granulovirus* (Granupom®) + TX, *Halobacillus halophilus* + TX, *Halobacillus litoralis* + TX, *Halobacillus trueperi* + TX, *Halomonas* spp. + TX, *Halomonas subglaciescola* + TX, *Halovibrio variabilis* + TX, *Hanseniaspora uvarum* + TX, *Helicoverpa armigera nucleopolyhedrovirus* (Helicovex®) + TX, *Helicoverpa zea nuclear polyhedrosis virus* (Gemstar®) + TX, Isoflavone – formononetin (Myconate®) + TX, *Kloeckera apiculata* + TX, *Kloeckera* spp. + TX, *Lagenidium giganteum* (Laginex®) + TX, *Lecanicillium longisporum* (Vertiblast®) + TX, *Lecanicillium muscarium* (Vertikil®) + TX, *Lymantria Dispar nucleopolyhedrosis virus* (Disparvirus®) + TX, *Marinococcus halophilus* + TX, *Meira geulakonigii* + TX, *Metarhizium anisopliae* (Met52®) + TX, *Metarhizium anisopliae* (Destruxin WP®) + TX,

Metschnikowia fruticola (Shemer®) + TX, *Metschnikowia pulcherrima* + TX, *Microdochium dimerum* (Antibot®) + TX, *Micromonospora coerulea* + TX, *Microsphaeropsis ochracea* + TX, *Muscodor albus* 620 (Muscudor®) + TX, *Muscodor roseus* strain A3-5 + TX, *Mycorrhizae* spp. (AMykor® + TX, Root Maximizer®) + TX, *Myrothecium verrucaria* strain AARC-0255 (DiTera®) + TX, BROS PLUS® + TX, *Ophiostoma piliferum* strain D97 (Sylvanex®) + TX, *Paecilomyces farinosus* + TX, *Paecilomyces fumosoroseus* (PFR-97® + TX, PreFeRal®) + TX, *Paecilomyces linacinus* (Biostat WP®) + TX, *Paecilomyces lilacinus* strain 251 (MeloCon WG®) + TX, *Paenibacillus polymyxa* + TX, *Pantoea agglomerans* (BlightBan C9-1®) + TX, *Pantoea* spp. + TX, *Pasteuria* spp. (Econem®) + TX, *Pasteuria nishizawae* + TX, *Penicillium aurantiogriseum* + TX, *Penicillium billai* (Jumpstart® + TX, TagTeam®) + TX, *Penicillium brevicompactum* + TX, *Penicillium frequentans* + TX, *Penicillium griseofulvum* + TX, *Penicillium purpurogenum* + TX, *Penicillium* spp. + TX, *Penicillium viridicatum* + TX, *Phlebiopsis gigantean* (Rotstop®) + TX, phosphate solubilizing bacteria (Phosphomeal®) + TX, *Phytophthora cryptogea* + TX, *Phytophthora palmivora* (Devine®) + TX, *Pichia anomala* + TX, *Pichia guilermondii* + TX, *Pichia membranaefaciens* + TX, *Pichia onychis* + TX, *Pichia stipites* + TX, *Pseudomonas aeruginosa* + TX, *Pseudomonas aureofasciens* (Spot-Less Biofungicide®) + TX, *Pseudomonas cepacia* + TX, *Pseudomonas chlororaphis* (AtEze®) + TX, *Pseudomonas corrugate* + TX, *Pseudomonas fluorescens* strain A506 (BlightBan A506®) + TX, *Pseudomonas putida* + TX, *Pseudomonas reactans* + TX, *Pseudomonas* spp. + TX, *Pseudomonas syringae* (Bio-Save®) + TX, *Pseudomonas viridiflava* + TX, *Pseudomons fluorescens* (Zequanox®) + TX, *Pseudozyma flocculosa* strain PF-A22 UL (Sporodex L®) + TX, *Puccinia canaliculata* + TX, *Puccinia thlaspeos* (Wood Warrior®) + TX, *Pythium paroecandrum* + TX, *Pythium oligandrum* (Polygandron® + TX, Polyversum®) + TX, *Pythium periplocum* + TX, *Rhanella aquatilis* + TX, *Rhanella* spp. + TX, *Rhizobia* (Dormal® + TX, Vault®) + TX, *Rhizoctonia* + TX, *Rhodococcus globerulus* strain AQ719 + TX, *Rhodosporidium diobovatum* + TX, *Rhodosporidium toruloides* + TX, *Rhodotorula* spp. + TX, *Rhodotorula glutinis* + TX, *Rhodotorula graminis* + TX, *Rhodotorula mucilagnosa* + TX, *Rhodotorula rubra* + TX, *Saccharomyces cerevisiae* + TX, *Salinococcus roseus* + TX, *Sclerotinia minor* + TX, *Sclerotinia minor* (SARRITOR®) + TX, *Scytalidium* spp. + TX, *Scytalidium uredinicola* + TX, *Spodoptera exigua nuclear polyhedrosis virus* (Spod-X® + TX, Spexit®) + TX, *Serratia marcescens* + TX, *Serratia plymuthica* + TX, *Serratia* spp. + TX, *Sordaria fimicola* + TX, *Spodoptera littoralis nucleopolyhedrovirus* (Littovir®) + TX, *Sporobolomyces roseus* + TX, *Stenotrophomonas maltophilia* + TX, *Streptomyces ahygroscopicus* + TX, *Streptomyces albaduncus* + TX, *Streptomyces exfoliates* + TX, *Streptomyces galbus* + TX, *Streptomyces griseoplanus* + TX, *Streptomyces griseoviridis* (Mycostop®) + TX, *Streptomyces lydicus* (Actinovate®) + TX, *Streptomyces lydicus* WYEC-108 (ActinoGrow®) + TX, *Streptomyces violaceus* + TX, *Tilletiopsis minor* + TX, *Tilletiopsis* spp. + TX, *Trichoderma asperellum* (T34 Biocontrol®) + TX, *Trichoderma gamsii* (Tenet®) + TX, *Trichoderma atroviride* (Plantmate®) + TX, *Trichoderma hamatum* TH 382 + TX, *Trichoderma harzianum rifai* (Mycostar®) + TX, *Trichoderma harzianum* T-22 (Trianum-P® + TX, PlantShield HC® + TX, RootShield® + TX, Trianum-G®) + TX, *Trichoderma harzianum* T-39 (Trichodex®) + TX, *Trichoderma inhamatum* + TX, *Trichoderma koningii* + TX, *Trichoderma* spp. LC 52 (Sentinel®) + TX, *Trichoderma lignorum* + TX, *Trichoderma longibrachiatum* + TX, *Trichoderma polysporum* (Binab T®) + TX, *Trichoderma taxi* + TX, *Trichoderma virens* + TX, *Trichoderma virens* (formerly Gliocladium virens GL-21) (SoilGuard®) + TX, *Trichoderma viride* + TX, *Trichoderma viride* strain ICC 080 (Remedier®) + TX, *Trichosporon pullulans* + TX, *Trichosporon* spp. + TX, *Trichothecium* spp. + TX, *Trichothecium*

roseum + TX, *Typhula phacorrhiza* strain 94670 + TX, *Typhula phacorrhiza* strain 94671 + TX, *Ulocladium atrum* + TX, *Ulocladium oudemansii* (Botry-Zen®) + TX, *Ustilago maydis* + TX, various bacteria and supplementary micronutrients (Natural II®) + TX, various fungi (Millennium Microbes®) + TX, *Verticillium chlamydosporium* + TX, *Verticillium lecanii* (Mycotal® + TX, Vertalec®) + TX, Vip3Aa20 (VIPtera®) + TX, *Virgibaclillus marismortui* + TX, *Xanthomonas campestris pv. Poae* (Camperico®) + TX, *Xenorhabdus bovienii* + TX, *Xenorhabdus nematophilus*; and

Plant extracts including: pine oil (Retenol®) + TX, azadirachtin (Plasma Neem Oil® + TX, AzaGuard® + TX, MeemAzal® + TX, Molt-X® + TX, Botanical IGR (Neemazad® + TX, Neemix®) + TX, canola oil (Lilly Miller Vegol®) + TX, *Chenopodium ambrosioides near ambrosioides* (Requiem®) + TX, *Chrysanthemum* extract (Crisant®) + TX, extract of neem oil (Trilogy®) + TX, essentials oils of *Labiatae* (Botania®) + TX, extracts of clove rosemary peppermint and thyme oil (Garden insect killer®) + TX, Glycinebetaine (Greenstim®) + TX, garlic + TX, lemongrass oil (GreenMatch®) + TX, neem oil + TX, *Nepeta cataria* (Catnip oil) + TX, *Nepeta catarina* + TX, nicotine + TX, oregano oil (MossBuster®) + TX, *Pedaliaceae* oil (Nematon®) + TX, pyrethrum + TX, *Quillaja saponaria* (NemaQ®) + TX, *Reynoutria sachalinensis* (Regalia® + TX, Sakalia®) + TX, rotenone (Eco Roten®) + TX, *Rutaceae* plant extract (Soleo®) + TX, soybean oil (Ortho ecosense®) + TX, tea tree oil (Timorex Gold®) + TX, thymus oil + TX, AGNIQUE® MMF + TX, BugOil® + TX, mixture of rosemary sesame pepermint thyme and cinnamon extracts (EF 300®) + TX, mixture of clove rosemary and peppermint extract (EF 400®) + TX, mixture of clove pepermint garlic oil and mint (Soil Shot®) + TX, kaolin (Screen®) + TX, storage glucam of brown algae (Laminarin®); and

pheromones including: blackheaded fireworm pheromone (3M Sprayable Blackheaded Fireworm Pheromone®) + TX, Codling Moth Pheromone (Paramount dispenser-(CM)/ Isomate C-Plus®) + TX, Grape Berry Moth Pheromone (3M MEC-GBM Sprayable Pheromone®) + TX, Leafroller pheromone (3M MEC – LR Sprayable Pheromone®) + TX, Muscamone (Snip7 Fly Bait® + TX, Starbar Premium Fly Bait®) + TX, Oriental Fruit Moth Pheromone (3M oriental fruit moth sprayable pheromone®) + TX, Peachtree Borer Pheromone (Isomate-P®) + TX, Tomato Pinworm Pheromone (3M Sprayable pheromone®) + TX, Entostat powder (extract from palm tree) (Exosex CM®) + TX, (E + TX,Z + TX,Z)-3 + TX,8 + TX,11 Tetradecatrienyl acetate + TX, (Z + TX,Z + TX,E)-7 + TX,11 + TX,13-Hexadecatrienal + TX, (E + TX,Z)-7 + TX,9-Dodecadien-1-yl acetate + TX, 2-Methyl-1-butanol + TX, Calcium acetate + TX, Scenturion® + TX, Biolure® + TX, Check-Mate® + TX, Lavandulyl senecioate; and

Macrobials including: *Aphelinus abdominalis* + TX, *Aphidius ervi* (Aphelinus-System®) + TX, *Acerophagus papaya* + TX, *Adalia bipunctata* (Adalia-System®) + TX, *Adalia bipunctata* (Adaline®) + TX, *Adalia bipunctata* (Aphidalia®) + TX, *Ageniaspis citricola* + TX, *Ageniaspis fuscicollis* + TX, *Amblyseius andersoni* (Anderline® + TX, Andersoni-System®) + TX, *Amblyseius californicus* (Amblyline® + TX, Spical®) + TX, *Amblyseius cucumeris* (Thripex® + TX, Bugline cucumeris®) + TX, *Amblyseius fallacis* (Fallacis®) + TX, *Amblyseius swirskii* (Bugline swirskii® + TX, Swirskii-Mite®) + TX, *Amblyseius womersleyi* (WomerMite®) + TX, *Amitus hesperidum* + TX, *Anagrus atomus* + TX, *Anagyrus fusciventris* + TX, *Anagyrus kamali* + TX, *Anagyrus loecki* + TX, *Anagyrus pseudococci* (Citripar®) + TX, *Anicetus benefices* + TX, *Anisopteromalus calandrae* + TX, *Anthocoris nemoralis* (Anthocoris-System®) + TX, *Aphelinus abdominalis* (Apheline® + TX, Aphiline®) + TX, *Aphelinus asychis* + TX, *Aphidius colemani* (Aphipar®) + TX, *Aphidius ervi* (Ervipar®) + TX, *Aphidius gifuensis* + TX, *Aphidius matricariae* (Aphipar-M®) + TX, *Aphidoletes aphidimyza* (Aphidend®) + TX, *Aphidoletes aphidimyza* (Aphidoline®) + TX,

Aphytis lingnanensis + TX, *Aphytis melinus* + TX, *Aprostocetus hagenowii* + TX, *Atheta coriaria* (Staphyline®) + TX, *Bombus* spp. + TX, *Bombus terrestris* (Natupol Beehive®) + TX, *Bombus terrestris* (Beeline® + TX, Tripol®) + TX, *Cephalonomia stephanoderis* + TX, *Chilocorus nigritus* + TX, *Chrysoperla carnea* (Chrysoline®) + TX, *Chrysoperla carnea* (Chrysopa®) + TX, *Chrysoperla rufilabris* + TX, *Cirrospilus ingenuus* + TX, *Cirrospilus quadristriatus* + TX, *Citrostichus phyllocnistoides* + TX, *Closterocerus chamaeleon* + TX, *Closterocerus* spp. + TX, *Coccidoxenoides perminutus* (Planopar®) + TX, *Coccophagus cowperi* + TX, *Coccophagus lycimnia* + TX, *Cotesia flavipes* + TX, *Cotesia plutellae* + TX, *Cryptolaemus montrouzieri* (Cryptobug® + TX, Cryptoline®) + TX, *Cybocephalus nipponicus* + TX, *Dacnusa sibirica* + TX, *Dacnusa sibirica* (Minusa®) + TX, *Diglyphus isaea* (Diminex®) + TX, *Delphastus catalinae* (Delphastus®) + TX, *Delphastus pusillus* + TX, *Diachasmimorpha krausii* + TX, *Diachasmimorpha longicaudata* + TX, *Diaparsis jucunda* + TX, *Diaphorencyrtus aligarhensis* + TX, *Diglyphus isaea* + TX, *Diglyphus isaea* (Miglyphus® + TX, Digline®) + TX, *Dacnusa sibirica* (DacDigline® + TX, Minex®) + TX, *Diversinervus* spp. + TX, *Encarsia citrina* + TX, *Encarsia formosa* (Encarsia max® + TX, Encarline® + TX, En-Strip®) + TX, *Eretmocerus eremicus* (Enermix®) + TX, *Encarsia guadeloupae* + TX, *Encarsia haitiensis* + TX, *Episyrphus balteatus* (Syrphidend®) + TX, *Eretmoceris siphonini* + TX, *Eretmocerus californicus* + TX, *Eretmocerus eremicus* (Ercal® + TX, Eretline e®) + TX, *Eretmocerus eremicus* (Bemimix®) + TX, *Eretmocerus hayati* + TX, *Eretmocerus mundus* (Bemipar® + TX, Eretline m®) + TX, *Eretmocerus siphonini* + TX, *Exochomus quadripustulatus* + TX, *Feltiella acarisuga* (Spidend®) + TX, *Feltiella acarisuga* (Feltiline®) + TX, *Fopius arisanus* + TX, *Fopius ceratitivorus* + TX, Formononetin (Wirless Beehome®) + TX, *Franklinothrips vespiformis* (Vespop®) + TX, *Galendromus occidentalis* + TX, *Goniozus legneri* + TX, *Habrobracon hebetor* + TX, *Harmonia axyridis* (HarmoBeetle®) + TX, *Heterorhabditis* spp. (Lawn Patrol®) + TX, *Heterorhabditis bacteriophora* (NemaShield HB® + TX, Nemaseek® + TX, Terranem-Nam® + TX, Terranem® + TX, Larvanem® + TX, B-Green® + TX, NemAttack ® + TX, Nematop®) + TX, *Heterorhabditis megidis* (Nemasys H® + TX, BioNem H® + TX, Exhibitline hm® + TX, Larvanem-M®) + TX, *Hippodamia convergens* + TX, *Hypoaspis aculeifer* (Aculeifer-System® + TX, Entomite-A®) + TX, *Hypoaspis miles* (Hypoline m® + TX, Entomite-M®) + TX, *Lbalia leucospoides* + TX, *Lecanoideus floccissimus* + TX, *Lemophagus errabundus* + TX, *Leptomastidea abnormis* + TX, *Leptomastix dactylopii* (Leptopar®) + TX, *Leptomastix epona* + TX, *Lindorus lophanthae* + TX, *Lipolexis oregmae* + TX, *Lucilia caesar* (Natufly®) + TX, *Lysiphlebus testaceipes* + TX, *Macrolophus caliginosus* (Mirical-N® + TX, Macroline c® + TX, Mirical®) + TX, *Mesoseiulus longipes* + TX, *Metaphycus flavus* + TX, *Metaphycus lounsburyi* + TX, *Micromus angulatus* (Milacewing®) + TX, *Microterys flavus* + TX, *Muscidifurax raptorellus* and *Spalangia cameroni* (Biopar®) + TX, *Neodryinus typhlocybae* + TX, *Neoseiulus californicus* + TX, *Neoseiulus cucumeris* (THRYPEX®) + TX, *Neoseiulus fallacis* + TX, *Nesideocoris tenuis* (NesidioBug® + TX, Nesibug®) + TX, *Ophyra aenescens* (Biofly®) + TX, *Orius insidiosus* (Thripor-I® + TX, Oriline i®) + TX, *Orius laevigatus* (Thripor-L® + TX, Oriline l®) + TX, *Orius majusculus* (Oriline m®) + TX, *Orius strigicollis* (Thripor-S®) + TX, *Pauesia juniperorum* + TX, *Pediobius foveolatus* + TX, *Phasmarhabditis hermaphrodita* (Nemaslug®) + TX, *Phymastichus coffea* + TX, *Phytoseiulus macropilus* + TX, *Phytoseiulus persimilis* (Spidex® + TX, Phytoline p®) + TX, *Podisus maculiventris* (Podisus®) + TX, *Pseudacteon curvatus* + TX, *Pseudacteon obtusus* + TX, *Pseudacteon tricuspis* + TX, *Pseudaphycus maculipennis* + TX, *Pseudleptomastix mexicana* + TX, *Psyllaephagus pilosus* + TX, *Psyttalia concolor* (complex) + TX, *Quadrastichus* spp. + TX, *Rhyzobius lophanthae* + TX, *Rodolia cardinalis* + TX, *Rumina decollate* + TX, *Semielacher petiolatus* + TX, *Sitobion avenae*

(Ervibank®) + TX, *Steinernema carpocapsae* (Nematac C® + TX, Millenium® + TX, BioNem C® + TX, NemAttack® + TX, Nemastar® + TX, Capsanem®) + TX, *Steinernema feltiae* (NemaShield® + TX, Nemasys F® + TX, BioNem F® + TX, Steinernema-System® + TX, NemAttack® + TX, Nemaplus® + TX, Exhibitline sf® + TX, Scia-rid® + TX, Entonem®) + TX, *Steinernema kraussei* (Nemasys L® + TX, BioNem L® + TX, Exhibitline srb®) + TX, *Steinernema riobrave* (BioVector® + TX, BioVektor®) + TX, *Steinernema scapterisci* (Nematac S®) + TX, *Steinernema* spp. + TX, *Steinernematid* spp. (Guardian Nematodes®) + TX, *Stethorus punctillum* (Stethorus®) + TX, *Tamarixia radiate* + TX, *Tetrastichus setifer* + TX, *Thripobius semiluteus* + TX, *Torymus sinensis* + TX, *Trichogramma brassicae* (Tricholine b®) + TX, *Trichogramma brassicae* (Tricho-Strip®) + TX, *Trichogramma evanescens* + TX, *Trichogramma minutum* + TX, *Trichogramma ostriniae* + TX, *Trichogramma platneri* + TX, *Trichogramma pretiosum* + TX, *Xanthopimpla stemmator*; and

other biologicals including: abscisic acid + TX, bioSea® + TX, *Chondrostereum purpureum* (Chontrol Paste®) + TX, *Colletotrichum gloeosporioides* (Collego®) + TX, Copper Octanoate (Cueva®) + TX, Delta traps (Trapline d®) + TX, Erwinia amylovora (Harpin) (ProAct® + TX, Ni-HIBIT Gold CST®) + TX, Ferri-phosphate (Ferramol®) + TX, Funnel traps (Trapline y®) + TX, Gallex® + TX, Grower's Secret® + TX, Homo-brassonolide + TX, Iron Phosphate (Lilly Miller Worry Free Ferramol Slug & Snail Bait®) + TX, MCP hail trap (Trapline f®) + TX, *Microctonus hyperodae* + TX, *Mycoleptodiscus terrestris* (Des-X®) + TX, BioGain® + TX, Aminomite® + TX, Zenox® + TX, Pheromone trap (Thripline ams®) + TX, potassium bicarbonate (MilStop®) + TX, potassium salts of fatty acids (Sanova®) + TX, potassium silicate solution (Sil-Matrix®) + TX, potassium iodide + potassiumthiocyanate (Enzicur®) + TX, SuffOil-X® + TX, Spider venom + TX, *Nosema locustae* (Semaspore Organic Grasshopper Control®) + TX, Sticky traps (Trapline YF® + TX, Rebell Amarillo®) + TX and Traps (Takitrapline y + b®) + TX.

The references in brackets behind the active ingredients, e.g. *[3878-19-1]* refer to the Chemical Abstracts Registry number. The above described mixing partners are known. Where the active ingredients are included in "The Pesticide Manual" [The Pesticide Manual - A World Compendium; Thirteenth Edition; Editor: C. D. S. TomLin; The British Crop Protection Council], they are described therein under the entry number given in round brackets hereinabove for the particular compound; for example, the compound "abamectin" is described under entry number (1). Where "[CCN]" is added hereinabove to the particular compound, the compound in question is included in the "Compendium of Pesticide Common Names", which is accessible on the internet [A. Wood; Compendium of Pesticide Common Names, Copyright © 1995-2004]; for example, the compound "acetoprole" is described under the internet address http://www.alanwood.net/pesticides/acetoprole.html.

Most of the active ingredients described above are referred to hereinabove by a so-called "common name", the relevant "ISO common name" or another "common name" being used in individual cases. If the designation is not a "common name", the nature of the designation used instead is given in round brackets for the particular compound; in that case, the IUPAC name, the IUPAC/Chemical Abstracts name, a "chemical name", a "traditional name", a "compound name" or a "develoment code" is used or, if neither one of those designations nor a "common name" is used, an "alternative name" is employed. “CAS Reg. No” means the Chemical Abstracts Registry Number.

The active ingredient mixture of the compounds of formula (I) selected from Tables 1 to 96 and Table A of the present invention with active ingredients described above comprises a compound selected from Tables 1 to 96 and Table A and an active ingredient as described above preferably in a mixing ratio

of from 100:1 to 1:6000, especially from 50:1 to 1:50, more especially in a ratio of from 20:1 to 1:20, even more especially from 10:1 to 1:10, very especially from 5:1 and 1:5, special preference being given to a ratio of from 2:1 to 1:2, and a ratio of from 4:1 to 2:1 being likewise preferred, above all in a ratio of 1:1, or 5:1, or 5:2, or 5:3, or 5:4, or 4:1, or 4:2, or 4:3, or 3:1, or 3:2, or 2:1, or 1:5, or 2:5, or 3:5, or 4:5, or 1:4, or 2:4, or 3:4, or 1:3, or 2:3, or 1:2, or 1:600, or 1:300, or 1:150, or 1:35, or 2:35, or 4:35, or 1:75, or 2:75, or 4:75, or 1:6000, or 1:3000, or 1:1500, or 1:350, or 2:350, or 4:350, or 1:750, or 2:750, or 4:750. Those mixing ratios are by weight.

The mixtures as described above can be used in a method for controlling pests, which comprises applying a composition comprising a mixture as described above to the pests or their environment, with the exception of a method for treatment of the human or animal body by surgery or therapy and diagnostic methods practised on the human or animal body.

The mixtures comprising a compound of formula (I) selected from Tables 1 to 96 and Table P and one or more active ingredients as described above can be applied, for example, in a single “ready-mix” form, in a combined spray mixture composed from separate formulations of the single active ingredient components, such as a “tank-mix”, and in a combined use of the single active ingredients when applied in a sequential manner, i.e. one after the other with a reasonably short period, such as a few hours or days. The order of applying the compounds of formula (I) selected from Tables 1 to 96 and Table P and the active ingredients as described above is not essential for working the present invention.

The compositions according to the invention can also comprise further solid or liquid auxiliaries, such as stabilizers, for example unepoxidized or epoxidized vegetable oils (for example epoxidized coconut oil, rapeseed oil or soya oil), antifoams, for example silicone oil, preservatives, viscosity regulators, binders and/or tackifiers, fertilizers or other active ingredients for achieving specific effects, for example bactericides, fungicides, nematocides, plant activators, molluscicides or herbicides.

The compositions according to the invention are prepared in a manner known per se, in the absence of auxiliaries for example by grinding, screening and/or compressing a solid active ingredient and in the presence of at least one auxiliary for example by intimately mixing and/or grinding the active ingredient with the auxiliary (auxiliaries). These processes for the preparation of the compositions and the use of the compounds I for the preparation of these compositions are also a subject of the invention.

The application methods for the compositions, that is the methods of controlling pests of the abovementioned type, such as spraying, atomizing, dusting, brushing on, dressing, scattering or pouring - which are to be selected to suit the intended aims of the prevailing circumstances - and the use of the compositions for controlling pests of the abovementioned type are other subjects of the invention. Typical rates of concentration are between 0.1 and 1000 ppm, preferably between 0.1 and 500 ppm, of active ingredient. The rate of application per hectare is generally 1 to 2000 g of active ingredient per hectare, in particular 10 to 1000 g/ha, preferably 10 to 600 g/ha.

A preferred method of application in the field of crop protection is application to the foliage of the plants (foliar application), it being possible to select frequency and rate of application to match the danger of infestation with the pest in question. Alternatively, the active ingredient can reach the plants via the root system (systemic action), by drenching the locus of the plants with a liquid composition or by incorporating the active ingredient in solid form into the locus of the plants, for example into the soil, for example in the form of granules (soil application). In the case of paddy rice crops, such granules can be metered into the flooded paddy-field.

The compounds of the invention and compositions thereof are also be suitable for the protection of plant propagation material, for example seeds, such as fruit, tubers or kernels, or nursery plants, against pests of the abovementioned type. The propagation material can be treated with the compound prior to planting, for example seed can be treated prior to sowing. Alternatively, the compound can be applied to seed kernels (coating), either by soaking the kernels in a liquid composition or by applying a layer of a solid composition. It is also possible to apply the compositions when the propagation material is planted to the site of application, for example into the seed furrow during drilling. These treatment methods for plant propagation material and the plant propagation material thus treated are further subjects of the invention. Typical treatment rates would depend on the plant and pest/fungi to be controlled and are generally between 1 to 200 grams per 100 kg of seeds, preferably between 5 to 150 grams per 100 kg of seeds, such as between 10 to 100 grams per 100 kg of seeds.

The term seed embraces seeds and plant propagules of all kinds including but not limited to true seeds, seed pieces, suckers, corns, bulbs, fruit, tubers, grains, rhizomes, cuttings, cut shoots and the like and means in a preferred embodiment true seeds.

The present invention also comprises seeds coated or treated with or containing a compound of formula (I). The term "coated or treated with and/or containing" generally signifies that the active ingredient is for the most part on the surface of the seed at the time of application, although a greater or lesser part of the ingredient may penetrate into the seed material, depending on the method of application. When the said seed product is (re)planted, it may absorb the active ingredient. In an embodiment, the present invention makes available a plant propagation material adhered thereto with a compound of formula (I). Further, it is hereby made available, a composition comprising a plant propagation material treated with a compound of formula (I).

Seed treatment comprises all suitable seed treatment techniques known in the art, such as seed dressing, seed coating, seed dusting, seed soaking and seed pelleting. The seed treatment application of the compound formula (I) can be carried out by any known methods, such as spraying or by dusting the seeds before sowing or during the sowing/planting of the seeds.

The invention further relates to a method for controlling pests, which comprises applying a composition according to the invention to the pests or their environment preferably with the exception of a method for treatment of the human or animal body by surgery or therapy and diagnostic methods practised on the human or animal body.

The invention further relates to a method for the protection of plant propagation material from the attack by pests, which comprises treating the propagation material or the site, where the propagation material is planted, with a composition comprising a compound according to this invention or with a compound according to this invention. The invention further relates to a plant propagation material treated with the pesticidal composition comprising a compound according to this invention or with a compound according to this invention.

The Examples which follow serve to illustrate the invention. The compounds of the invention can be distinguished from known compounds by virtue of greater efficacy at low application rates, which can be verified by the person skilled in the art using the experimental procedures outlined in the Examples, using lower application rates if necessary, for example 50 ppm, 12.5 ppm, 6 ppm, 3 ppm, 1.5 ppm or 0.8 ppm. Temperatures are given in degrees Celsius; mixing ratios of solvents are given in parts by volume.

Preparatory Examples:

"Mp" means melting point in °C. Free radicals represent methyl groups. ^{1}H NMR measurements were recorded on a Brucker 400MHz spectrometer, chemical shifts are given in ppm relevant to a TMS standard. Spectra measured in deuterated solvents as indicated.

The following LC-MS methods were used to characterize the compounds:

Method A

MS	Spectra were recorded on a Mass Spectrometer from Waters (SQD or SQDII Single quadrupole mass spectrometer) equipped with an electrospray source (Polarity: positive or negative ions, Capillary: 3.00 kV, Cone range: 30 V, Extractor: 2.00 V, Source Temperature: 150°C, Desolvation Temperature: 350°C, Cone Gas Flow: 0 L/Hr, Desolvation Gas Flow: 650 L/Hr, Mass range: 100 to 900 Da).
LC	Acquity UPLC from Waters: Binary pump, heated column compartment and diode-array detector. Solvent degasser, binary pump, heated column compartment and diode-array detector. Column: Waters UPLC HSS T3 , 1.8 μm, 30 x 2.1 mm, Temp: 60 °C, DAD Wavelength range (nm): 210 to 500, Solvent Gradient: A = water + 5% MeOH + 0.05 % HCOOH, B= Acetonitrile + 0.05 % HCOOH: gradient: 0 min 0% B, 100%A; 1.2-1.5min 100% B; Flow (ml/min) 0.85.

Method B

MS	Spectra were recorded on a Mass Spectrometer from Waters (SQD or SQDII Single quadrupole mass spectrometer) equipped with an electrospray source (Polarity: positive or negative ions, Capillary: 3.00 kV, Cone range: 45 V, Extractor: 2.00 V, Source Temperature: 150°C, Desolvation Temperature: 350°C, Cone Gas Flow: 0 L/Hr, Desolvation Gas Flow: 650 L/Hr, Mass range: 100 to 900 Da).
LC	Acquity UPLC from Waters: Binary pump, heated column compartment and diode-array detector. Solvent degasser, binary pump, heated column compartment and diode-array detector. Column: Waters UPLC HSS T3 , 1.8 μm, 30 x 2.1 mm, Temp: 60 °C, DAD Wavelength range (nm): 210 to 500, Solvent Gradient: A = water + 5% MeOH + 0.05 % HCOOH, B= Acetonitrile + 0.05 % HCOOH: gradient: 0 min 0% B, 100%A; 1.2-1.5min 100% B; Flow (ml/min) 0.85.

Method C

MS	Spectra were recorded on a Mass Spectrometer from Waters (SQD, SQDII Single quadrupole mass spectrometer) equipped with an electrospray source (Polarity: positive and negative ions), Capillary: 3.00 kV, Cone range: 30V, Extractor: 2.00 V, Source Temperature: 150°C, Desolvation Temperature: 350°C, Cone Gas Flow: 50 l/h, Desolvation Gas Flow: 650 l/h, Mass range: 100 to 900 Da)
LC	Acquity UPLC from Waters: Binary pump, heated column compartment, diode-array detector and ELSD detector. Column: Waters UPLC HSS T3, 1.8 μm, 30 x 2.1 mm, Temp: 60 °C, DAD Wavelength range (nm): 210 to 500, Solvent Gradient: A = water + 5% MeOH + 0.05 % HCOOH, B= Acetonitrile + 0.05 % HCOOH, gradient: 10-100% B

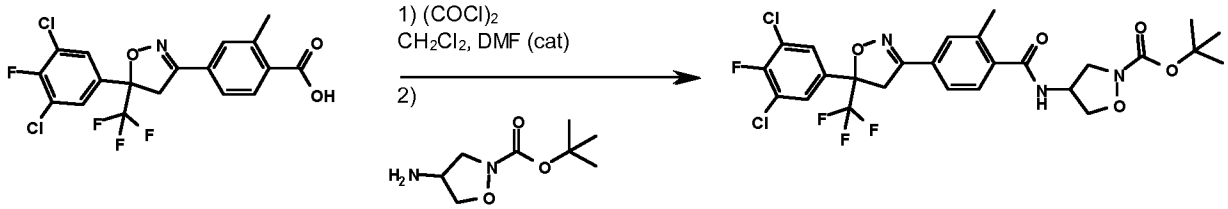
	in 2.7 min; Flow (ml/min) 0.85

Method D

MS	Spectra were recorded on a Waters SQD2 Mass Spectrometer (Single quadrupole mass spectrometer) Ionisation method: Electrospray, Polarity: positive ions Capillary (kV) 3.50, Cone (V) 30.00, Extractor (V) 3.00, Source Temperature (°C) 150, Desolvation Temperature (°C) 400 Cone Gas Flow (L/Hr) 60, Desolvation Gas Flow (L/Hr) 700, Mass range: 140 to 800 Da; DAD Wavelength range (nm): 210 to 400
LC	Method Waters ACQUITY UPLC with the following HPLC gradient conditions (Solvent A: Water/Methanol 9:1,0.1% formic acid and Solvent B: Acetonitrile,0.1% formic acid) Time (minutes) A (%) B (%) Flow rate (ml/min) 0 100 0 0.75 2.5 0 100 0.75 2.8 0 100 0.75 3.0 100 0 0.75 Type of column: Waters ACQUITY UPLC HSS T3; Column length: 30 mm; Internal diameter of column: 2.1 mm; Particle Size: 1.8 micron; Temperature: 60°C.

Example 1: N-(2-cyclobutylsulfonylisoxazolidin-4-yl)-4-[5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-benzamide (example A014 in table A)

Step A: tert-butyl 4-[[4-[5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-benzoyl]amino]isoxazolidine-2-carboxylate



A solution of tert-butyl 4-aminoisoxazolidine-2-carboxylate (preparation described in WO11/067272) (0.377 g) in tetrahydrofuran (5 ml) was treated with triethylamine (0.307 g) and stirred at 20°C. An amount of 4-[5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-benzoyl chloride (0.911 g) (the preparation of 4-[5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-benzoic acid is described in WO13/026695) dissolved in tetrahydrofuran (5 ml) was slowly added. The mixture was stirred for one hour then it was diluted with dichloromethane and aqueous solution of sodium bicarbonate. The phases were separated and the aqueous layer was extracted with dichloromethane. The organic phases were combined, dried over sodium sulfate and evaporated to yield a crude product as a yellow solid. Flash chromatography over silica gel with ethyl acetate-heptane mixture (1:1) gave the title compound as a slightly yellow solid. 1H-NMR (CDCl3, 400 MHz, δ in ppm):

7.58 (d, 2H), 7.54 – 7.46 (m, 2H), 7.40 (d, 1H), 6.25 (d, 1H), 5.02 (m, 1H), 4.12 – 3.95 (m, 4H), 3.72 – 3.57 (m, 2H), 2.47 (s, 3H), 1.49 (s, 9H).

Step B: 4-[5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-isoxazolidin-2-ium-4-yl-2-methyl-benzamide; 2,2,2-trifluoroacetate

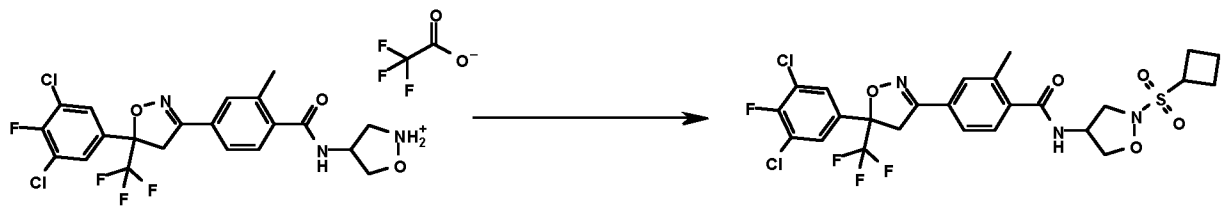


A solution of tert-butyl 4-[[4-[5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-benzoyl]amino]isoxazolidine-2-carboxylate (1.00 g) in dichloromethane (8.5 ml) was treated with trifluoroacetic acid (0.945 g) and stirred at 20°C for 16 hours. The reaction was followed by TLC analysis on silica gel, eluting with methyl alcohol-ethyl acetate (5/95).

The reaction mixture was concentrated under reduced pressure and the residue was submitted to flash chromatography over silica gel, eluting with methyl alcohol-ethyl acetate 0:10 to 1:9. After evaporation of the selected fractions, the title compound was obtained as a yellow powder.

1H-NMR (CDCl3, 400 MHz, δ in ppm): 8.40 - 8.10 (brs, 2H), 7.58 (d, 2H), 7.52 – 7.45 (m, 3H), 5.17 (m, 1H), 4.30 (m, 1H), 4.20 (m, 1H), 4.08 (d, 1H), 3.70 (m, 2H), 3.60 (m, 1H), 2.40 (s, 3H).

Step C: N-(2-cyclobutylsulfonylisoxazolidin-4-yl)-4-[5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-benzamide

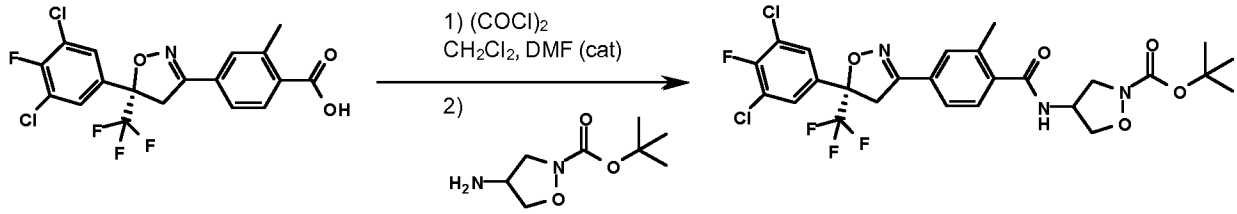


A solution of 4-[5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-isoxazolidin-2-ium-4-yl-2-methyl-benzamide; 2,2,2-trifluoroacetate (described in step B) (0.150 g,) in tetrahydrofuran (5.0 ml), under argon atmosphere was treated with pyridine (0.038 g) and cyclubutane sulfonyl chloride (0.187 g). The reaction mixture was stirred for 18 hours at 20°C. The reaction was followed by TLC (silica gel, Ethyl acetate/Heptane 1:1). The reaction mixture was evaporated under reduced pressure and the residue was submitted to flash column chromatography over silica gel, eluting with Ethyl acetate/Heptane 1:1. The selected fractions were evaporated to yield the title compound (example A014 in table A) as a colourless solid.

1H-NMR (CDCl3, 400 MHz, δ in ppm): 7.60 (d, 2H), 7.52 – 7.40 (m, 3H), 6.97 (d, 1H), 5.32 (m, 1H), 4.45 (t, 1H), 4.27 (dd, 1H), 4.10 – 3.95 (m, 3H), 3.73 - 3.63 (m, 2H), 2.49 (s, 3H), 1.30 – 1.15 (m, 2H), 0.75 (d, 2H), 0.45 (m, 2H).

Example 2: 4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-(2-methylsulfonylisoxazolidin-4-yl)benzamide (example A001 in table A)

Step A: tert-butyl 4-[[4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-benzoyl]amino]isoxazolidine-2-carboxylate



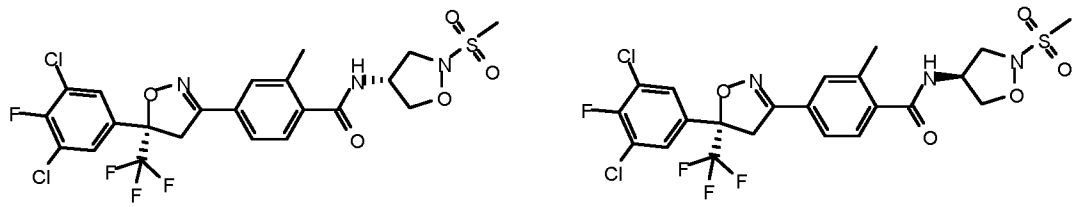
Following similar conditions as described in step A in example 1, but starting with the stereoenriched acid 4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-benzoic acid (described in WO 2013026931), tert-butyl 4-[[4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-benzoyl]amino]isoxazolidine-2-carboxylate was prepared as a mixture of diastereomers.

^{1}HNMR (CDCl3, 400 MHz): 7.59 (s, 1H), 7.58 (s, 1H), 7.53 - 7.47 (m, 2H), 7.38 (d, J = 8 Hz, 1H), 6.24 (d, J = 8 Hz, 1H), 5.05 – 4.97 (m, 1H), 4.12 – 4.01 (m, 3H), 3.97 (dd, J1 = 10 Hz, J2 = 3 Hz, 1H), 3.68 (d, J = 17 Hz, 1H), 3.60 (dd, J1 = 12 Hz, J2 = 3 Hz, 1H), 2.46 (s, 3H), 1.48 (s, 9H).

Steps B and C: 4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-(2-methylsulfonylisoxazolidin-4-yl)benzamide

Similarly to steps B and C of example 1, but using methanesulfonyl chloride instead of cyclobutanesulfonyl chloride, the title compound was obtained as a mixture of diastereomers (compound A001 in table A) (LC-MS data in the table).

Example 3: Single diastereomers 4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-[(4R)-2-methylsulfonylisoxazolidin-4-yl]benzamide (example A013 in Table A) and 4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-[(4S)-2-methylsulfonylisoxazolidin-4-yl]benzamide (example A012 in table A)



The intermediate, tert-butyl 4-[[4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-benzoyl]amino]isoxazolidine-2-carboxylate obtained in step A of preparation example 2 was submitted to chiral resolution by preparative HPLC chromatography using the conditions outlined hereafter.

Analytical HPLC method:

HPLC: Waters UPLC – HClass, DAD Detector Waters UPLC

Column: Daicel CHIRALPAK® IB, 3µm, 0.46cm x 10cm

Mobile phase: Hept/EtOH 90/10

Flow rate: 1.0 ml/min

Detection: 265 nm

Sample concentration: 1mg/mL in DCM/iPrOH 50/50

Injection: 2µl

Preparative HPLC method:

Autopurification System from Waters: 2767 sample Manager, 2489 UV/Visible Detector, 2545 Quaternary Gradient Module.

Column: Daicel CHIRALPAK® IB, 5µm, 1.0 cm x 25cm

Mobile phase: Hept/EtOH 90/10

Flow rate: 10 ml/min

Detection: UV 260 nm

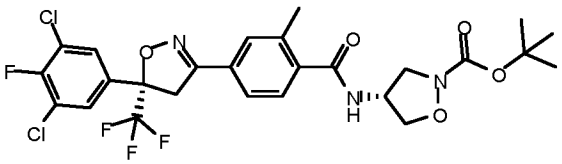
Sample concentration: 50mg/mL in (4ml Heptane/2ml EtOH)

Injection: 250µl - 500µl

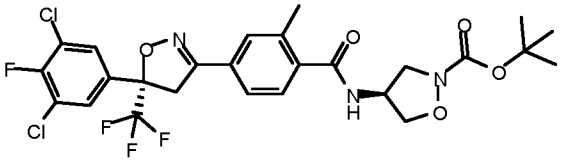
Results:

First eluting enantiomer	Second eluting enantiomer
Retention time (min) ~ 6.68	Retention time (min) ~ 10.79
Chemical purity (area% at 265 nm) 99	Chemical purity (area% at 265 nm) 99
Enantiomeric excess (%) > 99	Enantiomeric excess (%) > 99

The intermediate with the elution time of 6.68 min is tert-butyl (4R)-4-[[4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-benzoyl]amino]isoxazolidine-2-carboxylate



while the intermediate with the elution time of 10.79 min is tert-butyl (4S)-4-[[4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-benzoyl]amino]isoxazolidine-2-carboxylate.



Each diastereomer was submitted to the synthetic steps B and C, as described for the preparation example 2 to yield, respectively:

4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-[(4R)-2-methylsulfonylisoxazolidin-4-yl]benzamide (example A013 in Table A) with a retention time of 21.71 min under the conditions described hereafter

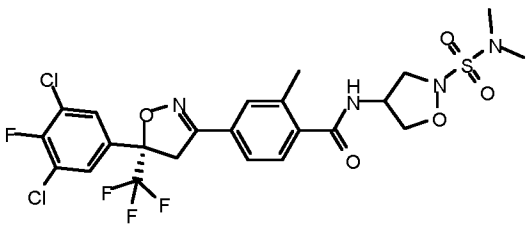
and

4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-[(4S)-2-methylsulfonylisoxazolidin-4-yl]benzamide (example A012 in table A) wit a retention time of 17.61 min under the same conditions.

Analytical method:

HPLC:Waters UPLC - HClass
DAD Detector Waters UPLC
Column: Daicel CHIRALPAK® IB, 3μm, 0.46cm x 10cm
Mobile phase: Heptane/EtOH 90/10
Flow rate: 1.0 ml/min
Detection: 265nm
Sample concentration: 1 mg/mL in DCM/iPr 50/50
Injection: 2μL

Example 4: 4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[2-(dimethylsulfamoyl)isoxazolidin-4-yl]-2-methyl-benzamide (example A010 in table A)



Following exactly the same synthetic sequence as in synthesis example 2, but using dimethylsulfamoyl chloride instead of methanesulfonyl chloride, the title compound was prepared as a mixture of diastereomers. LC-MS data is indicated in table A.

The mixture was submitted to preparative separation by chiral HPLC under the conditions described hereunder.

Analytical HPLC method:

HPLC: Waters UPLC – HClass, DAD Detector Waters UPLC
Column: Daicel CHIRALPAK® IA, 3μm, 0.46cm x 10cm
Mobile phase: TBME/EtOH 98/02
Flow rate: 1.0 ml/min
Detection: 265 nm
Sample concentration: 1mg/mL in DCM/iPrOH 50/50
Injection: 2μl

Preparative HPLC method:

Autopurification System from Waters: 2767 sample Manager, 2489 UV/Visible Detector, 2545 Quaternary Gradient Module.

Column: Daicel CHIRALPAK® IA, 5µm, 1.0 cm x 25cm

Mobile phase: TBME/EtOH 98/02

Flow rate: 10 ml/min

Detection: UV 260 nm

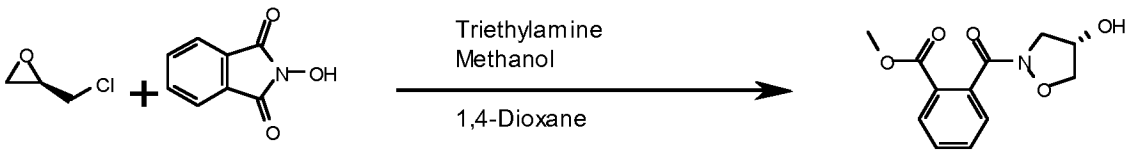
Sample concentration: 25mg/mL in dichloromethane, filtered

Injection: 100µl - 200µl

First eluting enantiomer (compound A143 in table A)	Second eluting enantiomer (compound A034 in table A)
Retention time (min) ~ 3.6	Retention time (min) ~ 4.77
Chemical purity (area% at 266 nm) 99	Chemical purity (area% at 266 nm) 99
Enantiomeric excess (%) > 99	Enantiomeric excess (%) > 99

Example 5: 2-chloro-N-[(4R)-2-(cyclopropylsulfamoyl)isoxazolidin-4-yl]-4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide (compound A154 in table A)

Step A: methyl 2-[(4S)-4-hydroxyisoxazolidine-2-carbonyl]benzoate

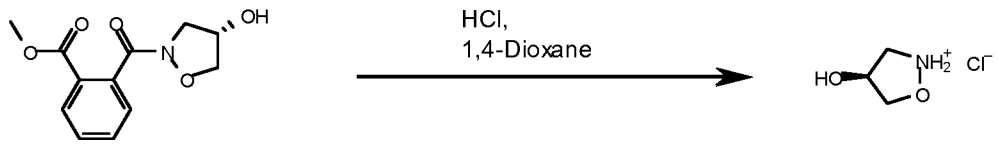


In a sulfonation flask with mechanical stirrer, condenser, thermometer, under inert atmosphere, a suspension of N-hydroxyphthalimide (40.0 g) and (R)-(-)-epichlorhydrin (25.0 g) in anhydrous 1,4-dioxane (240 mL), was treated with triethylamine (3.42 mL). The suspension turned immediately orange. The resulting mixture was then heated to 55°C and stirred at that temperature for 6 days. To the resulting dark red solution were added methanol (240 mL) and triethylamine (34.2 mL) and the stirring was continued for 3 hours at the same temperature.

The reaction mixture was then concentrated under vacuum to yield a dark red oil which was treated with a little dichloromethane and saturated aqueous sodium bicarbonate solution. The mixture was extracted twice with dichloromethane. The organic phase was dried over sodium sulfate and evaporated under reduced pressure. The residue was submitted to silica gel chromatography, using methanol/dichloromethane 5:95 as eluent. The selected fractions were evaporated and the residue was triturated with ethyl acetate. A white suspension formed slowly. Methyl 2-[(4S)-4-hydroxyisoxazolidine-2-carbonyl]benzoate was isolated by filtration.

^{1}HNMR (CDCl3, 400 MHz): 7.99 (d, J = 8 Hz, 1H), 7.62 (t, J = 8 Hz, 1H), 7.51-7.42 (m, 2H), 4.81-4.72 (m, 1H), 4.35-3.63 (m, 4H), 3.92 (s, 3H).

Step B: (4S)-isoxazolidin-2-ium-4-ol chloride

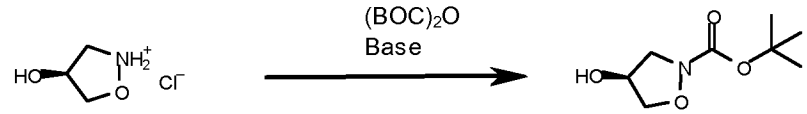


Methyl 2-[(4S)-4-hydroxyisoxazolidine-2-carbonyl]benzoate (264 g) was placed in a flask equipped with a mechanical stirrer, a condenser, a thermometer and an inert gas inlet and outlet through a bubbler. A 4 molar anhydrous solution of hydrochloric acid in dioxane (1.313 L) was added. The resulting solution was stirred at 80°C for 20 hours. Care was taken to trap the hydrochloric gas leaving the apparatus.

The reaction mixture was then cooled to 0°C and the solid that was formed was isolated by careful filtration. After rinsing with dry dioxane and drying, (4S)-isoxazolidin-2-ium-4-ol chloride was isolated as colorless powder. The compound was analyzed by NMR.

^{1}HNMR (DMSO-d6, 400 MHz): 13.1-12.1 (br s, 2H), 6.2-5.2 (br s, 1H), 4.85-477 (m, 1H), 4.08 (d, 1H), 4.04 (dd, 1H), 3.49 (dd, 1H), 3.33 (d, 1H).

Step C: tert-butyl (4S)-4-hydroxyisoxazolidine-2-carboxylate



A suspension of (4S)-isoxazolidin-2-ium-4-ol chloride (67.8 g) in dry tetrahydrofuran (300 mL) under inert atmosphere was stirred at 0°C. A solution of triethylamine (82 g) in tetrahydrofuran (100 mL) was added over a period of 10 minutes. A solution di-tert-butyl dicarbonate (141 g) in tetrahydrofuran (100 mL) was then added to the reaction mixture. After the removal of the ice bath, the reaction mixture was stirred at room temperature until the strating material was reacted.

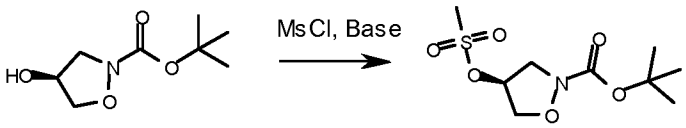
The progression of the reaction is monitored by TLC analysis of aliquots eluted on a silica gel plate with a mixture of ethyl acetate/heptane 1:1. The plate can be developed with iodine vapour or ninhydrine.

The reaction mixture was the filtered and the precipitate washed with tetrahydrofuran. The filtrate was concentrated under vacuum and the residue was purified on a silica gel column using first a gradient heptane/ethyl acetate 3:1 to 1:3.

The tert-butyl (4S)-4-hydroxyisoxazolidine-2-carboxylate is isolated as a pale yellow oil, characterized by its NMR spectrum.

^{1}HNMR (CDCl3, 400 MHz): 4.78-4.74 (m, 1H), 3.96-3.94 (m, 2H), 3.72-3.68 (m, 2H), 2.36 (broad d, 1H), 1.48 (s, 9H).

Step D: tert-butyl (4S)-4-methylsulfonyloxyisoxazolidine-2-carboxylate

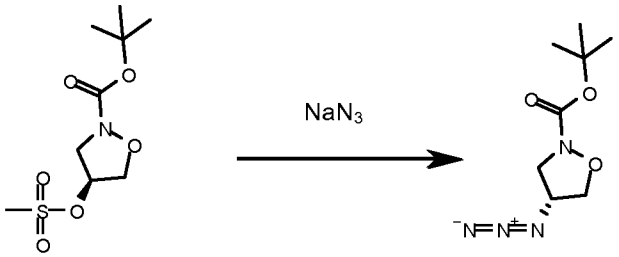


To a solution of tert-butyl (4S)-4-hydroxyisoxazolidine-2-carboxylate (5.00 g) in dichloromethane (30 mL) was added triethylamine (7.52 mL). The reaction flask was cooled in an ice bath and a solution of methanesulfonyl chloride (3,13 mL) in dichloromethane (10 mL) was slowly added in such a way to keep the temperature below 20°C. The resulting orange colored suspension was stirred for 16 hours at 20°C and resulted in a brown suspension.

The reaction mixture was then washed with 1M aqueous hydrochloric acid (30 mL) and the aqueous phase was extracted with dichloromethane. The combined organic extracts were washed with 1M aqueous sodium hydroxide (30 mL). The aqueous phase was extracted with dichloromethane and the combined organic extracts were dried over sodium sulfate and concentrated under vacuo to yield crude tert-butyl (4S)-4-methylsulfonyloxyisoxazolidine-2-carboxylate that was pure enough to be used in the following step.

^{1}HNMR (CDCl3, 400 MHz): 5.53-5.47 (m, 1H), 4.20-4.15 (broad d, J=10 Hz, 1H), 4,11-4.05 (dd, J_1=10 Hz, J_2= 5 Hz, 1H), 4.03-3.97 (broad d, J=14 Hz, 1H), 3.89-3.82 (dd, J_1=14 Hz, J_2= 5 Hz, 1H), 3.07 (s, 3H), 1.50 (s, 9H).

Step E: tert-butyl (4R)-4-azidoisoxazolidine-2-carboxylate

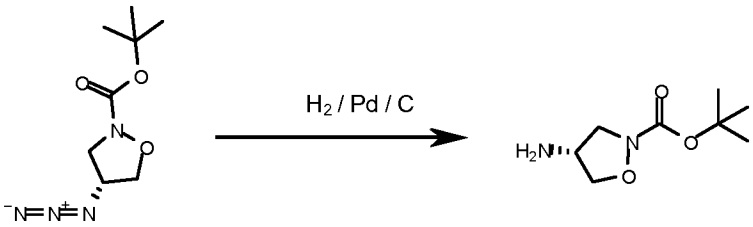


Sodium azide (21.5 g) was suspended in 170 mL of dimethylformamide (dried over molecular sieves) in a 500 mL flask fitted with a mechanical stirrer, a thermometer, a condenser, an argon inlet and outlet with a bubbler and a dropping funnel. The reaction flask was placed in an oil bath and heated under stirring at 60°C. The reaction was performed under argon atmosphere and behind a safety shield. Special care was given to the absence of chlorinated solvent traces in the starting mesylate for safety reasons. A solution of tert-butyl (4S)-4-methylsulfonyloxyisoxazolidine-2-carboxylate (described above) (68 g) in dry dimethylformamide (170 mL) was added under stirring. No exotherm was observed. After the addition was complete, the reaction mixture was stirred at the same temperature for 22 hours. The progression of the reaction can be followed by TLC analysis (silica gel plate, eluent ethyl acetate- heptane 1:1, Rf starting material 0.3, Rf product 0.6).

The reaction mixture was then let cool down to room temperature and transferred in a mixture of water (1 L) and ethyl acetate. The resulting mixture was extracted three times with ethyl acetate. The combined organic extracts were washed three times with water, then with brine before being dried over sodium

sulfate. After removal of the solvent under vacuum, the crude tert-butyl (4R)-4-azidoisoxazolidine-2-carboxylate was obtained as a light orange oil. It was used without purification for the following step.
^{1}HNMR (CDCl3, 400 MHz): 4.47-4.42 (m, 1H), 4.07-4.01 (dd, 1H), 3.97-3.92 (dd, 1H), 3.80-3.77 (d, 2H), 1.51 (s, 9H).

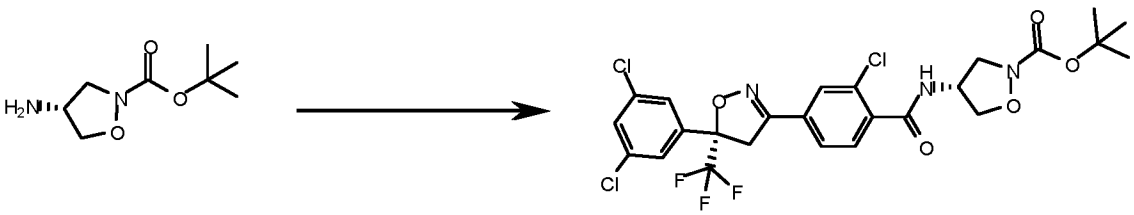
Step F: tert-butyl (4R)-4-aminoisoxazolidine-2-carboxylate



A solution of tert-butyl (4R)-4-azidoisoxazolidine-2-carboxylate (56 g) in tetrahydrufurane (1300 mL) was placed in an inertized autoclave equipped with a mechanical stirrer. Palladium on carbon (2.50 g, 5% catalyst loading) was introduced and the reactor was closed. After evacuation of the reactor's atmosphere hydrogen was introduced (this operation was repeated twice). The applied pressure didn't exceed 3 atm. The reaction was performed under strong agitation, at room temperature. The progression was checked by analysis of aliquots of the reaction mixture (after removal of hydrogen under vacuum and filling the reactor with argon). After 8 hours, another portion of catalyst (1.25 g) was introduced, following a safe protocol and the hydrogenation was continued for two more hours, after which the conversion was complete. After inertizing the reactor, the reaction mixture was filtered over a short path of celite and the filtrate was evaporated on the rotary evaporator at 60°C. The crude tert-butyl (4R)-4-aminoisoxazolidine-2-carboxylate was obtained as a pale brown oil.
^{1}HNMR (CDCl3, 400 MHz): 4.00-3.89 (m, 2H), 3.87-3.80 (dd, 1H), 3.70-3.65 (dd, 1H), 3.38-3.33 (dd, 1H), 1.48 (s, 9H).

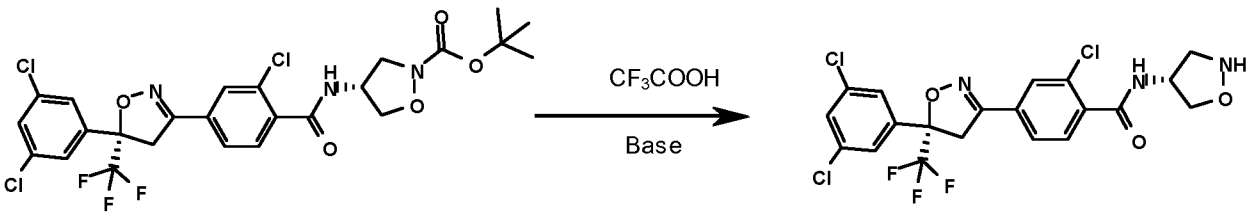
Enantiomeric purity of tert-butyl (4R)-4-aminoisoxazolidine-2-carboxylate: Chiral analysis of the product was performed on a chiral HPLC, using a racemic compound as reference.
HPLC: Waters UPLC - HClass
DAD Detector Waters UPLC
Column: Daicel CHIRALPAK® IF, 3μm, 0.46cm x 10cm
Mobile phase: Heptane/EtOH/DEA 80/20/0.1%
Flow rate: 1.0 ml/min
Detection: 220 nm
Sample concentration: 1 mg/mL in iPrOH 100%
Injection: 2μL
Under these conditions, the enantiomers have a retention time of 5.99 min and 9.69 min respectively. The product obtained as described above showed only the peak of the short retention time, the other isomer being not detected.

Step G: tert-butyl (4R)-4-[[2-chloro-4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzoyl]amino]isoxazolidine-2-carboxylate



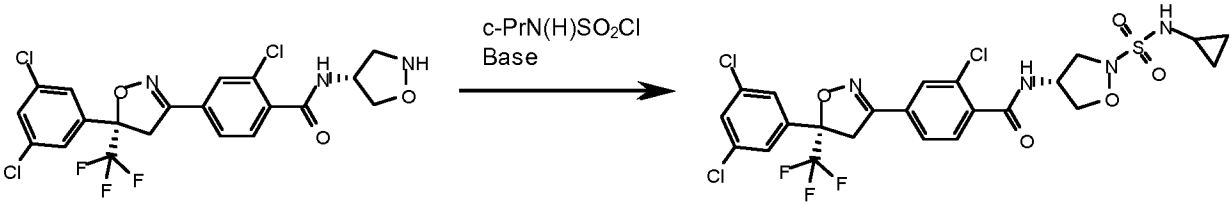
This step was performed in an analogous way as described in previous examples.

Step H: 2-chloro-4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-isoxazolidin-4-yl]benzamide



This step was performed in an analogous way as described in previous examples.

Step I: N-[(4R)-2-(dimethylsulfamoyl)isoxazolidin-4-yl]-2-methyl-4-[5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide (compound A154 in table A)

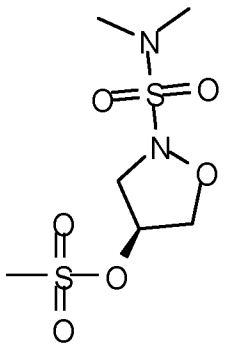


A solution of 2-chloro-4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-isoxazolidin-4-yl]benzamide (0.35 g) in tetrahydrofuran (5.5 mL) under nitrogen atmosphere, was treated with cyclopropylsulfamoyl chloride (0.161 g) (obtained in two steps by adding one equivalent of chlorosulfonic acid to three equivalents of cyclopropylamine in dichloromethane at 0°C, filtering and treating the solid residue with PCl5 in toluene at 75°C for 2 hours, the product being in solution can be recovered by decanting and evaporation of the solvent.) followed by pyridine (0.065 g). After one hour stirring at 20°C, the reaction mixture was evaporated and the residue was submitted to chromatography over silica gel to yield the title compound that was characterized by NMR.

^{1}HNMR ($CDCl_3$, 400 MHz): 7.75-7.65 (m, 2H), 7.64 – 7.48 (m, 1H), 7.50 (s, 2H), 7.42 (s, 1H), 7.20 (d, 1H), 5.45-5.35 (m, 1H), 5.11 (s, 1H), 4.48 (t, 1H), 4.21-4.15 (m, 1H), 4.05 (d, 1H), 3.94-3.86 (m, 1H), 3.85-3.76 (m, 1H), 3.68 (d, 1H), 2.73-2-67 (m, 1H), 0.90-0.65 (m, 4H).

Example 6: N-[(4R)-2-(dimethylsulfamoyl)isoxazolidin-4-yl]-2-methyl-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide (compound A037 in table A)

Step A: [(4S)-2-(dimethylsulfamoyl)isoxazolidin-4-yl] methanesulfonate

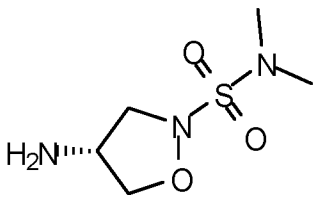


To a suspension of (4S)-isoxazolidin-2-ium-4-ol chloride (synthesis described in step B of example 5) (5.00 g) in tetrahydrofuran (50 mL) under inert atmosphere was added triethylamine (19.6 mL). The mixture was stirred at 20°C for 15 minutes, then N,N-dimethylsulfamoyl chloride (4.75 mL) was added. The reaction mixture was then heated to 60°C and stirred for 20 hours.

The resulting suspension was then cooled down to 0°C and methanesulfonyl chloride (3.42 mL) was added dropwise, so that the temperature was kept under 30°C. The mixture was then stirred at 20°C for 2 hours. The reaction mixture was treated with water (150mL) and extracted three times with ethyl acetate. The combined organic phases were washed with a saturated aqueous solution of sodium bicarbonate, followed by brine and dried over sodium sulfate. After removal of the solvent, the pale brown oil was crystallized from ethyl acetate / hexanes to yield off-white crystals of the title product that was characterized by NMR.

^{1}HNMR ($CDCl_3$, 400 MHz): 5.67-5.58 (m, 1H), 4.50 (dd, J_1 = 10.4 Hz, J_2 = 6.2 Hz, 1H), 4.24 (dd, J_1 = 10.4 Hz, J_2 = 2.6 Hz, 1H), 4.15 (dd, J_1 = 14.3 Hz, J_2 = 6.2 Hz, 1H), 3.71 (dd, J_1 = 14.3 Hz, J_2 = 2.6 Hz, 1H), 3,10 (s, 3H), 2.96 (s, 3H).

Steps B then C: (4R)-4-amino-N,N-dimethyl-isoxazolidine-2-sulfonamide



The title compound was obtained in an analogous way as described in steps E and F of synthesis example 5. It was characterized by NMR analysis.

^{1}HNMR ($CDCl_3$, 400 MHz): 4.25 (t, 1H), 4.07-3.99 (m, 1H), 3.79 (dd, 1H), 3.73 (dd, 1H), 3.25 (dd, 1H), 2.89 (s, 6H).

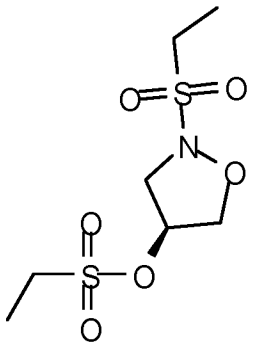
Step D: N-[(4R)-2-(dimethylsulfamoyl)isoxazolidin-4-yl]-2-methyl-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide

In an analogous way as described in previous synthesis examples, the acid chloride obtained from the stereo enriched 2-methyl-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzoic acid was reacted with the (4R)-4-amino-N,N-dimethyl-isoxazolidine-2-sulfonamide described above to yield the title compound. The LC-MS analysis (conditions in Table A) indicated a retention time of 1.23 minute and [M-H]- m/z peaks: 627, 629, 631, 633.

^{1}HNMR ($CDCl_3$, 400 MHz): 7.65 (s, 2H), 7.54-7.42 (m, 3H), 7.00 (br. d, 1H), 5.36-5.27 (m, 1H), 4.45 (t, 1H), 4.15 (dd, 1H), 4.07 (d, 1H), 3.87-3.80 (m, 1H), 3.78 - 3.62 (m, 2H), 2.97 (s, 6H), 2.47 (s, 3H).

Example 7: Synthesis of 4-[5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-2-ethylsulfonylisoxazolidin-4-yl]-2-methyl-benzamide (Compound A121 in table A)

Step A: [(4S)-2-ethylsulfonylisoxazolidin-4-yl] ethanesulfonate

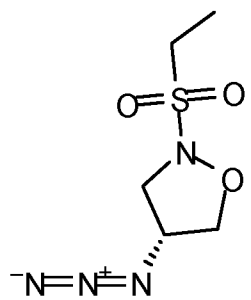


To a stirred suspension of (4S)-isoxazolidin-2-ium-4-ol chloride (synthesis described in step B of example 5) (2.50 g) in dichloromethane (100 mL) at 0°C was added triethylamine (11.2 mL), whereby the reaction mixture became a yellow solution. Ethanesulfonyl chloride (6.53 g) was then added in such a way that the temperature didn't exceed 25°C. A suspension formed and the reaction mixture was stirred at 0°C for 30 min, then for 1 hour at 20°C.

The reaction mixture was then washed with hydrochloric acid aqueous solution (1 N), followed by water and brine. After drying of the organic phase over sodium sulfate and removal of the solvent, the dark brown oil was purified by chromatography over a silica gel, eluting with a mixture of heptane and ethyl acetate. The title compound was isolated as a brown oil and characterized by NMR.

^{1}HNMR ($CDCl_3$, 400 MHz): 5.65-5.59 (m, 1H), 4.47 (dd, 1H), 4.37 (dd, 1H), 4.21 (dd,1H), 3.72 (dd, 1H), 3.42-3.34 (m, 2H), 3.22 (q, 2H), 1.47-1.38 (m, 6H).

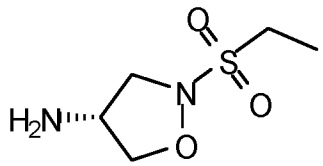
Step B: (4R)-4-azido-2-ethylsulfonyl-isoxazolidine



In a similar way as described above, but with heating at 90°C, the title compound was obtained as a pale yellow oil.

^{1}HNMR ($CDCl_3$, 400 MHz): 4.63-4.55 (m, 1H), 4.41 (dd, 1H), 4.21 (dd, 1H), 4.04 (dd,1H), 3.45-3.20 (m, 3H), 1.44 (t, 3H).

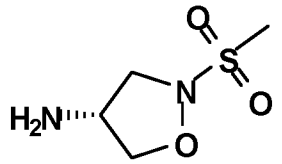
Step C: (4R)-2-ethylsulfonylisoxazolidin-4-amine



In a similar way as described above, the title compound was obtained as a colorless oil.

^{1}HNMR ($CDCl_3$, 400 MHz): 4.31 (dd, 1H), 4.14-4.06 (m, 1H), 3.90 (dd, 1H), 3.82 (dd,1H), 3.38-3.25 (m, 3H), 1.60 (br. S, 2H), 1.42 (t, 3H).

By analogy, the compound (4R)-2-methylsulfonylisoxazolidin-4-amine, hereafter, was also prepared



as a light yellow oil.

^{1}HNMR ($CDCl_3$, 400 MHz): 4.34 (dd, 1H), 4.13-4.07 (m, 1H), 3.88 (dd, 1H), 3.84 (dd,1H), 3.34 (dd, 1H), 3.12 (s, 3H), 1.56 (br. s, 2H).

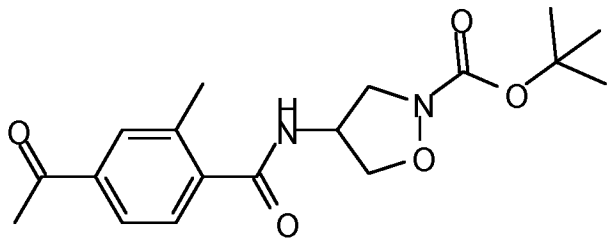
Step D: 4-[5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-2-ethylsulfonylisoxazolidin-4-yl]-2-methyl-benzamide

After reaction of the acid chloride obtained from the stereoenriched 4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-benzoic acid with the (4R)-2-ethylsulfonylisoxazolidin-4-amine, in a similar way as described in the previous sysnthetic examples, the title compound was obtained.

^{1}HNMR ($CDCl_3$, 400 MHz): 7.53-7.47 (m, 4H), 7.46 – 7.41 (m, 2H), 6.95 (d, 1H), 5.36-5.28 (m, 1H), 4.50-4.43 (m, 1H), 4.18-4.13 (m, 1H), 4.08 (d, 1H), 3.98 (d, 1H), 3.72 - 3.64 (m, 2H), 3.45-3.23 (m, 2H), 2.47 (s, 3H), 1.43 (t, 3H).

Example 8 : 4-[5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-(2-methylsulfonylisoxazolidin-4-yl)benzamide

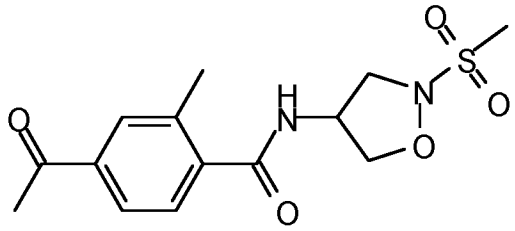
Step A: tert-butyl 4-[(4-acetyl-2-methyl-benzoyl)amino]isoxazolidine-2-carboxylate



Treatment of 4-acetyl-2-methyl-benzoyl chloride with tert-butyl 4-aminoisoxazolidine-2-carboxylate in an analogous way as for step A of example 1 leads to the title product as a viscous oil.

^{1}HNMR ($CDCl_3$, 400 MHz): 7.76 (s, 1H), 7.72 (d, 2H), 7.39 (d, 1H), 6.58 (br. d, 1H), 5.05-4.96 (m, 1H), 4.10-4.02 (m, 2H), 3.97 (dd, 1H), 3.60 (dd, 1H), 2.58 (s, 3H), 2.45 (s, 3H), 1.47 (s, 9H).

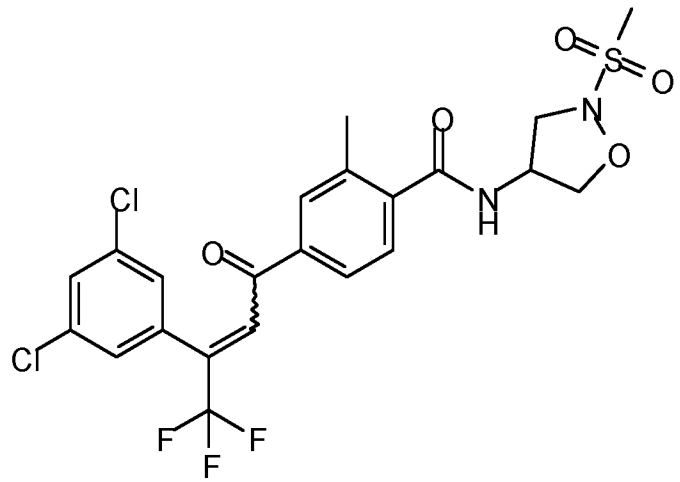
Step B: 4-acetyl-2-methyl-N-(2-methylsulfonylisoxazolidin-4-yl)benzamide



Proceeding in an analogous way as in step B and step C of the example 1, but using methanesulfonyl chloride instead of cyclobutanesulfonyl chloride, the title compound was obtained as colorless crystals with a melting point of 153-155°C.

^{1}HNMR ($CDCl_3$, 400 MHz): 7.80-7.73 (m, 2H), 7.44 (d, 1H), 6.94 (br. d, 1H), 5.37-5.29 (m, 1H), 4.48 (t, 1H), 4.18 (dd, 1H), 3.96 (d, 1H), 3.71 (dd, 1H), 3.17 (s, 3H), 2.60 (s, 3H), 2.48 (s, 3H).

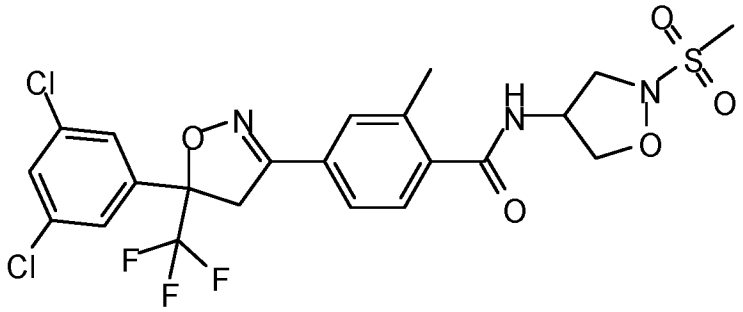
Step C: 4-[(E-Z)-3-(3,5-dichlorophenyl)-4,4,4-trifluoro-but-2-enoyl]-2-methyl-N-(2-methylsulfonylisoxazolidin-4-yl)benzamide



4-Acetyl-2-methyl-N-(2-methylsulfonylisoxazolidin-4-yl)benzamide (3.00 g), 1-(3,5-dichlorophenyl)-2,2,2-trifluoro-ethanone (3.35 g) and potassium carbonate (3.18 g) were mixed in tetrahydrofuran (50 mL). The suspension was stirred at 65°C for 44 hours.

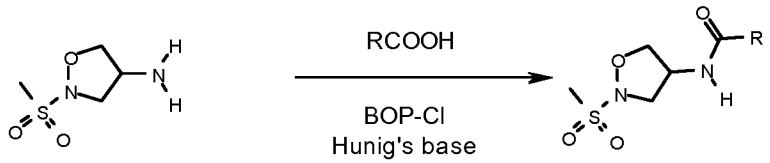
The resulting mixture was diluted with water (200 mL) and 2N hydrochloric acid (25 mL), then extracted twice with ethyl acetate. The organic phase was washed with water, brine and dried over sodium sulfate. After evaporation of the solvent, the crude product was submitted to chromatography over silica gel.
^{1}HNMR ($CDCl_3$, 400 MHz): 7.68-7.63 (m, 2H), 7.45 (d, 1H), 7.35 (d, 1H), 7.14 (s, 2H), 6.90 (br.d, 1H), 5.38-5.28 (m, 1H), 4.50 (t, 1H), 4.20 (dd, 1H), 4.01-3.95 (m, 1H), 3.68 (dd, 1H), 3.18 (s, 3H), 2.48 (s, 3H).

Step D : 4-[5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-(2-methylsulfonylisoxazolidin-4-yl)benzamide



To a stirred solution of 4-[(E-Z)-3-(3,5-dichlorophenyl)-4,4,4-trifluoro-but-2-enoyl]-2-methyl-N-(2-methylsulfonylisoxazolidin-4-yl)benzamide (3.15 g) in chloroform (57 mL) stirred at -20°C under nitrogen atmosphere, was added a solution of cesium hydroxide hydrate (2.89 g) in water (3 mL), followed by a 50% aqueous solution of hydroxylamine (0.76 g) and and (R)-[1-(9-anthrylmethyl)-5-vinyl-quinuclidin-1-ium-2-yl]-(6-methoxy-4-quinolyl)methanol chloride (0.63 g). (0.2 equiv.). After 3 hours at that temperature, the bath was removed and the mixture was stirred at 20°C for 15 hours.
The reaction mixture was diluted with dichloromethane (50 ml), then washed with diluted HCl. As the phase separation was difficult, the mixture was treated with aqueous sodium hydroxide to pH 11. The organic layer was dried over sodium sulfate and concentrated. The residue was submitted to silica gel chromatography to yield the title product that was characterized by NMR.
^{1}HNMR ($CDCl_3$, 400 MHz): 7.54-7.47 (m, 4H), 7.46 – 7.39 (m, 2H), 6.91 (br.d, 1H), 5.35-5.27 (m, 1H), 4.50-4.48 (t, 1H), 4.20-4.14 (m, 1H), 4.14-4.04 (m, 1H), 3.95 (d, 1H), 3.75 - 3.66 (m, 2H), 3.17 (s, 3H), 2.47 (s, 3H)

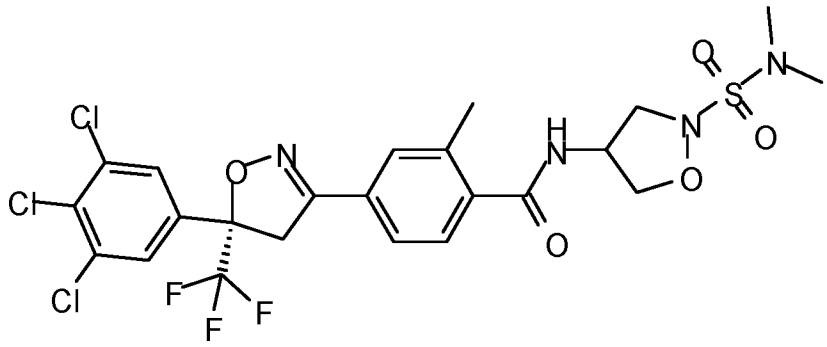
Example 9: Method for preparing compounds of the invention from a carboxylic acid



To a solution of an acid of formula RCOOH (45 µmol), for example 4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-benzoic acid in the case of Compound No. A040 of Table AX in dimethylacetamide (0.3 ml) was added successively a solution of 2-methylsulfonylisoxazolidin-4-amine (30 µmol) in dimethylacetamide (0.25 ml), diisopropylethylamine (Hunig's base) (0.6 ml), and a solution of bis(2-oxo-3-oxazolidinyl)phosphonic chloride (“BOP-Cl”) (15.3mg) in dimethylacetamide (0.25 ml). The reaction mixture was stirred at 50°C for 16 hours. Then the reaction mixture was evaporated to dryness.

The remaining mixture was dissolved with methanol / dimethylacetamide (4:1) (0.7 ml) and purified by preparative HPLC. This method was used to prepare a number of compounds (Compound Nos. A040 and A045 to A066 of Table A) in parallel.

Example 10: Resolution of 4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[2-(dimethylsulfamoyl)isoxazolidin-4-yl]-2-methyl-benzamide (examples A037 and A112 in table A)



The mixture of isomers of N-[2-(dimethylsulfamoyl)isoxazolidin-4-yl]-2-methyl-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide was submitted to preparative separation by chiral HPLC under the conditions described hereunder.

Analytical HPLC method:

HPLC: Waters UPLC – HClass, DAD Detector Waters UPLC

Column: Daicel CHIRALPAK® IF, 3μm, 0.46cm x 10cm

Mobile phase: Hept/EtOAc 70/30

Flow rate: 1.0 ml/min

Detection: 265 nm

Sample concentration: 1mg/mL in DCM/iPrOH 50/50

Injection: 2μl

Preparative HPLC method:

Autopurification System from Waters: 2767 sample Manager, 2489 UV/Visible Detector, 2545 Quaternary Gradient Module.

Column: Daicel CHIRALPAK® IF, 5μm, 1.0 cm x 25cm

Mobile phase: Hept/EtOAc 70/30

Flow rate: 10 ml/min

Detection: UV 260 nm

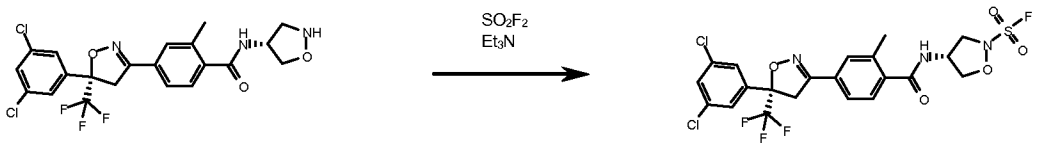
Sample concentration: 166 mg/mL in EtOAc/Hept, filtered

Injection: 30μl - 150μl

First eluting enantiomer (compound A112 in table A)	Second eluting enantiomer (compound A037 in table A)
Retention time (min) ~ 5.45	Retention time (min) ~ 8.86
Chemical purity (area% at 265 nm) 99	Chemical purity (area% at 265 nm) 99

Enantiomeric excess (%) > 99	Enantiomeric excess (%) > 99

Example 11: (4R)-4-[[4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-benzoyl]amino]isoxazolidine-2-sulfonyl fluoride (compound A198 in table A)



To a solution of 1.000 g of the compound 4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-isoxazolidin-4-yl]-2-methyl-benzamide (obtained by analogy as in step G of example 5) in tetrahydrofuran (15 ml), was added triethylamine (0.207 g). A slow stream of sulfuryl fluoride was bubbled through the mixture for one hour, then the mixture was stirred overnight at 20°C. The reaction mixture was then concentrated under vacuum. The residue was dissolved in ethyl acetate and washed with water, dried over sodium sulfate and the crude product was purified by chromatography over silica gel eluting with a mixture of ethyl acetate and heptane.

The title compound was characterized by LC-MS (see table A) and NMR.

^{1}HNMR ($CDCl_3$, 400 MHz): 7.50 (s, 2H), 7.48 – 7.39 (m, 3H), 7.38 – 7.32 (m, 1H), 6.75 – 6.60 (m, 1H), 5.28-5.18 (m, 1H), 4.47-4.40 (m, 1H), 4.20 (d, 1H), 4.18-4.05 (m, 2H), 3.84 (d, 1H), 3.71 (d, 1H), 2.40 (s, 3H)

Table A: Compounds according to the invention

Compound number	chemical name	LC-MS Method	RT (min)	$[M+H]^+$	[M-H]-
A1	4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-(2-methylsulfonylisoxazolidin-4-yl)benzamide	A	1.14	584 / 586 / 588	
A2	N-[2-(4-chlorophenyl)sulfonylisoxazolidin-4-yl]-4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-benzamide	A	1.26	678 / 680 / 682 / 684	
A3	4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-(2-propylsulfonylisoxazolidin-4-yl)benzamide	A	1.21	612 / 614 / 616	
A4	4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-(2-	A	1.18	598 / 600 / 602	

	ethylsulfonylisoxazolidin-4-yl)-2-methyl-benzamide				
A5	N-[2-(chloromethylsulfonyl)isoxazolidin-4-yl]-4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-benzamide	A	1.18	618 / 620 / 622 / 624	
A6	N-(2-cyclopropylsulfonylisoxazolidin-4-yl)-4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-benzamide	A	1.18	610 / 612 / 614	
A7	N-[2-(2-chloroethylsulfonyl)isoxazolidin-4-yl]-4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-benzamide	A	1.17	632 / 634 / 636 / 638	
A8	4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-[2-(2,2,2-trifluoroethylsulfonyl)isoxazolidin-4-yl]benzamide	A	1.2	652 / 654 / 656	
A9	4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-[2-(2-thienylsulfonyl)isoxazolidin-4-yl]benzamide	A	1.19	652 / 654 / 656	
A10	4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[2-(dimethylsulfamoyl)isoxazolidin-4-yl]-2-methyl-benzamide	A	1.19	613 / 615 / 617	
A11	4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-[2-(3,3,3-trifluoropropylsulfonyl)isoxazolidin-4-yl]benzamide	A	1.22	666 / 668 / 670	
A12	4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-[(4S)-2-methylsulfonylisoxazolidin-4-yl]benzamide	A	1.14	584 / 586 / 588	
A13	4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-[(4R)-2-methylsulfonylisoxazolidin-4-yl]benzamide	A	1.14	584 / 586 / 588	
A14	N-(2-cyclobutylsulfonylisoxazolidin-4-yl)-4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-benzamide	A	1.22	624 / 626 / 628	

A15	2-chloro-N-(2-methylsulfonylisoxazolidin-4-yl)-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.17	620 / 622 / 624 / 626	
A16	4-[(5S)-5-[3-bromo-5-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-(2-methylsulfonylisoxazolidin-4-yl)benzamide	A	1.14	644 / 646	
A17	4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-(2-isopropylsulfonylisoxazolidin-4-yl)-2-methyl-benzamide	A	1.21	612 / 614 / 616	
A18	4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[2-(2-methoxyethylsulfonyl)isoxazolidin-4-yl]-2-methyl-benzamide	A	1.17	628 / 630 / 632	
A19	2-chloro-4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-(2-methylsulfonylisoxazolidin-4-yl)benzamide	A	1.15		602 / 604 / 606 / 608
A20	4-[(5S)-5-[3-chloro-5-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-(2-methylsulfonylisoxazolidin-4-yl)benzamide	A	1.14	600 / 602	
A21	2-chloro-4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[2-(dimethylsulfamoyl)isoxazolidin-4-yl]benzamide	A	1.18	633 / 635 / 637	
A22	4-[(5S)-5-[3-chloro-5-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[2-(dimethylsulfamoyl)isoxazolidin-4-yl]-2-methyl-benzamide	A	1.17	629 / 631	
A23	4-[(5S)-5-[3-bromo-5-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[2-(dimethylsulfamoyl)isoxazolidin-4-yl]-2-methyl-benzamide	A	1.18	673 / 675	
A24	2-chloro-N-(2-cyclopropylsulfonylisoxazolidin-4-yl)-4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.18	630 / 632 / 634 / 636	
A25	2-chloro-4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-(2-ethylsulfonylisoxazolidin-4-yl)benzamide	A	1.2	618 / 620 / 622 / 624	
A26	2-methyl-N-(2-methylsulfonylisoxazolidin-4-yl)-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.18		598 / 600 / 602

A27	N-(2-ethylsulfonylisoxazolidin-4-yl)-2-methyl-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.2	614 / 616 / 618 / 620	
A28	2-chloro-N-(2-ethylsulfonylisoxazolidin-4-yl)-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.22	634 / 636 / 638 / 640 / 642	
A29	N-(2-cyclopropylsulfonylisoxazolidin-4-yl)-2-methyl-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.21	626 / 628 / 630 / 632	
A30	2-chloro-N-(2-cyclopropylsulfonylisoxazolidin-4-yl)-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.22	646 / 648 / 650 / 652	
A31	N-[2-(dimethylsulfamoyl)isoxazolidin-4-yl]-2-methyl-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.22	629 / 631 / 633 / 635	
A32	2-chloro-N-[2-(dimethylsulfamoyl)isoxazolidin-4-yl]-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.23	649 / 651 / 653 / 655	
A33	4-[5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-(2-methylsulfonylisoxazolidin-4-yl)benzamide	A	1.14		564 / 565 / 568
A34	4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4S)-2-(dimethylsulfamoyl)isoxazolidin-4-yl]-2-methyl-benzamide	A	1.19	613 / 615 / 617	
A35	2-methyl-N-(2-sulfamoylisoxazolidin-4-yl)-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.13	601 / 603 / 605	
A36	2-methyl-N-[(4R)-2-methylsulfonylisoxazolidin-4-yl]-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.18	600 / 602 / 604	
A37	N-[(4R)-2-(dimethylsulfamoyl)isoxazolidin-4-yl]-2-methyl-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.23		627 / 629 / 631 / 633
A38	4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-[(4R)-2-methylsulfonylisoxazolidin-4-yl]benzamide	A	1.14	566 / 568	
A39	4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-2-(dimethylsulfamoyl)isoxazolidin-4-yl]-2-methyl-benzamide	A	1.19	595 / 597	

A40	4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-(2-methylsulfonylisoxazolidin-4-yl)benzamide	D	1.89	566.13	
A41	4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[2-(dimethylsulfamoyl)isoxazolidin-4-yl]-2-methyl-benzamide	B	1.17		593 / 595
A42	4-[(5S)-5-[3-chloro-5-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-(2-ethylsulfonylisoxazolidin-4-yl)-2-methyl-benzamide	B	1.17		612 / 614
A43	2-bromo-N-(2-ethylsulfonylisoxazolidin-4-yl)-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	B	1.22		676 / 678 / 680
A44	2-bromo-4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-(2-ethylsulfonylisoxazolidin-4-yl)benzamide	B	1.19		660 / 662 / 664
A45	4-[5-(4-bromo-3,5-dichloro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-(2-methylsulfonylisoxazolidin-4-yl)benzamide	D	1.98	644.01	
A46	4-[5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-(2-methylsulfonylisoxazolidin-4-yl)naphthalene-1-carboxamide	D	1.97	602.11	
A47	2-cyano-4-[5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-(2-methylsulfonylisoxazolidin-4-yl)benzamide	D	1.9	577.09	
A48	2-bromo-4-[5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-(2-methylsulfonylisoxazolidin-4-yl)benzamide	D	1.89	630	
A49	2-chloro-4-[5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-(2-methylsulfonylisoxazolidin-4-yl)benzamide	D	1.88	586.05	
A50	4-[5-(3,5-dichloro-4-cyano-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-(2-methylsulfonylisoxazolidin-4-yl)benzamide	D	1.76	591.09	
A51	4-[5-(3-chloro-5-methyl-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-(2-methylsulfonylisoxazolidin-4-yl)benzamide	D	1.81	546.16	
A52	2-cyclopropyl-4-[5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-(2-methylsulfonylisoxazolidin-4-yl)benzamide	D	1.93	592.13	

A53	2-methyl-N-(2-methylsulfonylisoxazolidin-4-yl)-4-[5-[4-(trifluoromethoxy)phenyl]-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	D	1.79	582.16	
A54	4-[5-(2-fluoro-4-pyridyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-(2-methylsulfonylisoxazolidin-4-yl)benzamide	D	1.44	517.15	
A55	4-[5-(4-bromophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-(2-methylsulfonylisoxazolidin-4-yl)benzamide	D	1.74	576.1	
A56	8-[5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-(2-methylsulfonylisoxazolidin-4-yl)quinoline-5-carboxamide	D	1.93	603.09	
A57	4-[5-[4-chloro-3,5-bis(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-(2-methylsulfonylisoxazolidin-4-yl)benzamide	D	2	668.1	
A58	4-[5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-(2-methylsulfonylisoxazolidin-4-yl)-2-(trifluoromethyl)benzamide	D	1.93	620.07	
A59	4-[5-[3,5-bis(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-(2-methylsulfonylisoxazolidin-4-yl)benzamide	D	1.91	634.15	
A60	2-methyl-N-(2-methylsulfonylisoxazolidin-4-yl)-4-[5-(trifluoromethyl)-5-[3-(trifluoromethyl)phenyl]-4H-isoxazol-3-yl]benzamide	D	1.74	566.17	
A61	2-methyl-N-(2-methylsulfonylisoxazolidin-4-yl)-4-[5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	D	1.97	600.06	
A62	4-[5-[3-chloro-5-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-(2-methylsulfonylisoxazolidin-4-yl)benzamide	D	1.89	600.12	
A63	4-[5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-(2-methylsulfonylisoxazolidin-4-yl)benzamide	D	1.89	584.11	
A64	4-[5-[chloro(difluoro)methyl]-5-(3,5-dichlorophenyl)-4H-isoxazol-3-yl]-2-methyl-N-(2-methylsulfonylisoxazolidin-4-yl)benzamide	D	1.91	582.08	
A65	4-[5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-(2-methylsulfonylisoxazolidin-4-yl)-2-vinyl-benzamide	D	1.91	578.12	
A66	4-[5-(3,4-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-(2-	D	1.83	566.13	

	methylsulfonylisoxazolidin-4-yl)benzamide				
A67	2-methyl-N-[(4R)-2-(methylsulfamoyl)isoxazolidin-4-yl]-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.17		615 / 617 / 619
A68	2-methyl-N-[(4R)-2-sulfamoylisoxazolidin-4-yl]-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.13		599 / 601 / 603
A69	2-methyl-N-[2-(methylsulfamoyl)isoxazolidin-4-yl]-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.18		613 / 615 / 617
A70	4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-[2-(methylsulfamoyl)isoxazolidin-4-yl]benzamide	A	1.14	599 / 601 / 603	
A71	4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-(2-sulfamoylisoxazolidin-4-yl)benzamide	A	1.1	585 / 587 / 589	
A72	N-[(4R)-2-[ethyl(methyl)sulfamoyl]isoxazolidin-4-yl]-2-methyl-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.25		641 / 643 / 645
A73	N-[2-[ethyl(methyl)sulfamoyl]isoxazolidin-4-yl]-2-methyl-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.25		641 / 643 / 645
A74	4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[2-[dimethylcarbamoyl(methyl)sulfamoyl]isoxazolidin-4-yl]-2-methyl-benzamide	A	1.16	670 / 672 / 674	
A75	4-[(5S)-5-[3-chloro-5-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-[(4R)-2-methylsulfonylisoxazolidin-4-yl]benzamide	A	1.14		598 / 600
A76	ethyl N-[4-[[4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-benzoyl]amino]isoxazolidin-2-yl]sulfonyl-N-methyl-carbamate	A	1.21	671 / 673	
A77	methyl N-[4-[[4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-benzoyl]amino]isoxazolidin-2-yl]sulfonyl-N-methyl-carbamate	A	1.18		655 / 657 / 659

A78	N-[4-[[4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-benzoyl]amino]isoxazolidin-2-yl]sulfonyl-N-methyl-pyridine-3-carboxamide	A	1.18	704 / 706 / 708	
A79	4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[2-[dimethylsulfamoyl(methyl)sulfamoyl]isoxazolidin-4-yl]-2-methyl-benzamide	A	1.2		704 / 706 / 708
A80	N-[2-[benzoyl(methyl)sulfamoyl]isoxazolidin-4-yl]-4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-benzamide	A	1.24		701 / 703 / 705
A81	N-[2-[cyano(methyl)sulfamoyl]isoxazolidin-4-yl]-4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-benzamide	A	1.18		622 / 624 / 626
A82	N-[2-[allyl(methyl)sulfamoyl]isoxazolidin-4-yl]-2-methyl-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.27		653 / 655 / 656
A83	2-methyl-N-[2-[methyl(oxiran-2-ylmethyl)sulfamoyl]isoxazolidin-4-yl]-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.21		669 / 671 / 674
A84	2-methyl-N-[2-[methyl(propyl)sulfamoyl]isoxazolidin-4-yl]-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.28		655 / 657 / 659
A85	N-[2-[butyl(methyl)sulfamoyl]isoxazolidin-4-yl]-2-methyl-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.31		669 / 671 / 673
A86	N-[2-[benzyl(methyl)sulfamoyl]isoxazolidin-4-yl]-2-methyl-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.31		703 / 706 / 707
A87	N-[2-[cyanomethyl(methyl)sulfamoyl]isoxazolidin-4-yl]-2-methyl-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.2		652 / 654 / 656
A88	methyl 2-[methyl-[4-[[2-methyl-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzoyl]amino]isoxazolidin-2-yl]sulfonyl-amino]acetate	A	1.21		*[M+HCOO]- 721 / 723 / 725

A89	ethyl 2-[methyl-[4-[[2-methyl-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzoyl]amino]isoxazolidin-2-yl]sulfonyl-amino]acetate	A	1.24		699 / 701 / 703
A90	N-[2-[2-methoxyethyl(methyl)sulfamoyl]isoxazolidin-4-yl]-2-methyl-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.23		671 / 673 / 676
A91	4-[(5S)-5-[3-chloro-5-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-2-(dimethylsulfamoyl)isoxazolidin-4-yl]-2-methyl-benzamide	A	1.19	629 / 631	
A92	4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-[2-[methyl(methylsulfonyl)sulfamoyl]isoxazolidin-4-yl]benzamide	A	1.17	677 / 679 / 701	
A93	tert-butyl N-[4-[[4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-benzoyl]amino]isoxazolidin-2-yl]sulfonyl-N-ethyl-carbamate	A	1.28		712 / 714 / 716
A94	tert-butyl N-allyl-N-[4-[[4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-benzoyl]amino]isoxazolidin-2-yl]sulfonyl-carbamate	A	1.28		723 / 725 / 727
A95	4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[2-(ethylsulfamoyl)isoxazolidin-4-yl]-2-methyl-benzamide	A	1.15	613 / 615 / 617	
A96	N-[2-[methoxymethyl(methyl)sulfamoyl]isoxazolidin-4-yl]-2-methyl-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.22		657 / 659
A97	N-[2-(tert-butylsulfamoyl)isoxazolidin-4-yl]-4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-benzamide	A	1.19		641 / 643
A98	4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[2-(diethylsulfamoyl)isoxazolidin-4-yl]-2-methyl-benzamide	A	1.23		639 / 641 / 643

A99	4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-(2-pyrrolidin-1-ylsulfonylisoxazolidin-4-yl)benzamide	A	1.2		639 / 641 / 643
A100	N-[2-[tert-butyl(methyl)sulfamoyl]isoxazolidin-4-yl]-4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-benzamide	A	1.25		655 / 657 / 659
A101	N-[2-(isopropylsulfamoyl)isoxazolidin-4-yl]-2-methyl-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.2		641 / 643 / 645
A102	4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-[2-(methylsulfonylsulfamoyl)isoxazolidin-4-yl]benzamide	A	1.01		661 / 663 / 665
A103	N-[2-[isopropyl(methyl)sulfamoyl]isoxazolidin-4-yl]-2-methyl-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.26		655 / 657 / 659
A104	N-[2-[ethyl(isopropyl)sulfamoyl]isoxazolidin-4-yl]-2-methyl-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.29	671 / 673 / 675	
A105	N-[2-(allylsulfamoyl)isoxazolidin-4-yl]-4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-benzamide	A	1.15	625 / 627 / 629	
A106	4-[[2-methyl-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzoyl]amino]isoxazolidine-2-sulfonyl fluoride	A	1.25		602 / 604 / 606
A107	2-chloro-4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-2-(dimethylsulfamoyl)isoxazolidin-4-yl]benzamide	A	1.24	633 / 635 / 637	
A108	2-chloro-4-[(5S)-5-[3-chloro-5-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-2-(dimethylsulfamoyl)isoxazolidin-4-yl]benzamide	A	1.23		647 / 649
A109	2-chloro-N-[(4R)-2-(dimethylsulfamoyl)isoxazolidin-4-yl]-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.23	649 / 651 / 653 / 655	
A110	2-chloro-4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-2-(dimethylsulfamoyl)isoxazolidin-4-yl]benzamide	A	1.19		613 / 615 / 617

A111	N-[(4R)-2-(dimethylsulfamoyl)isoxazolidin-4-yl]-2-methyl-4-[(5S)-5-(trifluoromethyl)-5-[3-(trifluoromethyl)phenyl]-4H-isoxazol-3-yl]benzamide	A	1.12	595	
A112	N-[(4S)-2-(dimethylsulfamoyl)isoxazolidin-4-yl]-2-methyl-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	*	*	*	*
A113	2-chloro-4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-2-(ethylsulfamoyl)isoxazolidin-4-yl]benzamide	A	1.21	615 / 617 / 619	613 / 615 / 617
A114	2-chloro-4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-2-(methylsulfamoyl)isoxazolidin-4-yl]benzamide	A	1.18	601 / 603 / 605	599 / 601 / 603
A115	2-chloro-4-[(5S)-5-[3-chloro-5-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-2-(methylsulfamoyl)isoxazolidin-4-yl]benzamide	A	1.19	635 / 637 / 639	633 / 635 / 637
A116	2-chloro-4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-2-methylsulfonylisoxazolidin-4-yl]benzamide	A	1.19	586 / 588 / 590	
A117	2-chloro-4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-2-ethylsulfonylisoxazolidin-4-yl]benzamide	A	1.22	600 / 602 / 604	
A118	N-[(4R)-2-ethylsulfonylisoxazolidin-4-yl]-2-methyl-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.22	614 / 616 / 618	
A119	4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-2-ethylsulfonylisoxazolidin-4-yl]-2-methyl-benzamide	A	1.18	598 / 600 / 602	
A120	4-[(5S)-5-[3-chloro-5-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-2-ethylsulfonylisoxazolidin-4-yl]-2-methyl-benzamide	A	1.18		612 / 614 / 616
A121	4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-2-ethylsulfonylisoxazolidin-4-yl]-2-methyl-benzamide	A	1.17	580 / 582 / 584	
A122	2-chloro-4-[(5S)-5-[3-chloro-5-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-2-ethylsulfonylisoxazolidin-	A	1.18	634 / 636	

	4-yl]benzamide				
A123	2-chloro-4-[(5S)-5-[3-chloro-5-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-2-methylsulfonylisoxazolidin-4-yl]benzamide	A	1.15	620 / 622	
A124	2-chloro-4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-2-(ethylsulfamoyl)isoxazolidin-4-yl]benzamide	C	2.05	633 / 635 / 637	631 / 633 / 635
A125	2-chloro-N-[(4R)-2-(ethylsulfamoyl)isoxazolidin-4-yl]-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	C	2.13	649 / 651 / 653 / 655	647 / 649 / 651 / 653
A126	2-chloro-N-[(4R)-2-(methylsulfamoyl)isoxazolidin-4-yl]-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	C	2.07	635 / 637 / 639 / 641	633 / 635 / 637
A127	2-chloro-4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-2-(methylsulfamoyl)isoxazolidin-4-yl]benzamide	A	1.27	629 / 631 / 633	627 / 629 / 631
A128	2-chloro-4-[(5S)-5-[3-chloro-5-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-2-(ethylsulfamoyl)isoxazolidin-4-yl]benzamide	A	1.21	649 / 651 / 653	647 / 649
A129	2-chloro-4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-2-[ethyl(methyl)sulfamoyl]isoxazolidin-4-yl]benzamide	A	1.27	629 / 631 / 633	627 / 629 / 631
A130	2-chloro-4-[(5S)-5-[3-chloro-5-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-2-[ethyl(methyl)sulfamoyl]isoxazolidin-4-yl]benzamide	A	1.27	663 / 665	661 / 663 / 665
A131	2-chloro-4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-2-[ethyl(methyl)sulfamoyl]isoxazolidin-4-yl]benzamide	C	2.18	647 / 649 / 651	645 / 647 / 649
A132	2-chloro-N-[(4R)-2-[ethyl(methyl)sulfamoyl]isoxazolidin-4-yl]-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	C	2.26	663 / 665 / 667	661 / 663 / 665 / 667

A133	4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-2-(ethylsulfamoyl)isoxazolidin-4-yl]-2-methyl-benzamide	A	1.2		611 / 613 / 615
A134	4-[(5S)-5-[3-chloro-5-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-2-(ethylsulfamoyl)isoxazolidin-4-yl]-2-methyl-benzamide	A	1.2		627 / 629
A135	4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-2-(ethylsulfamoyl)isoxazolidin-4-yl]-2-methyl-benzamide	A	1.2		593 / 595 / 597
A136	N-[(4R)-2-(ethylsulfamoyl)isoxazolidin-4-yl]-2-methyl-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.24		627 / 629 / 631
A137	4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-[(4R)-2-(methylsulfamoyl)isoxazolidin-4-yl]benzamide	A	1.19		597 / 599 / 601
A138	4-[(5S)-5-[3-chloro-5-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-[(4R)-2-(methylsulfamoyl)isoxazolidin-4-yl]benzamide	A	1.18		613 / 615
A139	4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-[(4R)-2-(methylsulfamoyl)isoxazolidin-4-yl]benzamide	A	1.18		579 / 581 / 583
A140	4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-2-[ethyl(methyl)sulfamoyl]isoxazolidin-4-yl]-2-methyl-benzamide	A	1.26		625 / 627 / 629
A141	4-[(5S)-5-[3-chloro-5-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-2-[ethyl(methyl)sulfamoyl]isoxazolidin-4-yl]-2-methyl-benzamide	A	1.26		641 / 643
A142	4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-2-[ethyl(methyl)sulfamoyl]isoxazolidin-4-yl]-2-methyl-benzamide	A	1.26		607 / 609
A143	4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-2-(dimethylsulfamoyl)isoxazolidin-4-yl]-2-methyl-	A	1.23	613 / 615	

	benzamide				
A144	2-chloro-4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-2-methylsulfonylisoxazolidin-4-yl]benzamide	A	1.16	604 / 606 / 608 / 610	
A145	2-chloro-N-[(4R)-2-methylsulfonylisoxazolidin-4-yl]-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.19	620 / 622 / 624	
A146	2-chloro-4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-2-ethylsulfonylisoxazolidin-4-yl]benzamide	A	1.23	618 / 620 / 622	
A147	2-chloro-N-[(4R)-2-ethylsulfonylisoxazolidin-4-yl]-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.27		632 / 634 / 636
A148	N-[(4R)-2-(azetidin-1-ylsulfonyl)isoxazolidin-4-yl]-4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-benzamide	A	1.26		623 / 625
A149	4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-[(4R)-2-(2,2,2-trifluoroethylsulfamoyl)isoxazolidin-4-yl]benzamide	A	1.25		665 / 667 / 669
A150	4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-[(4R)-2-[methyl(2,2,2-trifluoroethyl)sulfamoyl]isoxazolidin-4-yl]benzamide	A	1.25		679 / 681 / 683
A151	tert-butyl N-[(4R)-4-[[2-chloro-4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzoyl]amino]isoxazolidin-2-yl]sulfonylcarbamate	A	1.19		685 / 687 / 687
A152	tert-butyl N-[(4R)-4-[[2-chloro-4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzoyl]amino]isoxazolidin-2-yl]sulfonyl-N-prop-2-ynyl-carbamate	A	1.28		723 / 725
A153	2-chloro-N-[(4R)-2-[cyclopropyl(methyl)sulfamoyl]isoxazolidin-4-yl]-4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.23	641 / 643 / 645	

A154	2-chloro-N-[(4R)-2-(cyclopropylsulfamoyl)isoxazolidin-4-yl]-4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.17	627 / 629 / 631	
A155	N-[(4R)-2-(cyclopropylsulfamoyl)isoxazolidin-4-yl]-4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-benzamide	A	1.16	607 / 609. 611	
A156	N-[(4R)-2-[cyclopropyl(methyl)sulfamoyl]isoxazolidin-4-yl]-4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-benzamide	A	1.23	621 / 623	
A157	2-chloro-N-[(4R)-2-[cyclopropyl(ethyl)sulfamoyl]isoxazolidin-4-yl]-4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.26	655 / 657 / 659	
A158	2-chloro-4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-2-(prop-2-ynylsulfamoyl)isoxazolidin-4-yl]benzamide	A	1.15	625 / 627 / 629	
A159	2-methyl-N-[(4R)-2-methylsulfonylisoxazolidin-4-yl]-4-[(5S)-5-(trifluoromethyl)-5-[3-(trifluoromethyl)phenyl]-4H-isoxazol-3-yl]benzamide	A	1.07		564
A160	N-[(4R)-2-ethylsulfonylisoxazolidin-4-yl]-2-methyl-4-[(5S)-5-(trifluoromethyl)-5-[3-(trifluoromethyl)phenyl]-4H-isoxazol-3-yl]benzamide	A	1.11	580	
A161	2-chloro-4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-2-[ethyl(prop-2-ynyl)sulfamoyl]isoxazolidin-4-yl]benzamide	A	1.23	653 / 655 / 657 / 659	
A162	N-[2-[acetyl(methyl)sulfamoyl]isoxazolidin-4-yl]-2-methyl-4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]benzamide	A	1.2	641 / 643	
A163	N-[(4R)-2-(cyanomethylsulfonyl)-1,2-oxazolidin-4-yl]-4-[(5R)-5-(3,5-dichloro-4-fluorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methylbenzamide	A	1.17	609, 611	
A164	N-[(4R)-2-(chloromethylsulfonyl)-1,2-oxazolidin-4-yl]-4-[(5R)-5-(3,5-dichloro-4-fluorophenyl)-5-	A	1.21	618, 620, 622	

	(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methylbenzamide				
A165	N-[(4R)-2-(cyanomethylsulfonyl)-1,2-oxazolidin-4-yl]-4-[(5R)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methylbenzamide	A	1.16		589, 591, 593
A166	N-[(4R)-2-(chloromethylsulfonyl)-1,2-oxazolidin-4-yl]-4-[(5R)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methylbenzamide	A	1.19	600, 602, 604	
A167	N-[(4R)-2-[(1-cyanocyclopropyl)sulfamoyl]-1,2-oxazolidin-4-yl]-4-[(5R)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methylbenzamide	A	1.15	632, 634	
A168	N-[(4R)-2-[(1-cyanocyclopropyl)sulfamoyl]-1,2-oxazolidin-4-yl]-4-[(5R)-5-(3,5-dichloro-4-fluorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methylbenzamide	A	1.16	650, 652	
A169	N-[(4S)-2-(dimethylsulfamoyl)-1,2-oxazolidin-4-yl]-4-[(5S)-5-[3-fluoro-5-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methylbenzamide	A	1.19	613	
A170	4-[(5S)-5-[3-fluoro-4-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methyl-N-[(4R)-2-methylsulfonyl-1,2-oxazolidin-4-yl]benzamide	A	1.13	584	
A171	N-[(4S)-2-(dimethylsulfamoyl)-1,2-oxazolidin-4-yl]-4-[(5R)-5-[3-fluoro-4-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methylbenzamide	A	1.18	613	
A172	4-[(5S)-5-[3-fluoro-5-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methyl-N-[(4S)-2-methylsulfonyl-1,2-oxazolidin-4-yl]benzamide	A	1.14	584	
A173	N-[(4S)-2-(bromomethylsulfonyl)-1,2-oxazolidin-4-yl]-4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methylbenzamide	A	1.20	644, 646, 648	
A174	2-[[(4S)-4-[[4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methylbenzoyl]amino]-1,2-oxazolidin-2-	A	1.10	610, 612, 614	

	yl]sulfonyl]acetic acid				
A175	4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-N-[(4S)-2-ethenylsulfonyl-1,2-oxazolidin-4-yl]-2-methylbenzamide	A	1.17	578, 580	
A176	methyl 2-[[(4R)-4-[[4-[(5R)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methylbenzoyl]amino]-1,2-oxazolidin-2-yl]sulfonyl]acetate	A	1.16	624, 628, 630	
A177	N-[(4R)-2-(2-bromoethylsulfonyl)-1,2-oxazolidin-4-yl]-4-[(5R)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methylbenzamide	A	1.22		656, 658, 660
A178	4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methyl-N-[(4S)-2-sulfamoyl-1,2-oxazolidin-4-yl]benzamide	A	1.09	567, 569, 571	
A179	N-[(4R)-2-[(1-cyanocyclopropyl)-methylsulfamoyl]-1,2-oxazolidin-4-yl]-4-[(5R)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methylbenzamide	A	1.20	645, 647, 649	
A180	4-[(5R)-5-[3-fluoro-5-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methyl-N-[(4R)-2-(methylsulfamoyl)-1,2-oxazolidin-4-yl]benzamide	A	1.10	599	
A181	4-[(5S)-5-[4-fluoro-3-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methyl-N-[(4S)-2-(methylsulfamoyl)-1,2-oxazolidin-4-yl]benzamide	A	1.09	599	
A182	4-[(5S)-5-[3-fluoro-4-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methyl-N-[(4S)-2-(methylsulfamoyl)-1,2-oxazolidin-4-yl]benzamide	A	1.10	599	
A183	4-[(5S)-5-[4-fluoro-3-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methyl-N-[(4R)-2-methylsulfonyl-1,2-oxazolidin-4-yl]benzamide	A	1.10	584	
A184	N-[(4S)-2-(dimethylsulfamoyl)-1,2-oxazolidin-4-yl]-4-[(5R)-5-[4-fluoro-3-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methylbenzamide	A	1.15	613	

A185	4-[(5R)-5-[3-chloro-5-(difluoromethyl)phenyl]-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methyl-N-[(4R)-2-methylsulfonyl-1,2-oxazolidin-4-yl]benzamide	B	1.09	582, 584	
A186	4-[(5R)-5-[3-chloro-5-(difluoromethyl)phenyl]-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-N-[(4R)-2-(dimethylsulfamoyl)-1,2-oxazolidin-4-yl]-2-methylbenzamide	B	1.14	611, 613	
A187	N-[(4S)-2-[(1-cyanocyclopropyl)-methylsulfamoyl]-1,2-oxazolidin-4-yl]-4-[(5S)-5-(3,5-dichloro-4-fluorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methylbenzamide	A	1.22	664, 666	
A188	4-[(5S)-5-(3,5-dichloro-4-fluorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methyl-N-[(4S)-2-morpholin-4-ylsulfonyl-1,2-oxazolidin-4-yl]benzamide	A	1.20	655, 657, 659	
A189	N-[(4R)-2-(bromomethylsulfonyl)-1,2-oxazolidin-4-yl]-4-[(5S)-5-(3,5-dichloro-4-fluorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methylbenzamide	A	1.20	662, 664, 666	
A190	methyl 2-[[(4S)-4-[[4-[(5S)-5-(3,5-dichloro-4-fluorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methylbenzoyl]amino]-1,2-oxazolidin-2-yl]sulfonyl]acetate	A	1.17	642, 644, 646	
A191	N-[(4R)-2-(2-bromoethylsulfonyl)-1,2-oxazolidin-4-yl]-4-[(5R)-5-(3,5-dichloro-4-fluorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methylbenzamide	A	1.23	676, 678, 680	
A192	4-[(5R)-5-(3,5-dichloro-4-fluorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methyl-N-[(4R)-2-(2,2,2-trifluoroethylsulfonyl)-1,2-oxazolidin-4-yl]benzamide	A	1.22	652, 654, 656	
A193	4-[(5S)-5-(3,5-dichloro-4-fluorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-N-[(4R)-2-ethenylsulfonyl-1,2-oxazolidin-4-yl]-2-methylbenzamide	A	1.18	596, 598, 600	
A194	4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methyl-N-[(4S)-2-(2,2,2-trifluoroethylsulfamoyl)-1,2-oxazolidin-4-yl]benzamide	A	1.19	649, 651	

A195	4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methyl-N-[(4S)-2-(2,2,2-trifluoroethylsulfonyl)-1,2-oxazolidin-4-yl]benzamide	A	1.22	634, 636, 638	
A196	4-[(5S)-5-[3,5-dichloro-4-(difluoromethyl)phenyl]-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-N-[(4S)-2-(dimethylsulfamoyl)-1,2-oxazolidin-4-yl]-2-methylbenzamide	A	1.19	645, 647, 649	
A197	4-[(5S)-5-[3,5-dichloro-4-(difluoromethyl)phenyl]-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methyl-N-[(4S)-2-methylsulfonyl-1,2-oxazolidin-4-yl]benzamide	A	1.13	616, 618, 620	
A198	(4R)-4-[[4-[(5R)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methylbenzoyl]amino]-1,2-oxazolidine-2-sulfonyl fluoride	A	1.23	570, 572, 574	
A199	4-[(5R)-5-(3,5-dichloro-4-fluorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methyl-N-[(4R)-2-(3,3,3-trifluoropropylsulfonyl)-1,2-oxazolidin-4-yl]benzamide	A	1.24	666, 668, 670	
A200	2-[[(4S)-4-[[4-[(5S)-5-(3,5-dichloro-4-fluorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methylbenzoyl]amino]-1,2-oxazolidin-2-yl]sulfonyl]acetic acid	A	1.10	628, 630	
A201	4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methyl-N-[(4S)-2-[2-(methylamino)-2-oxoethyl]sulfonyl-1,2-oxazolidin-4-yl]benzamide	A	1.10	623, 625	
A202	4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-N-[(4S)-2-[2-(dimethylamino)-2-oxoethyl]sulfonyl-1,2-oxazolidin-4-yl]-2-methylbenzamide	A	1.12	637, 639, 641	
A203	4-[(5S)-5-(3,5-dichloro-4-fluorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-N-[(4S)-2-[2-(hydroxyamino)-2-oxoethyl]sulfonyl-1,2-oxazolidin-4-yl]-2-methylbenzamide	C	1.79	643, 645, 647	
A204	4-[(5S)-5-[3,5-dichloro-4-(difluoromethoxy)phenyl]-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methyl-N-[(4S)-2-methylsulfonyl-1,2-oxazolidin-4-yl]benzamide	A	1.13	632, 634, 636	

A205	4-[(5S)-5-[3,5-dichloro-4-(difluoromethoxy)phenyl]-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-N-[(4S)-2-(dimethylsulfamoyl)-1,2-oxazolidin-4-yl]-2-methylbenzamide	A	1.18	661, 663, 665	
A206	4-[(5R)-5-[3,5-dichloro-4-(difluoromethyl)phenyl]-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methyl-N-[(4R)-2-(methylsulfamoyl)-1,2-oxazolidin-4-yl]benzamide	A	1.12	631, 633, 635	
A207	4-[(5R)-5-[3,5-dichloro-4-(difluoromethoxy)phenyl]-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methyl-N-[(4R)-2-(methylsulfamoyl)-1,2-oxazolidin-4-yl]benzamide	A	1.12	647, 649, 651	
A208	4-[(5S)-5-(3,5-dichloro-4-fluorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methyl-N-[(4S)-2-sulfamoyl-1,2-oxazolidin-4-yl]benzamide	A	1.10	585, 587, 589	
A209	tert-butyl N-[[(4R)-4-[[4-[(5R)-5-(3,5-dichloro-4-fluorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methylbenzoyl]amino]-1,2-oxazolidin-2-yl]sulfonyl]carbamate	A	1.21		683, 685, 687
A210	4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-N-[(4S)-2-(fluoromethylsulfonyl)-1,2-oxazolidin-4-yl]-2-methylbenzamide	A	1.17	583, 586	
A211	4-[(5R)-5-(3,5-dichloro-4-fluorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-N-[(4R)-2-(fluoromethylsulfonyl)-1,2-oxazolidin-4-yl]-2-methylbenzamide	A	1.19	602, 604	
A212	2-methyl-N-[(4S)-2-methylsulfonyl-1,2-oxazolidin-4-yl]-4-[(5R)-5-[3-methyl-5-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]benzamide	C	1.91	580	
A213	(4S)-4-[[4-[(5S)-5-(3,5-dichloro-4-fluorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methylbenzoyl]amino]-1,2-oxazolidine-2-sulfonyl fluoride	A	1.22	588, 590, 592	
A214	4-[(5S)-5-[3-chloro-5-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methyl-N-[(4S)-2-(2,2,2-trifluoroethylsulfonyl)-1,2-oxazolidin-4-yl]benzamide	A	1.23	668, 670	
A215	2-methyl-N-[(4R)-2-methylsulfonyl-1,2-oxazolidin-4-yl]-4-[(5S)-5-(trifluoromethyl)-5-[6-	C	1.70	567	

	(trifluoromethyl)pyridin-2-yl]-4H-1,2-oxazol-3-yl]benzamide				
A216	N-[(4R)-2-(fluoromethylsulfonyl)-1,2-oxazolidin-4-yl]-2-methyl-4-[(5R)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]benzamide	A	1.23	618, 620, 622	
A217	N-[(4R)-2-(chloromethylsulfonyl)-1,2-oxazolidin-4-yl]-4-[(5R)-5-[3-chloro-5-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methylbenzamide	A	1.20	634, 636	
A218	4-[(5R)-5-[3-chloro-5-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-N-[(4R)-2-(fluoromethylsulfonyl)-1,2-oxazolidin-4-yl]-2-methylbenzamide	A	1.19	618, 620	
A219	(4R)-4-[[4-[(5R)-5-[3-chloro-5-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methylbenzoyl]amino]-1,2-oxazolidine-2-sulfonyl fluoride	A	1.23	604, 606	
A220	N-[(4R)-2-(chloromethylsulfonyl)-1,2-oxazolidin-4-yl]-2-methyl-4-[(5R)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]benzamide	A	1.25	634, 636, 638	
A221	2-methyl-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-N-[(4R)-2-(2,2,2-trifluoroethylsulfonyl)-1,2-oxazolidin-4-yl]benzamide	A	1.27	668, 670, 672	
A222	2-methyl-N-[(4R)-2-methylsulfonyl-1,2-oxazolidin-4-yl]-4-[5-(trifluoromethyl)-5-[4-(trifluoromethyl)pyridin-2-yl]-4H-1,2-oxazol-3-yl]benzamide	C	1.71	567	
A223	4-[(5R)-5-(3,5-dichloro-4-fluorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methyl-N-[(4S)-2-(trifluoromethylsulfonyl)-1,2-oxazolidin-4-yl]benzamide	A	1.26	638, 640, 642	
A224	4-[(5R)-5-(3,5-dichloro-4-fluorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methyl-N-[(4S)-2-(trifluoromethylsulfanyl)-1,2-oxazolidin-4-yl]benzamide	A	1.26	606, 608, 610	
A225	4-[(5R)-5-(3,5-dichloro-4-fluorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-N-[(4R)-2-(2,2-difluoroethylsulfonyl)-1,2-oxazolidin-4-yl]-2-methylbenzamide	A	1.20	634, 636, 638	

A226	4-[(5S)-5-(3,5-dichloro-4-fluorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-N-[(4R)-2-(difluoromethylsulfonyl)-1,2-oxazolidin-4-yl]-2-methylbenzamide	A	1.21	620, 622, 624	
A227	4-[(5R)-5-(3,5-dichloro-4-fluorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methyl-N-[(4R)-2-(trichloromethylsulfanyl)-1,2-oxazolidin-4-yl]benzamide	A	1.31	654, 656, 658, 660, 662	
A228	N-[(4S)-2-cyclopropylsulfonyl-1,2-oxazolidin-4-yl]-4-[(5S)-5-(3,5-dichloro-4-fluorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methylbenzamide	A	1.19	610, 612, 614	
A229	N-[(4S)-2-cyclopropylsulfonyl-1,2-oxazolidin-4-yl]-2-methyl-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]benzamide	A	1.24	626, 628, 630	
A230	N-[(4S)-2-cyclopropylsulfonyl-1,2-oxazolidin-4-yl]-4-[(5S)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methylbenzamide	A	1.19	592, 594	
A231	N-[(4R)-2-(difluoromethylsulfonyl)-1,2-oxazolidin-4-yl]-2-methyl-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]benzamide	A	1.24	636, 638, 640	
A232	4-[(5R)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-N-[(4S)-2-(difluoromethylsulfonyl)-1,2-oxazolidin-4-yl]-2-methylbenzamide	A	1.20	602, 604, 606	
A233	4-[(5S)-5-[3-chloro-5-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-N-[(4S)-2-(difluoromethylsulfonyl)-1,2-oxazolidin-4-yl]-2-methylbenzamide	A	1.20	636, 638	
A234	tert-butyl N-[[(4R)-4-[[4-[(5R)-5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]-2-methylbenzoyl]amino]-1,2-oxazolidin-2-yl]sulfonyl]carbamate	A	1.20		665, 667, 669
A235	2-methyl-N-[(4S)-2-(1-methylcyclopropyl)sulfonyl-1,2-oxazolidin-4-yl]-4-[(5S)-5-(3,4,5-trichlorophenyl)-5-(trifluoromethyl)-4H-1,2-oxazol-3-yl]benzamide	A	1.27	640, 642, 644	
A236	6-[5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-4-methyl-N-(2-methylsulfonylisoxazolidin-4-yl)pyridine-3-	D	1.83	567.1	

	carboxamide				
A237	6-[5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-methyl-N-(2-methylsulfonylisoxazolidin-4-yl)pyridine-3-carboxamide	D	1.86	567.12	
A238	5-[5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-(2-methylsulfonylisoxazolidin-4-yl)pyridine-2-carboxamide	D	1.85	553.09	
A239	1-[5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-(2-methylsulfonylisoxazolidin-4-yl)isoquinoline-4-carboxamide	D	2	603.11	

Biological examples

These Examples illustrate the pesticidal/insecticidal properties of compounds of formula (I). Tests were performed as follows:

Diabrotica balteata (Corn root worm)

Maize sprouts placed onto an agar layer in 24-well microtiter plates were treated with aqueous test solutions prepared from 10'000 ppm DMSO stock solutions by spraying. After drying, the plates were infested with L2 larvae (6 to 10 per well). The samples were assessed for mortality and growth inhibition in comparison to untreated samples 4 days after infestation.

The following compounds gave an effect of at least 80% in at least one of the two categories (mortality or growth inhibition) at an application rate of 200 ppm:

A1, A2, A3, A4, A5, A6, A7, A8, A9, A10, A11, A12, A13, A14, A15, A16, A17, A18, A19, A20, A21, A22, A23, A24, A25, A27, A28, A29, A30, A31, A32, A33, A34, A35, A36, A37, A38, A39, A40, A41, A42, A43, A44, A45, A46, A48, A49, A50, A51, A52, A53, A54, A55, A57, A58, A59, A60, A61, A62, A63, A64, A65, A66, A67, A68, A69, A70, A71, A72, A73, A74, A75, A76, A77, A78, A79, A80, A81, A82, A83, A84, A85, A86, A87, A88, A89, A90, A91, A92, A93, A94, A95, A96, A97, A98, A99, A100, A101, A102, A103, A104, A105, A106, A107, A108, A109, A110, A111, A112, A113, A114, A115, A116, A117, A118, A119, A120, A121, A122, A123, A124, A125, A126, A127, A128, A129, A130, A131, A132, A133, A134, A135, A136, A137, A138, A139, A140, A141, A142, A143, A144, A145, A146, A147, A148, A149, A150, A151, A152, A153, A154, A155, A156, A157, A158, A159, A160, A161, A162, A163, A164, A165, A166, A167, A168, A169, A170, A171, A172, A173, A174, A176, A178, A179, A180, A181, A182, A183, A184, A185, A186, A187, A188, A189, A190, A192, A194, A195, A196, A197, A198, A199, A200, A201, A202, A203, A204, A205, A206, A207, A208, A209, A210, A211, A212, A213, A214, A215, A216, A217, A218, A219, A220, A221, A222, A223, A224, A225, A226, A227, A228, A229, A230, A231, A232, A233, A236, A237, A239.

Euschistus heros (Neotropical Brown Stink Bug)

Soybean leaves on agar in 24-well microtiter plates were sprayed with aqueous test solutions prepared from 10'000 ppm DMSO stock solutions. After drying the leaves were infested with N2 nymphs. The samples were assessed for mortality and growth inhibition in comparison to untreated samples 5 days after infestation.

The following compounds gave an effect of at least 80% in at least one of the two categories (mortality or growth inhibition) at an application rate of 200 ppm:

A2, A3, A4, A5, A6, A7, A8, A9, A10, A11, A12, A13, A14, A15, A17, A18, A19, A20, A26, A27, A33, A34, A35, A36, A37, A38, A39, A40, A41, A42, A43, A44, A45, A46, A48, A49, A50, A52, A54, A57, A58, A59, A60, A61, A62, A63, A64, A65, A66, A67, A68, A69, A70, A71, A72, A73, A74, A75, A76, A77, A78, A79, A80, A81, A82, A83, A84, A85, A86, A87, A88, A89, A90, A91, A92, A93, A94, A95, A96, A97, A98, A99, A100, A101, A102, A103, A104, A105, A106, A107, A108, A109, A110, A111, A112, A113, A114, A115, A116, A117, A118, A119, A120, A121, A122, A123, A124, A125, A126, A127, A128, A129, A130, A131, A132, A133, A134, A135, A136, A137, A138, A139, A140, A141, A142, A143, A144, A145, A146, A147, A148, A149, A150, A151, A152, A153, A154, A155, A156, A157, A158, A159, A160, A161, A162, A163, A164, A165, A166, A167, A168, A169, A172, A173, A174, A176, A178, A179, A180, A181, A183, A184, A185, A186, A187, A188, A189, A190, A192, A194, A195, A196, A197, A198, A199, A200, A201, A202, A203, A204, A205, A206, A207, A209, A210, A211, A212, A213, A214, A215, A216, A217, A218, A219, A220, A221, A223, A224, A225, A226, A227, A228, A229, A230, A231, A232, A233, A236, A239

Myzus persicae (Green peach aphid):Feeding/Contact activity

Sunflower leaf discs were placed onto agar in a 24-well microtiter plate and sprayed with aqueous test solutions prepared from 10'000 ppm DMSO stock solutions. After drying, the leaf discs were infested with an aphid population of mixed ages. The samples were assessed for mortality 6 days after infestation.

The following compounds resulted in at least 80% mortality at an application rate of 200 ppm:

A1, A3, A4, A5, A6, A7, A10, A11, A12, A13, A14, A15, A16, A17, A18, A19, A20, A21, A22, A23, A24, A25, A27, A28, A29, A30, A31, A32, A33, A34, A35, A36, A37, A38, A39, A40, A41, A42, A43, A44, A45, A50, A59, A61, A62, A63, A64, A65, A66, A67, A68, A69, A70, A71, A72, A73, A74, A75, A76, A77, A78, A79, A80, A81, A82, A83, A84, A85, A86, A87, A90, A91, A93, A95, A96, A97, A98, A99, A100, A101, A103, A104, A105, A106, A107, A108, A109, A111, A112, A113, A114, A115, A116, A117, A118, A119, A120, A121, A122, A123, A124, A125, A126, A127, A128, A129, A130, A131, A132, A133, A134, A135, A136, A137, A138, A139, A140, A141, A142, A143, A144, A145, A146, A147, A148, A149, A150, A151, A152, A153, A154, A155, A156, A157, A158, A159, A161, A162, A164, A166, A168, A169, A172, A173, A174, A178, A180, A181, A183, A184, A185, A186, A187, A188, A189, A192, A196, A197, A198, A200, A204, A205, A206, A207, A208, A209, A210, A211, A212, A213, A214, A215, A216, A217, A218, A219, A220, A223, A226, A228, A229, A230, A231, A232, A233.

Plutella xylostella (Diamond back moth)

24-well microtiter plates with artificial diet were treated with aqueous test solutions prepared from 10'000 ppm DMSO stock solutions by pipetting. After drying, the plates were infested with L2 larvae (10 to 15 per well). The samples were assessed for mortality and growth inhibition in comparison to untreated samples 5 days after infestation.

The following compounds gave an effect of at least 80% in at least one of the two categories (mortality or growth inhibition) at an application rate of 200 ppm:

A1, A2, A3, A4, A5, A6, A7, A8, A9, A10, A11, A12, A13, A14, A15, A16, A17, A18, A19, A20, A21, A22, A23, A24, A25, A27, A28, A29, A30, A31, A32, A33, A34, A35, A36, A37, A38, A39, A40, A41, A42, A43, A44, A45, A46, A48, A49, A50, A51, A52, A53, A54, A55, A56, A57, A58, A59, A60, A61, A62, A63, A64, A65, A66, A67, A68, A69, A70, A71, A72, A73, A74, A75, A76, A77, A78, A79, A80, A81, A82, A83, A84, A85, A86, A87, A88, A89, A90, A91, A92, A93, A94, A95, A96, A97, A98, A99, A100, A101, A102, A103, A104, A105, A106, A107, A108, A109, A110, A111, A112, A113, A114, A115, A116, A117, A118, A119, A120, A121, A122, A123, A124, A125, A126, A127, A128, A129, A130, A131, A132, A133, A134, A135, A136, A137, A138, A139, A140, A141, A142, A143, A144, A145, A146, A147, A148, A149, A150, A151, A152, A153, A154, A155, A156, A157, A158, A159, A160, A161, A162, A163, A164, A165, A166, A167, A168, A169, A170, A171, A172, A173, A174, A176, A177, A178, A179, A180, A181, A182, A183, A184, A185, A186, A187, A188, A189, A190, A192, A193, A194, A195, A196, A197, A198, A199, A200, A201, A202, A203, A204, A205, A206, A207, A208, A209, A210, A211, A212, A213, A214, A215, A216, A217, A218, A219, A220, A221, A222, A223, A224, A225, A226, A227, A228, A229, A230, A231, A232, A233, A236, A237, A239.

Spodoptera littoralis (Egyptian cotton leaf worm)

Cotton leaf discs were placed onto agar in 24-well microtiter plates and sprayed with aqueous test solutions prepared from 10'000 ppm DMSO stock solutions. After drying the leaf discs were infested with five L1 larvae. The samples were assessed for mortality, anti-feeding effect, and growth inhibition in comparison to untreated samples 3 days after infestation. Control of Spodoptera littoralis by a test sample is given when at least one of the categories mortality, anti-feedant effect, and growth inhibition is higher than the untreated sample.

The following compounds resulted in at least 80% control at an application rate of 200 ppm:

A1, A2, A3, A4, A5, A6, A7, A8, A9, A10, A11, A12, A13, A14, A15, A16, A17, A18, A19, A20, A21, A22, A23, A24, A25, A27, A28, A29, A30, A31, A32, A33, A34, A35, A36, A37, A38, A39, A40, A41, A42, A43, A44, A45, A46, A47, A48, A49, A50, A51, A52, A53, A54, A55, A56, A57, A58, A59, A60, A61, A62, A63, A64, A65, A66, A67, A68, A69, A70, A71, A72, A73, A74, A75, A76, A77, A78, A79, A80, A81, A82, A83, A84, A85, A86, A87, A88, A89, A90, A91, A92, A93, A94, A95, A96, A97, A98, A99, A100, A101, A102, A103, A104, A105, A106, A107, A108, A109, A110, A111, A112, A113, A114, A115, A116, A117, A118, A119, A120, A121, A122, A123, A124, A125, A126, A127, A128, A129, A130, A131, A132, A133, A134, A135, A136, A137, A138, A139, A140, A141, A142, A143, A144, A145, A146, A147, A148, A149, A150, A151, A152, A153, A154, A155, A156, A157, A158, A159, A160, A161, A162, A163, A164, A165, A166, A167, A168, A169, A170, A171, A172, A173, A174, A175, A176, A177, A178, A179, A180, A181, A182, A183, A184, A185, A186, A187, A188, A189, A190, A192, A193, A194, A195, A196, A197, A198, A199, A200, A201, A202, A203, A204, A205, A206, A207, A208, A209, A210, A211, A212, A213, A214, A215, A216, A217, A218, A219, A220, A221, A222, A223, A224, A225, A226, A227, A228, A229, A230, A231, A232, A233, A236, A237, A238, A239

Spodoptera littoralis (Egyptian cotton leaf worm)

Test compounds were applied by pipette from 10'000 ppm DMSO stock solutions into 24-well plates and mixed with agar. Lettuce seeds were placed onto the agar and the multi well plate was closed by another plate which contained also agar. After 7 days the compound was absorbed by the roots and the lettuce grew into the lid plate. The lettuce leaves were then cut off into the lid plate. Spodoptera eggs were pipetted through a plastic stencil onto a humid gel blotting paper and the lid plate was closed with it. The samples were assessed for mortality, anti-feedant effect and growth inhibition in comparison to untreated samples 6 days after infestation.

The following compounds gave an effect of at least 80% in at least one of the three categories (mortality, anti-feeding, or growth inhibition) at a test rate of 12.5 ppm:

A1, A5, A6, A8, A10, A11, A12, A13, A16, A19, A20, A21, A22, A23, A24, A25, A27, A28, A30, A31, A32, A33, A34, A35, A36, A37, A38, A39, A40, A41, A42, A44, A45, A48, A52, A57, A59, A61, A62, A63, A64, A65, A66, A67, A68, A69, A70, A72, A73, A75, A76, A78, A81, A82, A87, A90, A91, A95, A97, A98, A105, A107, A108, A109, A111, A112, A113, A114, A115, A116, A117, A118, A119, A120, A121, A122, A123, A125, A126, A127, A128, A130, A131, A132, A133, A134, A135, A136, A137, A138, A139, A140, A141, A142, A143, A144, A145, A146, A147, A155, A158, A159, A160, A236.

Tetranychus urticae (Two-spotted spider mite):Feeding/contact activity

Bean leaf discs on agar in 24-well microtiter plates were sprayed with aqueous test solutions prepared from 10'000 ppm DMSO stock solutions. After drying the leaf discs were infested with a mite population of mixed ages. The samples were assessed for mortality on mixed population (mobile stages) 8 days after infestation.

The following compounds resulted in at least 80% mortality at an application rate of 200 ppm:

A1, A2, A3, A4, A5, A6, A7, A8, A9, A10, A11, A12, A13, A14, A15, A16, A17, A18, A19, A20, A21, A22, A23, A24, A25, A27, A28, A29, A30, A31, A32, A33, A34, A35, A36, A37, A38, A39, A40, A41, A42, A43, A44, A45, A46, A48, A49, A50, A51, A52, A53, A54, A55, A57, A58, A59, A60, A61, A62, A63, A64, A65, A66, A67, A68, A69, A70, A71, A72, A73, A74, A75, A76, A77, A78, A79, A80, A81, A82, A83, A84, A85, A86, A87, A88, A89, A90, A91, A92, A93, A94, A95, A96, A97, A98, A99, A100, A101, A102, A103, A104, A105, A106, A107, A108, A109, A110, A111, A112, A113, A114, A115, A116, A117, A118, A119, A120, A121, A122, A123, A124, A125, A126, A127, A128, A129, A130, A131, A132, A133, A134, A135, A136, A137, A138, A139, A140, A141, A142, A143, A144, A145, A146, A147, A148, A149, A150, A151, A152, A153, A154, A155, A156, A157, A158, A159, A160, A161, A162, A163, A164, A165, A166, A167, A168, A169, A170, A171, A172, A173, A174, A176, A178, A179, A180, A181, A182, A183, A184, A185, A186, A187, A188, A189, A190, A192, A193, A194, A195, A196, A197, A198, A199, A200, A201, A202, A203, A204, A205, A206, A207, A208, A209, A210, A211, A212, A213, A214, A215, A216, A217, A218, A219, A220, A221, A222, A223, A224, A225, A226, A227, A228, A229, A230, A231, A232, A233, A236.

Thrips tabaci (Onion thrips) Feeding/Contact activity

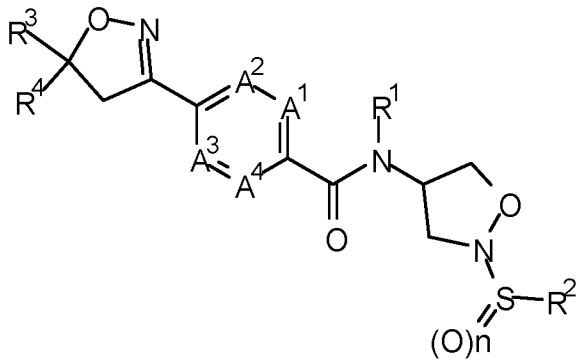
Sunflower leaf discs were placed on agar in 24-well microtiter plates and sprayed with aqueous test solutions prepared from 10'000 ppm DMSO stock solutions. After drying the leaf discs were infested with a thrips population of mixed ages. The samples were assessed for mortality 6 days after infestation.

The following compounds resulted in at least 80% mortality at an application rate of 200 ppm:

A1, A2, A3, A4, A5, A6, A7, A8, A9, A10, A11, A12, A13, A14, A15, A16, A17, A18, A19, A20, A21, A22, A23, A24, A25, A27, A28, A29, A30, A31, A32, A33, A34, A35, A36, A37, A38, A39, A40, A41, A42, A43, A44, A45, A46, A48, A49, A50, A51, A52, A55, A57, A58, A59, A60, A61, A62, A63, A64, A65, A66, A67, A68, A69, A70, A71, A72, A73, A74, A75, A76, A77, A78, A79, A80, A81, A82, A83, A84, A85, A86, A87, A88, A89, A90, A91, A92, A93, A94, A95, A96, A97, A98, A99, A100, A101, A102, A103, A104, A105, A106, A107, A108, A109, A110, A111, A112, A113, A114, A115, A116, A117, A118, A119, A120, A121, A122, A123, A124, A125, A126, A127, A128, A129, A130, A131, A132, A133, A134, A135, A136, A137, A138, A139, A140, A141, A142, A143, A144, A145, A146, A147, A148, A149, A150, A151, A152, A153, A154, A155, A156, A157, A158, A159, A160, A161, A162, A163, A164, A165, A166, A167, A168, A169, A170, A171, A172, A173, A174, A176, A177, A178, A179, A180, A181, A182, A183, A184, A185, A186, A187, A188, A189, A190, A192, A193, A194, A195, A196, A197, A198, A199, A200, A202, A203, A204, A205, A206, A207, A208, A209, A210, A211, A212, A213, A214, A215, A216, A217, A218, A219, A220, A221, A223, A224, A225, A226, A227, A228, A229, A230, A231, A232, A233, A236, A239.

CLAIMS

1. A compound of formula (I)



(I)

wherein

A^1, A^2, A^3 and A^4 are independently of one another C-H, C-R^5, or nitrogen;

R^1 is hydrogen, C_1-C_8alkyl, C_1-C_8alkylcarbonyl-, C_1-C_8alkoxy, C_1-C_8alkoxy-C_1-C_8alkyl or C_1-C_8alkoxycarbonyl-;

R^2 is C_1-C_8alkyl, C_1-C_8alkyl substituted by one to three R^{6a}, C_1-C_8haloalkyl, C_1-C_8haloalkyl substituted by one to three R^{6a}, C_3-C_8cycloalkyl, C_3-C_8cycloalkyl substituted by one to three R^{6b}, C_3-C_8cycloalkyl where one carbon atom is replaced by O, S, S(O) or SO_2, C_3-C_8cycloalkyl-C_1-C_8alkyl, C_3-C_8cycloalkyl-C_1-C_8alkyl where one carbon atom in the cycloalkyl group is replaced by O, S, S(O) or SO_2, C_3-C_8cycloalkyl-C_1-C_8haloalkyl, C_2-C_8alkenyl, C_2-C_8alkenyl substituted by one to three R^{6a}, C_2-C_8haloalkenyl, C_2-C_8haloalkenyl substituted by one to three R^{6a}, C_2-C_8alkynyl, C_2-C_8haloalkynyl, phenyl, phenyl substituted by one to three R^7, phenyl-C_1-C_4alkyl, phenyl-C_1-C_4alkyl wherein the phenyl moiety is substituted by one to three R^7, 5-6 membered heteroaryl, 5-6 membered heteroaryl substituted by one to three R^7, 5-6 membered heteroaryl-C_1-C_4alkyl, 5-6 membered heteroaryl-C_1-C_4alkyl wherein the heteroaryl moiety is substituted by one to three R^7, -N(R^8)(R^9), halogen or -OR^{10};

R^3 is C_1-C_8haloalkyl;

R^4 is aryl, aryl substituted by one to three R^7, heteroaryl or heteroaryl substituted by one to three R^7;

R^5 is independently halogen, cyano, nitro, C_1-C_8alkyl, C_3-C_8cycloalkyl, C_1-C_8haloalkyl, C_2-C_8alkenyl, C_2-C_8haloalkenyl, C_2-C_8alkynyl, C_2-C_8haloalkynyl, C_1-C_8alkoxy, C_1-C_8haloalkoxy, or C_1-C_8alkoxycarbonyl-, or two R^5 on adjacent carbon atoms together form a -CH=CH-CH=CH- bridge or a -N=CH-CH=CH- bridge;

R^{6a} is independently cyano, nitro, amino, C_1-C_8alkylamino, N,N-C_1-C_8dialkylamino, hydroxy, C_1-C_8alkoxy, or C_1-C_8haloalkoxy;

R^{6b} is independently halogen, cyano, nitro, oxo, C_1-C_8alkyl, C_1-C_8haloalkyl, amino, C_1-C_8alkylamino, N,N-C_1-C_8dialkylamino, hydroxyl, C_1-C_8alkoxy, C_1-C_8haloalkoxy, phenyl, phenyl substituted by one to three R^7, 5-6 membered heteroaryl, 5-6 membered heteroaryl substituted by one to three R^7;

R^7 is independently halogen, cyano, nitro, C_1-C_8alkyl, C_1-C_8haloalkyl, C_1-C_8alkoxy,, C_1-C_8haloalkoxy;

R^8 and R^9 are independently hydrogen, cyano, cyano-C_1-C_8alkyl, C_1-C_8alkyl, C_1-C_8alkyl substituted by one to three R^{6a}, C_2-C_8alkenyl, C_2-C_8alkenyl substituted by one to three R^{6a}, C_1-C_8alkoxy, C_1-C_8haloalkoxy, C_1-C_8haloalkoxy substituted by one to three R^{6a}, C_1-C_8alkoxy substituted by one to three R^{6a},C_1-C_8haloalkyl, C_1-C_8haloalkyl substituted by one to three R^{6a}, C_3-C_8cycloalkyl, C_3-C_8cycloalkyl substituted by one to three R^{6b}, C_3-C_8cycloalkyl where one carbon atom is replaced by O, S, S(O) or SO_2,

C_3-C_8cycloalkyl-C_1-C_8alkyl, C_3-C_8cycloalkyl-C_1-C_8alkyl where one carbon atom in the cycloalkyl group is replaced by O, S, S(O) or SO_2, C_3-C_8cycloalkyl-C_1-C_8haloalkyl, C_2-C_8alkenyl, C_2-C_8alkenyl substituted by one to three R^{6a}, C_2-C_8haloalkenyl, C_2-C_8haloalkenyl substituted by one to three R^{6a}, C_2-C_8alkynyl, C_2-C_8haloalkynyl, phenyl, phenyl substituted by one to three R^7, phenyl-C_1-C_4alkyl, phenyl-C_1-C_4alkyl wherein the phenyl moiety is substituted by one to three R^7, 5-6 membered heteroaryl, 5-6 membered heteroaryl substituted by one to three R^7, 5-6 membered heteroaryl-C_1-C_4alkyl, 5-6 membered heteroaryl-C_1-C_4alkyl wherein the heteroaryl moiety is substituted by one to three R^7, -S(O)R^{10}, -S(O)$_2R^{10}$, COR^{10}, COOR^{10}, or R^8 and R^9 together with the nitrogen atom can be linked through a C_3-C_8alkylene chain, a C_3-C_8alkylene chain substituted by one to three R^{6b} or a C_3-C_8alkylene chain, where one carbon atom is replaced by O, S, S(O) or SO_2;

R^{10} is hydrogen, cyano-C_1-C_8alkyl, C_1-C_8alkyl, C_1-C_8alkyl substituted by one to three R^{6a}, C_1-C_8haloalkyl, C_1-C_8haloalkyl substituted by one to three R^{6a}, C_3-C_8cycloalkyl, C_3-C_8cycloalkyl substituted by one to three R^{6b}, C_3-C_8cycloalkyl where one carbon atom is replaced by O, S, S(O) or SO_2, C_3-C_8cycloalkyl-C_1-C_8alkyl, C_3-C_8cycloalkyl-C_1-C_8alkyl where one carbon atom in the cycloalkyl group is replaced by O, S, S(O) or SO_2, C_3-C_8cycloalkyl-C_1-C_8haloalkyl, C_2-C_8alkenyl, C_2-C_8alkenyl substituted by one to three R^{6a}, C_2-C_8haloalkenyl, C_2-C_8haloalkenyl substituted by one to three R^{6a}, C_2-C_8alkynyl, C_2-C_8haloalkynyl, phenyl, phenyl substituted by one to three R^7, phenyl-C_1-C_4alkyl, phenyl-C_1-C_4alkyl wherein the phenyl moiety is substituted by one to three R^7, 5-6 membered heteroaryl, 5-6 membered heteroaryl substituted by one to three R^7, 5-6 membered heteroaryl-C_1-C_4alkyl or 5-6 membered heteroaryl-C_1-C_4alkyl wherein the heteroaryl moiety is substituted by one to three R^7;

n is 1 or 2;

or a tautomer, isomer, enantiomer, salt or *N*-oxide thereof.

2. The compound according to claim 1, wherein A^1 is CR^5 and A^2, A^3 and A^4 are each CH, wherein R^5 is as defined in claim 1.

3. The compound according to either claim 1 or claim 2, wherein R^1 is hydrogen, C_1-C_8alkyl, C_1-C_8alkylcarbonyl- or C_1-C_8alkoxycarbonyl-.

4. The compound according to any one of claims 1 to 3, wherein R^2 is C_1-C_8alkyl or C_1-C_8alkyl substituted by one to three R^{6a}, C_1-C_8haloalkyl or C_1-C_8haloalkyl substituted by one to three R^{6a}, C_3-C_8cycloalkyl or C_3-C_8cycloalkyl substituted by one to three R^{6b}, phenyl, phenyl substituted by one to three R^7, phenyl-C_1-C_4alkyl, phenyl-C_1-C_4alkyl wherein the phenyl moiety is substituted by one to three R^7, 5-6 membered heteroaryl, 5-6 membered heteroaryl substituted by one to three R^7, halogen or -N(R^8)(R^9) wherein R^8, R^9, R^{6a} and R^{6b} are as defined in claim 1.

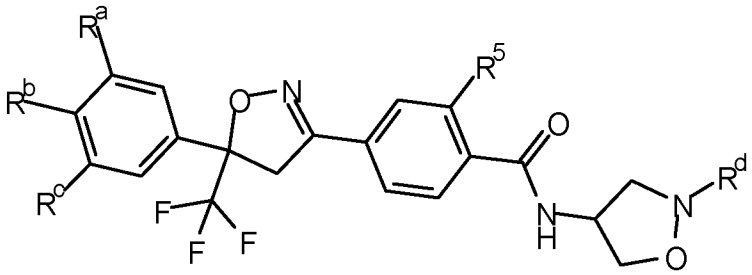
5. The compound according to any one of claims 1 to 4, wherein R^3 is C_1-C_4haloalkyl.

6. The compound according to any one of claims 1 to 5, wherein R^4 is phenyl or phenyl substituted by one to three R^7; wherein R^7 is independently halogen, cyano, C_1-C_8alkyl, C_1-C_8haloalkyl, C_1-C_8alkoxy, or C_1-C_8haloalkoxy.

7. The compound according to any one of claims 1 to 6, wherein A^1 is CR^5 and A^2, A^3 and A^4 are each CH; R^1 is hydrogen, methyl, ethyl, methylcarbonyl-, or methoxycarbonyl; R^2 is C_1-C_8alkyl, C_1-C_8alkyl substituted by one to three R^{6a}, C_2-C_8alkenyl, C_2-C_8alkynyl, C_3-C_8cycloalkyl, C_1-C_8haloalkyl, di-C_1-C_8alkylamino, C_1-C_4alkylamino, fluoro, aryl, aryl substituted by one to three R^{6b}, 5-6 membered heteroaryl or 5-6 membered heteroaryl substituted by one to three R^{6b}; R^3 is C_1-C_4haloalkyl; R^4 is aryl or aryl substituted by one to three R^{6b}; and n is 2; wherein R^5 is halogen or C_1-C_8alkyl, C_3-C_8cycloalkyl, C_1-C_8haloalkyl, or C_2-C_8alkenyl; R^{6a} is independently cyano, halogen, nitro, C_1-C_4alkoxy, or C_1-C_4haloalkoxy; and R^{6b} is independently halogen, cyano, nitro, C_1-C_4alkyl, or C_1-C_4haloalkyl, C_1-C_4alkoxy, or C_1-C_4haloalkoxy.

8. The compound according to any one of claims 1 to 7, wherein A^1 is CR^5 and A^2, A^3 and A^4 are each CH; R^1 is hydrogen; R^2 is C_1-C_4alkyl, C_1-C_4alkyl substituted by one to three R^{6a}, C_2-C_4alkenyl, C_2-C_4alkynyl, C_3-C_5cycloalkyl, C_1-C_4haloalkyl, di-C_1-C_4alkylamino, C_1-C_4alkylamino, fluoro, 1-3 halo-substituted phenyl, or 5-6 membered heteroaryl; R^3 is chlorodifluoromethyl or trifluoromethyl; R^4 is 3,5-bis-(trifluoromethyl)-phenyl, 3-chloro-5-trifluoromethyl-phenyl, 3-bromo-5-trifluoromethyl-phenyl, 3,5-dibromo-phenyl, 3,5-dichloro-phenyl, 3,4-dichloro-phenyl, 3-trifluoromethyl-phenyl, 4-bromo-3,5-dichlorophenyl, 3,5-dichloro-4-fluoro phenyl or 3,4,5-trichloro-phenyl; and n is 2; wherein R^5 is bromo, chloro, fluoro, cyano, nitro, methyl, ethyl, trifluoromethyl, cyclopropyl, or vinyl; R^{6a} is independently fluoro, cyano, nitro, methoxy, difluoromethoxy or trifluoromethoxy; and R^{6b} is independently bromo, chloro, fluoro, cyano, nitro methyl, ethyl, trifluoromethyl, methoxy, difluoromethoxy, trifluoromethoxy.

9. A compound of formula (I) according to claim 1 represented by the compounds of formula (Ib)



(Ib)

wherein

R^a is hydrogen, halogen, cyano, C_1-C_8alkyl, C_1-C_8haloalkyl, or C_1-C_8haloalkoxy;
R^b is hydrogen, halogen, cyano, C_1-C_8alkyl, C_1-C_8haloalkyl, or C_1-C_8haloalkoxy;
R^c is hydrogen, halogen, cyano, C_1-C_8alkyl, C_1-C_8haloalkyl, or C_1-C_8haloalkoxy;
R^5 is halogen, cyano, C_1-C_8alkyl, C_3-C_8cycloalkyl, C_1-C_8haloalkyl, C_2-C_8alkenyl;
R^d is $S(O)_2$-R^2;
R^2 is C_1-C_8alkyl or C_1-C_8alkyl substituted by one to three R^{6a}, C_1-C_8haloalkyl or C_1-C_8haloalkyl substituted by one to three R^{6a}, C_3-C_8cycloalkyl or C_3-C_8cycloalkyl substituted by one to three R^{6b}, phenyl, phenyl substituted by one to three R^7, phenyl-C_1-C_4alkyl, phenyl-C_1-C_4alkyl wherein the phenyl moiety is substituted by one to three R^7, 5-6 membered heteroaryl, 5-6 membered heteroaryl substituted by one to three R^7, -$N(R^8)(R^9)$, C_1-C_4alkylamino, fluoro;
R^5 is independently halogen, cyano, nitro, C_1-C_8alkyl, C_3-C_8cycloalkyl, C_1-C_8haloalkyl, C_2-C_8alkenyl;

R^{6a} is independently C_1-C_8alkoxy, or C_1-C_8haloalkoxy;

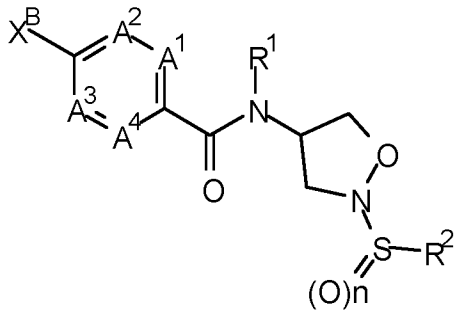
R^{6b} is independently oxo, amino, C_1-C_8alkylamino, N,N-C_1-C_8dialkylamino, C_1-C_8alkoxy, C_1-C_8haloalkoxy, phenyl, phenyl substituted by one to three R^7, 5-6 membered heteroaryl or 5-6 membered heteroaryl substituted by one to three R^7;

R^7 is independently halogen, cyano, C_1-C_8alkyl, C_1-C_8haloalkyl, C_1-C_8alkoxy, or C_1-C_8haloalkoxy;

R^8 and R^9 are independently hydrogen, cyano-C_1-C_8alkyl, C_1-C_8alkyl, C_1-C_8alkyl substituted by one to three R^{6a}, C_2-C_8alkenyl or C_2-C_8alkenyl substituted by one to three R^{6a}, phenyl-C_1-C_4alkyl, phenyl-C_1-C_4alkyl wherein the phenyl moiety is substituted by one to three R^7, $-S(O)_2R^{10}$;

R^{10} is hydrogen, cyano-C_1-C_8alkyl, C_1-C_8alkyl or C_1-C_8alkyl substituted by one to three R^{6a}, phenyl, phenyl substituted by one to three R^7, 5-6 membered heteroaryl, 5-6 membered heteroaryl substituted by one to three R^7.

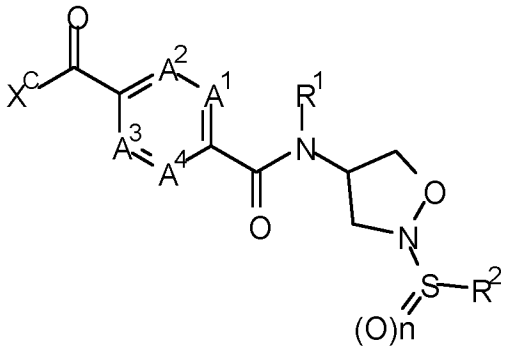
10. A compound of formula (Int-I)



(Int-I)

wherein A^1, A^2, A^3, A^4, R^1 and R^2, are as defined for a compound of formula (I) according to any one of claims 1 to 9 and X^B is a leaving group, or X^B is cyano, formyl, CH=N-OH or acetyl; or a tautomer, isomer, enantiomer, salt or *N*-oxide thereof; or

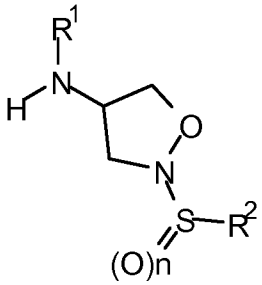
a compound of formula (Int-II)



(Int-II)

wherein A^1, A^2, A^3, A^4, R^1 and R^2, are as defined for a compound of formula (I) according to any one of claims 1 to 9 and X^C is CH_2-halogen, $CH=C(R^3)R^4$, or $CH_2C(OH)(R^3)R^4$ wherein R^3 and R^4 are as defined for a compound of formula (I) according to any one of claims 1 to 9; or a tautomer, isomer, enantiomer, salt or *N*-oxide thereof; or

a compound of formula (Int-III)



(Int-III)

wherein $R^1$and R^2, are as defined for a compound of formula (I) according to any one of claims 1 to 9; or a tautomer, isomer, enantiomer,salt or *N*-oxide thereof.

11. A method of combating and/or controlling an invertebrate animal pest which comprises applying to the pest, to a locus of the pest, or to a plant susceptible to attack by the pest a pesticidally effective amount of a compound of formula (I) as defined in any one of claims 1 to 9.

12. A pesticidal composition, which comprises at least one compound of formula (I) according to any of the claims 1 to 9 or where appropriate, a tautomer thereof, in each case in free form or in agrochemically utilizable salt form, as active ingredient.

13. A method for controlling pests, which comprises applying a composition according to claim 12 to the pests or their environment with the exception of a method for treatment of the human or animal body by surgery or therapy and diagnostic methods practised on the human or animal body.

14. A method for the protection of plant propagation material from the attack by pests, which comprises treating the propagation material or the site, where the propagation material is planted, with a composition according to claim 12.

15. Plant propagation material treated with the pesticidal composition described in claim 12.

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2016/072588

A. CLASSIFICATION OF SUBJECT MATTER
INV. C07D413/14 A01N43/80
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
C07D A01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2011/067272 A1 (SYNGENTA PARTICIPATIONS AG [CH]; CASSAYRE JEROME YVES [CH]; RENOLD PET) 9 June 2011 (2011-06-09) cited in the application claim 1	1-15
X	US 2011/144334 A1 (MITA TAKESHI [JP] ET AL) 16 June 2011 (2011-06-16) claim 1	1-15
X	US 2007/066617 A1 (MITA TAKESHI [JP] ET AL) 22 March 2007 (2007-03-22) claim 1	1-15

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
10 November 2016	22/11/2016

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Panday, Narendra

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2016/072588

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2011067272 A1	09-06-2011	AR 079224 A1	04-01-2012
		AU 2010326766 A1	07-06-2012
		BR 112012013085 A2	08-09-2015
		CA 2780522 A1	09-06-2011
		CN 102639529 A	15-08-2012
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		EA 201200826 A1	30-01-2013
		EC SP12011940 A	31-07-2012
		EP 2507230 A1	10-10-2012
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		JP 2013512274 A	11-04-2013
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		NZ 600036 A	31-05-2013
		TW 201130417 A	16-09-2011
		US 2012238517 A1	20-09-2012
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