(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
27 February 2014 (27.02.2014)

WIPO | PCT

(10) International Publication Number
WO 2014/029707 A1

(51) International Patent Classification:
A01N 43/36 (2006.01) *A01N 43/80* (2006.01)
A01N 43/653 (2006.01) *A01L 7/04* (2006.01)

(21) International Application Number:
PCT/EP2013/067183

(22) International Filing Date:
16 August 2013 (16.08.2013)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
12181772.0 24 August 2012 (24.08.2012) EP
13158159.7 7 March 2013 (07.03.2013) EP

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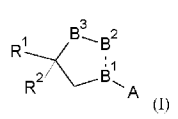
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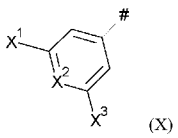
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

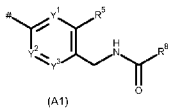
(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

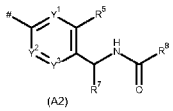
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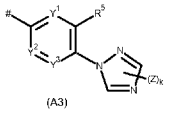
(54) Title: METHODS OF CONTROLLING INSECTS

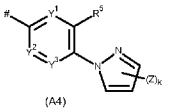

(I)

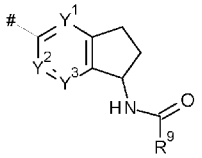

(X)


(A1)


(A2)


(A3)


(A4)


(A5)

(57) Abstract: The present invention provides a method comprising applying to a crop of rice plants, the locus thereof, or propagation material thereof, a compound of formula (I) wherein -B^1-B^2-B^3- is -C=N-O-, -C=N-CH_2-, or -N-CH_2-CH_2-; providing that when A is A1 -B^1-B^2-B^3- is -C=N-CH_2- or -N-CH_2-CH_2-, when A is A2 -B^1-B^2-B^3- is -C=N-O- or -N-CH_2-CH_2-, and when A is A3 -B^1-B^2-B^3- is -C=N-O-; R^1 is trifluoromethyl, difluoromethyl or chlorodifluoromethyl; R^2 is group (X) X^2 is C-X^6 or nitrogen; X^1, X^3 and X^6 are independently hydrogen, halogen or trihalomethyl, wherein at least one of X^1, X^3 and X^6 : is not hydrogen; A is selected from (A1) to (A5) Y^1 is C-R^6, CH or nitrogen; Y^2 and Y^3 are independently CH or nitrogen; wherein no more than two of Y^1, Y^2 and Y^3 are nitrogen and wherein Y^2 and Y^3 are not both nitrogen; R^5 is hydrogen, halogen, cyano, nitro, NH2, C_1-C_4alkyl, C_1-C_4haloalkyl, C_3-C_5cycloalkyl, C_3-C_5halocycloalkyl, C_1-C_2alkoxy, or C_1-C_2haloalkoxy; providing that when A is A3 or A4, R^5 is not hydrogen; R^6 when present together with R^5 forms a -CH=CH-CH=CH- bridge; R^7 is C_1-C_4alkyl; R^8 is C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy(C_1-C_4)alkyl, C_1-C_4alkylthio(C_1-C_4)alkyl, C_1-C_4alkylsulfmyl(C_1-C_4)alkyl, C_1-C_4alkylsulfonyl(C_1-C_4)alkyl, C_3-C_6cycloalkyl, C_3-C_6cycloalkyl(C_1-C_4)alkyl-, or tetrahydrofuranyl; R^9 is C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkyl-O-CH_2-, C_1-C_4haloalkyl-O-CH_2-,C_3-C_6cycloalkyl, C_3- C_6cycloalkyl-CH_2, C_1-C_4alkyl-S-CH_2-, C_1-C_4alkyl-S(O)-CH_2-, or C_1-C_4alkyl-S(O)-CH_2; each Z is independently

[Continued on next page]

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Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

— *of inventorship (Rule 4.17(iv))*

Published:

— *with international search report (Art. 21(3))*

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

halogen, C_1-C_{12}alkyl or C_1-C_{12}alkyl substituted by one to five R^{12}, nitro, C_1-C_{12}alkoxy or C_1-C_{12}alkoxy substituted by one to five R^{12} cyano, C_1-C_{12}alkylsulfinyl, C_1-C_{12}alkylsulfonyl, C_1-C_{12}haloalkylsulfinyl, C_1-C_{12}haloalkylsulfonyl, hydroxyl or thiol; each R^{12} is halogen, cyano, nitro, hydroxy, C_1-C_8alkoxy-, C_1-C_8haloalkoxy-, mercapto, C_1-C_8alkylthio-, or C_1-C_8haloalkylthio; and k is 0, 1,2 or 3.

METHODS OF CONTROLLING INSECTS

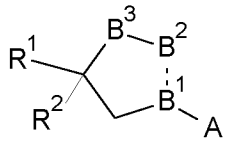
The present invention relates to a method of controlling insects, in particular insects that infest rice.

Compounds that are insecticidally, acaricidally, nematicidally and/or moluscicidally active by antagnonism of the gamma-aminobutyric acid (GABA)-gated chloride channel, and which comprise a partially saturated heterocycle that is substituted by a haloalkyl substituent and one or two optionally substituted aromatic or heteroaromatic rings, represent a new class of pesticides that are described for example in Ozoe et al. Biochemical and Biophysical Research Communications, 391 (2010) 744-749. Compounds from this class are broadly described in WO 2005/085216 (EP1731512), WO 2007/123853, WO 2007/075459, WO 2009/002809, WO 2008/019760, WO 2008/122375, WO 2008/128711, WO 2009/097992, WO 2010/072781, WO 2010/072781, WO 2008/126665, WO 2007/125984, WO 2008/130651, JP2008110971, JP2008133273, JP2009108046, WO 2009/022746, WO 2009/022746, WO 2010/032437, WO 2009/080250, WO 2010/020521, WO 2010/025998, WO 2010/020522, WO 2010/084067, WO 2010/086225, WO 2010/149506 and WO 2010/108733.

It has now surprisingly been found that particular insecticides from this new class of gamma-aminobutyric acid (GABA)-gated chloride channel antagonists (disclosed in e.g. WO 2009/080250, WO 2010/020522, WO 2010/149506, WO 2011/101229 and WO 2012/045700) are highly effective at controlling certain pests in rice.

These compounds therefore represent an important new solution for safeguarding crops of useful plants, particularly rice crops, from insects that infest rice crops, particularly where the insects are resistant to current methods.

In a first aspect the invention provides a method comprising applying to a crop of rice plants, the locus thereof, or propagation material thereof, a compound of formula I



(I)

wherein -B^1-B^2-B^3- is -C=N-O-, -C=N-CH_2- , or -N-CH_2-CH_2-; providing that

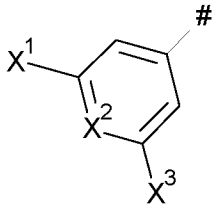
when A is A1 -B^1-B^2-B^3- is -C=N-CH_2- or -N-CH_2-CH_2-,

when A is A2 -B^1-B^2-B^3- is -C=N-O- or -N-CH_2-CH_2-, and

when A is A3 -B^1-B^2-B^3- is -C=N-O-;

R^1 is trifluoromethyl, difluoromethyl or chlorodifluoromethyl;

R^2 is group X

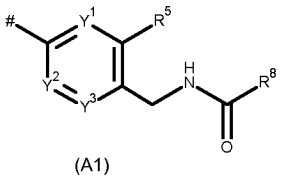


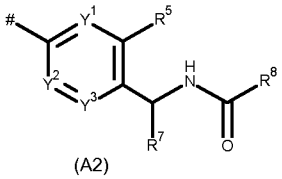
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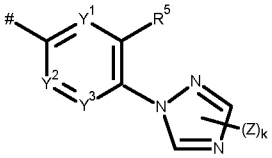
X^2 is C-X^6 or nitrogen;

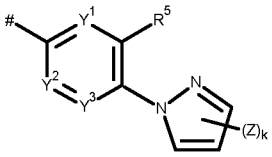
X^1, X^3 and X^6 are independently hydrogen, halogen or trihalomethyl, wherein at least one of X^1, X^3 and X^6 is not hydrogen;

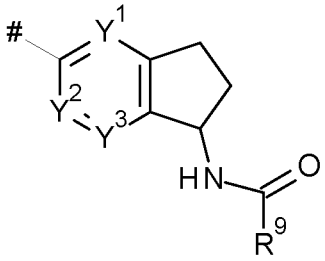
A is selected from A1 to A5


(A1)


(A2)


(A3)


(A4)


(A5)

Y^1 is C-R^6, CH or nitrogen;

Y^2 and Y^3 are independently CH or nitrogen;

wherein no more than two of Y^1, Y^2 and Y^3 are nitrogen and wherein Y^2 and Y^3 are not both nitrogen;

R^5 is hydrogen, halogen, cyano, nitro, NH_2, C_1-C_4alkyl, C_1-C_4haloalkyl, C_3-C_5cycloalkyl, C_3-C_5halocycloalkyl, C_1-C_2alkoxy, or C_1-C_2haloalkoxy; providing that when A is A3 or A4, R^5 is not hydrogen;

R^6 when present together with R^5 forms a -CH=CH-CH=CH- bridge;

R^7 is C_1-C_4alkyl;

R^8 is C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy(C_1-C_4)alkyl, C_1-C_4alkylthio(C_1-C_4)alkyl, C_1-C_4alkylsulfinyl(C_1-C_4)alkyl, C_1-C_4alkylsulfonyl(C_1-C_4)alkyl, C_3-C_6cycloalkyl, C_3-C_6cycloalkyl(C_1-C_4)alkyl-, or tetrahydrofuranyl;

R^9 is C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkyl-O-CH_2-, C_1-C_4haloalkyl-O-CH_2-,C_3-C_6cycloalkyl, C_3-C_6cycloalkyl-CH_2-, C_1-C_4alkyl-S-CH_2-, C_1-C_4alkyl-S(O)-CH_2-, or C_1-C_4alkyl-S(O_2)-CH_2;

each Z is independently halogen, C_1-C_{12}alkyl or C_1-C_{12}alkyl substituted by one to five R^{12}, nitro, C_1-C_{12}alkoxy or C_1-C_{12}alkoxy substituted by one to five R^{12}, cyano, C_1-C_{12}alkylsulfinyl, C_1-C_{12}alkylsulfonyl, C_1-C_{12}haloalkylsulfinyl, C_1-C_{12}haloalkylsulfonyl, hydroxyl or thiol;

each R^{12} is halogen, cyano, nitro, hydroxy, C_1-C_8alkoxy-, C_1-C_8haloalkoxy-, mercapto, C_1-C_8alkylthio-, or C_1-C_8haloalkylthio; and

k is 0, 1,2 or 3.

The method may be for controlling and/or preventing insects selected from the group consisting of stemborer, leaffolder, hoppers, Gall midge, whorl maggot, Rice bugs, and Black bugs, preferably hoppers and/or stemborer, most preferably hoppers and in particular *Nilaparvata lugens*.

In one embodiment the invention provides a method of controlling and/or preventing stemborer in rice comprising applying to a crop of rice plants, the locus thereof, or propagation material thereof, a compound of formula I. In one embodiment the invention provides use of a compound of formula I for controlling and/or preventing stemborer, particularly in rice. The stemborer may be resistant to other insecticides. Examples of stemborers include *Chilo sp, Chilo suppressalis, Chilo polychrysus, Chilo auricilius, Scirpophaga spp., Scirpophaga incertulas, Scirpophaga innotata, Scirpophaga nivella Sesamia sp, Sesamia inferens.* In a further aspect the invention provides a method for obtaining regulatory approval for the use of one or more of a compound of formula I to control stemborer, preferably in rice, comprising at least one step of referring to, submitting or relying on biological data showing that said active ingredient reduces insect pressure.

In one embodiment the invention provides a method of controlling and/or preventing leaffolder in rice comprising applying to a crop of rice plants, the locus thereof, or propagation material thereof, a compound of formula I. In one embodiment the invention provides use of a compound of formula I for controlling and/or preventing leaffolder, particularly in rice. The leaffolder may be resistant to other insecticides. Examples of leaffolders include *Cnaphalocrocis spp., Cnaphalocrocis medinalis, Marasmia spp., Marasmia patnalis, Marasmia exigua.* In a further aspect the invention provides a method for obtaining regulatory approval for the use of one or more of a compound of formula I to control leaffolder, preferably in rice, comprising at least one step of referring to, submitting or relying on biological data showing that said active ingredient reduces insect pressure.

In one embodiment the invention provides a method of controlling and/or preventing, hoppers in rice comprising applying to a crop of rice plants, the locus thereof, or propagation material thereof, a compound of formula I. In one embodiment the invention provides use of a compound of formula for controlling and/or preventing hoppers, particularly in rice. The hoppers may be resistant to other insecticides. Examples of Hoppers include *Nephotettix spp., Nephotettix virescens, Nephotettix nigropictus, Nephotettix malayanus, Nephotettix cincticeps*, *Nilaparvata lugens, Sogatella furcifera,* preferably *Nilaparvata lugens.* In a further aspect the invention provides a method for obtaining regulatory approval for the use of one or more of a compound of formula I to control hoppers, preferably in rice, comprising at least one step of referring to, submitting or relying on biological data showing that said active ingredient reduces insect pressure.

In one embodiment the invention provides a method of controlling and/or preventing Gall midge in rice comprising applying to a crop of rice plants, the locus thereof, or propagation material thereof, a compound of formula I. In one embodiment the invention provides use of a compound of formula for controlling and/or preventing Gall midge, particularly in rice. The Gall midge may be resistant to other insecticides. Examples of Gall midge include *Orseolia sp, Orseolia oryzae.* In a further aspect the invention provides a method for obtaining regulatory approval for the use of one or more of a compound of formula I to control Gall midge, preferably in rice, comprising at least one step of referring to, submitting or relying on biological data showing that said active ingredient reduces insect pressure.

In one embodiment the invention provides a method of controlling and/or preventing whorl maggot in rice comprising applying to a crop of rice plants, the locus thereof, or propagation material thereof, a compound of formula I. In one embodiment the invention provides use of a compound of formula for controlling and/or preventing whorl maggot, particularly in rice. The whorl maggot may be resistant to other insecticides. Examples of whorl maggots include *Hydrellia sp, Hydrellia philippina.* In a further aspect the invention provides a method for obtaining regulatory approval for the use of one or more of a compound of formula I to control whorl maggots, preferably in rice, comprising at least one step of referring to, submitting or relying on biological data showing that said active ingredient reduces insect pressure.

In one embodiment the invention provides a method of controlling and/or preventing Rice bugs in rice comprising applying to a crop of rice plants, the locus thereof, or propagation material thereof, a compound of formula I. In one embodiment the invention provides use of a compound of formula for controlling and/or preventing Rice bugs, particularly in rice. The Rice bugs may be resistant to other insecticides. Examples of rice bugs include *Leptocorisa sp, Leptocorisa oratorius, Leptocorisa chinensis, Leptocorisa acuta.* In a further aspect the invention provides a method for obtaining regulatory approval for the use of one or more of a compound of formula I to control Rice bugs, preferably in rice, comprising at least one step of referring to, submitting or relying on biological data showing that said active ingredient reduces insect pressure.

In one embodiment the invention provides a method of controlling and/or preventing Black bugs in rice comprising applying to a crop of rice plants, the locus thereof, or propagation material thereof, a compound of formula I. In one embodiment the invention provides use of a compound of formula for controlling and/or preventing Black bugs, particularly in rice. The Black bugs may be resistant to other insecticides. Examples of Black bugs include *Scotinophara sp, Scotinophara coarctata, Scotinophara lurida, Scotinophara latiuscula.* In a further aspect the invention provides a method for obtaining regulatory approval for the use of one or more of a compound of formula I to control Black bugs, preferably in rice, comprising at least one step of referring to, submitting or relying on biological data showing that said active ingredient reduces insect pressure.

The invention preferably relates to methods of controlling and/or preventing hoppers, and in particular *Nilaparvata lugen,* and/or stemborer, in particular *Chilo sp.*. Most preferably the invention relates to methods of controlling and/or preventing hoppers, and in particular *Nilaparvata lugens.*

The compounds of the invention may exist in different geometric or optical isomers or tautomeric forms. This invention covers all such isomers and tautomers and mixtures thereof in all proportions as well as isotopic forms such as deuterated compounds. The compounds of the invention may contain one or more asymmetric carbon atoms, and may exist as enantiomers (or as pairs of diastereoisomers) or as mixtures of such. Reference to compounds of the invention also includes reference to salts and N-oxides.

The preferences for B^1, B^2, B^3, R^1, R^2, Y^1, Y^2, Y^3, R^5, R^6, R^7, R^8, R^9, R^{12}, X^1 X^2, X^3, X^6, Z and k are, in any combination, as described below.

Preferably R^1 is trifluoromethyl, or chlorodifluoromethyl, most preferably trifluoromethyl.

Preferably X^1, X^3 and X^6 are independently hydrogen, halogen or trifluoromethyl, wherein at least two of X^1, X^3 and X^6 are not hydrogen. More preferably X^1, X^3 and X^6 are independently hydrogen, chloro, bromo or trifluoromethyl, wherein at least two of X^1, X^3 and X^6 are not hydrogen. Preferably at least two of X^1, X^3 and X^6 are chloro, bromo or trifluoromethyl.

In one group of compounds R^2 is 3,5-dichlorophenyl-, 3-chloro-4-fluorophenyl-, 3-fluoro-4-chlorophenyl-, 3,4-dichlorophenyl-, 3-chloro-4-bromophenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-dichloro-4-iodophenyl-, 3,4,5-trifluorophenyl-, 3-chloro-5-bromophenyl-, 3-chloro-5-fluorophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,4-dichloro-5-(trifluoromethyl)phenyl-, 3,5-bis(trifluoromethyl)phenyl-, 4-chloro-3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3-bromo-5-(trifluoromethyl)phenyl-, more preferably 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-, more preferably R^2 is 3,5-dichloro-phenyl, 3,5-dichloro-4-fluorophenyl- or 3,4,5-trichloro-phenyl, most preferably 3,5-dichloro-phenyl.

Preferably Y^1 is CH, Y^2 is CH, Y^3 is CH, or Y^1 is N, Y^2 is CH, Y^3 is CH, or Y^1 is N, Y^2 is N, Y^3 is CH, or Y^1 is CH, Y^2 is N, Y^3 is CH, or Y^1 is CH, Y^2 is CH, Y^3 is N. Most preferably Y^1 is CH, Y^2 is CH, and Y^3 is CH.

Preferably R^5 is hydrogen, chloro, bromo, fluoro, trifluoromethyl, methyl, ethyl, methoxy, nitro, trifluoromethoxy, cyano, cyclopropyl, more preferably R^5 is hydrogen, chloro, bromo, fluoro, trifluoromethyl, methyl, ethyl, nitro, cyano, cyclopropyl, most preferably R^5 is hydrogen, cyano, chloro, bromo, fluoro, methyl, or trifluoromethyl.

Preferably R^8 is C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkyl-O-CH_2-, C_1-C_4haloalkyl-O-CH_2-,C_3-C_6cycloalkyl, C_3-C_6cycloalkyl-CH_2-, C_1-C_4alkyl-S(O)-CH_2-, C_1-C_4alkyl-S(O_2)-CH_2-, more preferably C_1-C_4alkyl, C_1-C_4alkyl-O-CH_2-, C_1-C_4alkyl-S-CH_2-, C_1-C_4alkyl-SO-CH_2-, C_1-C_4alkyl-SO_2-CH_2-, C_3-C_4cycloalkyl, or C_3-C_4cycloalkyl-CH_2-, most preferably R^8 is methyl, ethyl, n-propyl, isopropyl, CH_3-O-CH_2-, CH_3-S-CH_2-, CH_3-S(O)-CH_2-, CH_3-SO_2-CH_2-, cyclobutyl, cyclopropyl or cyclopropyl-CH_2-.

Preferably R^9 is C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkyl-O-CH_2-, C_1-C_4haloalkyl-O-CH_2-,C_3-C_6cycloalkyl, C_3-C_6cycloalkyl-CH_2-, C_1-C_4alkyl-S(O)-CH_2-, C_1-C_4alkyl-S(O_2)-CH_2-, more preferably C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkyl-O-CH_2-, C_1-C_4haloalkyl-O-CH_2-,C_3-C_6cycloalkyl, C_3-C_6cycloalkyl-CH_2-, more preferably C_1-C_4alkyl, C_1-C_4haloalkyl or C_3-C_4cycloalkyl, more preferably methyl, ethyl, n-propyl, CF_3CH_2- or cyclopropyl, even more preferably ethyl, CF_3CH_2- or cyclopropyl.

Preferably each Z is independently halogen, cyano, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy, or C_1-C_4haloalkoxy, most preferably each Z is independently hydrogen, cyano, halogen, methyl, halomethyl, methoxy or halomethoxy, most preferably cyano or trifluoromethyl.

Each R^{12} is preferably independently bromo, chloro, fluoro, methoxy, or methylthio, most preferably chloro, fluoro, or methoxy.

Preferably k is 0 or 1.

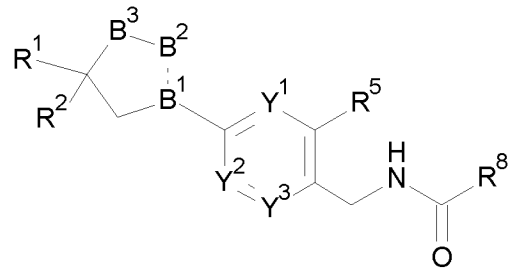
In one group of compounds $-B^1-B^2-B^3-$ is -C=N-O-.

In another group of compounds $-B^1-B^2-B^3-$ is $-C=N-CH_2-$.

In another group of compounds $-B^1-B^2-B^3-$ is $-N-CH_2-CH_2-$.

In another group of compounds Y^1 is $C-R^6$ and R^6 together with R^5 forms a -CH=CH-CH=CH- bridge.

In one embodiment the compound of formula I is a compound of formula IA



(IA)

wherein B^1, B^2, B^3, R^1, R^2, Y^1, Y^2, Y^3, R^5 and R^8 are as defined for a compound of formula I.In compounds of formula IA preferred definitions of B^1, B^2, B^3, R^1, R^2, Y^1, Y^2, Y^3, R^5 and R^8 are, in any combination, as set out below.

Preferably R^1 is trifluoromethyl, or chlorodifluoromethyl, most preferably trifluoromethyl.

Preferably X^1, X^3 and X^6 are independently hydrogen, halogen or trifluoromethyl, wherein at least two of X^1, X^3 and X^6 are not hydrogen. More preferably X^1, X^3 and X^6 are independently hydrogen, chloro, bromo or trifluoromethyl, wherein at least two of X^1, X^3 and X^6 are not hydrogen. Preferably at least two of X^1, X^3 and X^6 are chloro, bromo or trifluoromethyl.

In one group of compounds R^2 is 3,5-dichlorophenyl-, 3-chloro-4-fluorophenyl-, 3-fluoro-4-chlorophenyl-, 3,4-dichlorophenyl-, 3-chloro-4-bromophenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-dichloro-4-iodophenyl-, 3,4,5-trifluorophenyl-, 3-chloro-5-bromophenyl-, 3-chloro-5-fluorophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,4-dichloro-5-(trifluoromethyl)phenyl-, 3,5-bis(trifluoromethyl)phenyl-, 4-chloro-3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3-bromo-5-(trifluoromethyl)phenyl-, more preferably 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-, more preferably R^2 is 3,5-dichloro-phenyl or 3,4,5-trichloro-phenyl, most preferably 3,5-dichloro-phenyl.

Preferably Y^1 is CH, Y^2 is CH, Y^3 is CH, or Y^1 is N, Y^2 is CH, Y^3 is CH, or Y^1 is N, Y^2 is N, Y^3 is CH, or Y^1 is CH, Y^2 is N, Y^3 is CH, or Y^1 is CH, Y^2 is CH, Y^3 is N. Most preferably Y^1 is CH, Y^2 is CH, and Y^3 is CH.

Preferably R^5 is hydrogen, chloro, bromo, fluoro, trifluoromethyl, methyl, ethyl, methoxy, nitro, trifluoromethoxy, cyano, cyclopropyl, more preferably R^5 is hydrogen, chloro, bromo, fluoro, trifluoromethyl, methyl, ethyl, nitro, cyano, cyclopropyl, more preferably R^5 is hydrogen, cyano, chloro, bromo, fluoro, methyl, or trifluoromethyl, even more preferably hydrogen, chloro, bromo, methyl or trifluoromethyl, most preferably chloro, bromo, fluoro or methyl.

Preferably R^8 is C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkyl-O-CH_2-, C_1-C_4haloalkyl-O-CH_2-,C_3-C_6cycloalkyl, C_3-C_6cycloalkyl-CH_2-, C_1-C_4alkyl-S(O)-CH_2-, C_1-C_4alkyl-S(O_2)-CH_2-, more preferably C_1-C_4alkyl, C_1-C_4alkyl-O-CH_2-, C_1-C_4alkyl-S-CH_2-, C_1-C_4alkyl-SO-CH_2-, C_1-C_4alkyl-SO_2-CH_2-, C_3-C_4cycloalkyl, or C_3-C_4cycloalkyl-CH_2-, more preferably R^8 is methyl, ethyl, n-propyl, isopropyl, CH_3-O-CH_2-, CH_3-S-CH_2-, CH_3-S(O)-CH_2-, CH_3-SO_2-CH_2-, cyclobutyl, cyclopropyl or cyclopropyl-CH_2-, most preferably n-propyl or cyclopropyl.

In one group of compounds of formula IA -B^1-B^2-B^3- is -C=N-CH_2-.

In another group of compounds of formula IA -B^1-B^2-B^3- is -C=N-CH_2- and Y^1 is CH, Y^2 is CH, Y^3 is CH.

In another group of compounds of formula IA -B^1-B^2-B^3- is -C=N-CH_2-, Y^1 is CH, Y^2 is CH, Y^3 is CH and R^1 is CF_3.

In another group of compounds of formula IA -B^1-B^2-B^3- is -C=N-CH_2-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 and R^5 is chloro, bromo, fluoro or methyl.

In another group of compounds of formula IA -B^1-B^2-B^3- is -C=N-CH_2-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, and R^8 is methyl, ethyl, n-propyl, isopropyl, CH_3-O-CH_2-, CH_3-S-CH_2-, CH_3-S(O)-CH_2-, CH_3-SO_2-CH_2-, cyclobutyl, cyclopropyl or cyclopropyl-CH_2-, preferably n-propyl or cyclopropyl.

In another group of compounds of formula IA -B^1-B^2-B^3- is -C=N-CH_2-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, R^5 is chloro, bromo, fluoro or methyl and R^8 is methyl, ethyl, n-propyl, isopropyl, CH_3-O-CH_2-, CH_3-S-CH_2-, CH_3-S(O)-CH_2-, CH_3-SO_2-CH_2-, cyclobutyl, cyclopropyl or cyclopropyl-CH_2-, preferably n-propyl or cyclopropyl.

In another group of compounds of formula IA -B^1-B^2-B^3- is -C=N-CH_2- , Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, R^5 is chloro, bromo, fluoro or methyl and R^8 is methyl, ethyl, n-propyl, isopropyl, CH_3-O-CH_2-, CH_3-S-CH_2-, CH_3-S(O)-CH_2-, CH_3-SO_2-CH_2-, cyclobutyl, cyclopropyl or cyclopropyl-CH_2-, preferably n-propyl or cyclopropyl, and R^2 is 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-

In one group of compounds of formula IA -B^1-B^2-B^3- is -N-CH_2-CH_2-.

In another group of compounds of formula IA -B^1-B^2-B^3- is -N-CH_2-CH_2-, Y^1 is CH, Y^2 is CH, Y^3 is CH.

In another group of compounds of formula IA $-B^1-B^2-B^3-$ is $-N-CH_2-CH_2-$, Y^1 is CH, Y^2 is CH, Y^3 is CH and R^1 is CF_3.

In another group of compounds of formula IA $-B^1-B^2-B^3-$ is $-N-CH_2-CH_2-$, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 and R^5 is chloro, bromo, fluoro or methyl .

In another group of compounds of formula IA $-B^1-B^2-B^3-$ is $-N-CH_2-CH_2-$, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, and R^8 is methyl, ethyl, n-propyl, isopropyl, CH_3-O-CH_2-, CH_3-S-CH_2-, $CH_3-S(O)-CH_2-$, $CH_3-SO_2-CH_2-$, cyclobutyl, cyclopropyl or cyclopropyl-CH_2-, preferably n-propyl or cyclopropyl.

In another group of compounds of formula IA $-B^1-B^2-B^3-$ is $-N-CH_2-CH_2-$, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, R^5 is chloro, bromo, fluoro or methyl and R^8 is methyl, ethyl, n-propyl, isopropyl, CH_3-O-CH_2-, CH_3-S-CH_2-, $CH_3-S(O)-CH_2-$, $CH_3-SO_2-CH_2-$, cyclobutyl, cyclopropyl or cyclopropyl-CH_2-, preferably n-propyl or cyclopropyl.

In another group of compounds of formula IA $-B^1-B^2-B^3-$ is $-N-CH_2-CH_2-$, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, R^5 is chloro, bromo, fluoro or methyl, R^8 is methyl, ethyl, n-propyl, isopropyl, CH_3-O-CH_2-, CH_3-S-CH_2-, $CH_3-S(O)-CH_2-$, $CH_3-SO_2-CH_2-$, cyclobutyl, cyclopropyl or cyclopropyl-CH_2-, preferably n-propyl or cyclopropyl, and R^2 is 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-.

In another group of compounds of formula IA R^5 is chloro, bromo, fluoro or methyl and R^8 methyl, ethyl, n-propyl, isopropyl, CH_3-O-CH_2-, CH_3-S-CH_2-, $CH_3-S(O)-CH_2-$, $CH_3-SO_2-CH_2-$, cyclobutyl, cyclopropyl or cyclopropyl-CH_2-, preferably n-propyl or cyclopropyl.

In another group of compounds of formula IA R^5 is chloro, bromo, fluoro or methyl; R^8 methyl, ethyl, n-propyl, isopropyl, CH_3-O-CH_2-, CH_3-S-CH_2-, $CH_3-S(O)-CH_2-$, $CH_3-SO_2-CH_2-$, cyclobutyl, cyclopropyl or cyclopropyl-CH_2-, preferably n-propyl or cyclopropyl, R^1 is CF_3, $-B^1-B^2-B^3$ is $-C=N-O-$ or $-C=N-CH_2-$, Y^1, Y^2 and Y^3 are CH, and R^5 is chloro or methyl.

In a further preferred embodiment of compounds of formula IA $-B^1-B^2-B^3-$ is $-C=N-O-$, R^1 is trifluoromethyl, Y^1, Y^2 and Y^3 are CH, R^5 is chloro, and R^8 is n-propyl.

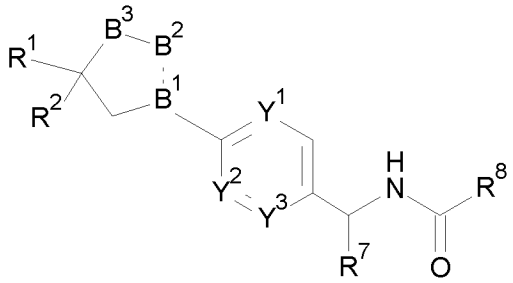
In a further preferred embodiment of compounds of formula IA $-B^1-B^2-B^3-$ is $-C=N-O-$, R^1 is trifluoromethyl, Y^1, Y^2 and Y^3 are CH, R^5 is chloro, and R^8 is n-propyl.

In a further preferred embodiment of compounds of formula IA $-B^1-B^2-B^3-$ is $-C=N-O-$, R^1 is trifluoromethyl, R^2 is 3-bromo-5-trifluoromethylphenyl, Y^1, Y^2 and Y^3 are CH and R^8 is n-propyl.

In a further preferred embodiment of compounds of formula IA $-B^1-B^2-B^3-$ is $-C=N-O-$, R^1 is trifluoromethyl, R^2 is 3-bromo-5-trifluoromethylphenyl, Y^1, Y^2 and Y^3 are CH and R^5 is chloro.

In a further preferred embodiment of compounds of formula IA $-B^1-B^2-B^3-$ is $-C=N-O-$, R^1 is trifluoromethyl, R^2 is 3-bromo-5-trifluoromethylphenyl, Y^1, Y^2 and Y^3 are CH, R^5 is chloro, and R^8 is n-propyl.

In one embodiment the compound of formula I is a compound of formula IB



(IB)

wherein B^1, B^2, B^3, R^1, R^2, Y^1, Y^2, Y^3, R^7 and R^8 are as defined for a compound of formula I.In compounds of formula IB preferred definitions of B^1, B^2, B^3, R^1, R^2, Y^1, Y^2, Y^3, R^7 and R^8 are, in any combination, as set out below.

Preferably R^1 is trifluoromethyl, or chlorodifluoromethyl, most preferably trifluoromethyl.

Preferably X^1, X^3 and X^6 are independently hydrogen, halogen or trifluoromethyl, wherein at least two of X^1, X^3 and X^6 are not hydrogen. More preferably X^1, X^3 and X^6 are independently hydrogen, chloro, bromo or trifluoromethyl, wherein at least two of X^1, X^3 and X^6 are not hydrogen. Preferably at least two of X^1, X^3 and X^6 are chloro, bromo or trifluoromethyl.

In one group of compounds R^2 is 3,5-dichlorophenyl-, 3-chloro-4-fluorophenyl-, 3-fluoro-4-chlorophenyl-, 3,4-dichlorophenyl-, 3-chloro-4-bromophenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-dichloro-4-iodophenyl-, 3,4,5-trifluorophenyl-, 3-chloro-5-bromophenyl-, 3-chloro-5-fluorophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,4-dichloro-5-(trifluoromethyl)phenyl-, 3,5-bis(trifluoromethyl)phenyl-, 4-chloro-3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3-bromo-5-(trifluoromethyl)phenyl-, more preferably 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-, more preferably R^2 is 3,5-dichloro-phenyl or 3,4,5-trichloro-phenyl, most preferably 3,5-dichloro-phenyl.

Preferably Y^1 is CH, Y^2 is CH, Y^3 is CH, or Y^1 is N, Y^2 is CH, Y^3 is CH, or Y^1 is N, Y^2 is N, Y^3 is CH, or Y^1 is CH, Y^2 is N, Y^3 is CH, or Y^1 is CH, Y^2 is CH, Y^3 is N. Most preferably Y^1 is CH, Y^2 is CH, and Y^3 is CH.

Preferably R^7 is methyl.

Preferably R^8 is C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkyl-O-CH_2-, C_1-C_4haloalkyl-O-CH_2-,C_3-C_6cycloalkyl, C_3-C_6cycloalkyl-CH_2-, C_1-C_4alkyl-S(O)-CH_2-, C_1-C_4alkyl-S(O_2)-CH_2-, more preferably C_1-C_4alkyl, C_1-C_4alkyl-O-CH_2-, C_1-C_4alkyl-S-CH_2-, C_1-C_4alkyl-SO-CH_2-, C_1-C_4alkyl-SO_2-CH_2-, C_3-C_4cycloalkyl, or C_3-C_4cycloalkyl-CH_2-, more preferably R^8 is methyl, ethyl, n-propyl, isopropyl, CH_3-O-CH_2-, CH_3-S-CH_2-, CH_3-S(O)-CH_2-, CH_3-SO_2-CH_2-, cyclobutyl, cyclopropyl or cyclopropyl-CH_2-, most preferably n-propyl or cyclopropyl.

In one group of compounds of formula IB -B^1-B^2-B^3- is -C=N-O-.

In another group of compounds of formula IB $-B^1-B^2-B^3-$ is -C=N-O- and Y^1 is CH, Y^2 is CH, Y^3 is CH.

In another group of compounds of formula IB $-B^1-B^2-B^3-$ is -C=N-O- , Y^1 is CH, Y^2 is CH, Y^3 is CH and R^1 is CF_3.

In another group of compounds of formula IB $-B^1-B^2-B^3-$ is -C=N-O- , Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 and R^7 is methyl.

In another group of compounds of formula IB $-B^1-B^2-B^3-$ is -C=N-O- , Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, and R^8 is methyl, ethyl, n-propyl, isopropyl, CH_3-O-CH_2-, CH_3-S-CH_2-, CH_3-S(O)-CH_2-, CH_3-SO_2-CH_2-, cyclobutyl, cyclopropyl or cyclopropyl-CH_2-, preferably n-propyl or cyclopropyl.

In another group of compounds of $-B^1-B^2-B^3-$ is -C=N-O- , Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, R^7 is methyl and R^8 is methyl, ethyl, n-propyl, isopropyl, CH_3-O-CH_2-, CH_3-S-CH_2-, CH_3-S(O)-CH_2-, CH_3-SO_2-CH_2-, cyclobutyl, cyclopropyl or cyclopropyl-CH_2-, preferably n-propyl or cyclopropyl.

In another group of compounds of formula IB $-B^1-B^2-B^3-$ is -C=N-O- , Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, R^7 is methyl, R^8 is methyl, ethyl, n-propyl, isopropyl, CH_3-O-CH_2-, CH_3-S-CH_2-, CH_3-S(O)-CH_2-, CH_3-SO_2-CH_2-, cyclobutyl, cyclopropyl or cyclopropyl-CH_2-, preferably n-propyl or cyclopropyl, and R^2 is 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-.

In one group of compounds of formula IB $-B^1-B^2-B^3-$ is -N-CH_2-CH_2-.

In another group of compounds of formula IB $-B^1-B^2-B^3-$ is -N-CH_2-CH_2- and Y^1 is CH, Y^2 is CH, Y^3 is CH.

In another group of compounds of formula IB $-B^1-B^2-B^3-$ is -N-CH_2-CH_2- , Y^1 is CH, Y^2 is CH, Y^3 is CH and R^1 is CF_3.

In another group of compounds of formula IB $-B^1-B^2-B^3-$ is -N-CH_2-CH_2- , Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 and R^7 is methyl.

In another group of compounds of formula IB $-B^1-B^2-B^3-$ is -N-CH_2-CH_2- , Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, and R^8 is methyl, ethyl, n-propyl, isopropyl, CH_3-O-CH_2-, CH_3-S-CH_2-, CH_3-S(O)-CH_2-, CH_3-SO_2-CH_2-, cyclobutyl, cyclopropyl or cyclopropyl-CH_2-, preferably n-propyl or cyclopropyl.

In another group of compounds of formula IB $-B^1-B^2-B^3-$ is -N-CH_2-CH_2- , Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, R^7 is methyl and R^8 is methyl, ethyl, n-propyl, isopropyl, CH_3-O-CH_2-, CH_3-S-CH_2-, CH_3-S(O)-CH_2-, CH_3-SO_2-CH_2-, cyclobutyl, cyclopropyl or cyclopropyl-CH_2-, preferably n-propyl or cyclopropyl.

In another group of compounds of formula IB $-B^1-B^2-B^3-$ is -N-CH_2-CH_2- , Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, R^7 is methyl, R^8 is methyl, ethyl, n-propyl, isopropyl, CH_3-O-CH_2-, CH_3-S-CH_2-, CH_3-S(O)-CH_2-, CH_3-SO_2-CH_2-, cyclobutyl, cyclopropyl or cyclopropyl-CH_2-, preferably n-propyl or cyclopropyl, and R^2 is 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-

fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-.

In another group of compounds of formula IB R^7 is methyl, and R^8 is methyl, ethyl, n-propyl, isopropyl, CH_3-O-CH_2-, CH_3-S-CH_2-, CH_3-S(O)-CH_2-, CH_3-SO_2-CH_2-, cyclobutyl, cyclopropyl or cyclopropyl-CH_2-, preferably n-propyl or cyclopropyl.

In another group of compounds of formula IB R^7 is methyl, R^8 is methyl, ethyl, n-propyl, isopropyl, CH_3-O-CH_2-, CH_3-S-CH_2-, CH_3-S(O)-CH_2-, CH_3-SO_2-CH_2-, cyclobutyl, cyclopropyl or cyclopropyl-CH_2-, preferably n-propyl or cyclopropyl,R^1 is CF_3, -B^1-B^2-B^3- is -C=N-O-, -C=N-CH_2- or -N-CH_2-CH_2-, and Y^1, Y^2 and Y^3 are CH.

In a further preferred embodiment of compounds of formula IB -B^1-B^2-B^3- is -C=N-O-, R^1 is trifluoromethyl, Y^1, Y^2 and Y^3 are CH; R^5 is chloro, R^7 is methyl and R^8 is n-propyl.

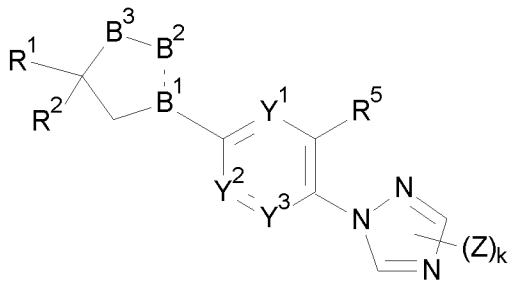
In a further preferred embodiment of compounds of formula IB -B^1-B^2-B^3- is -C=N-O-, R^1 is trifluoromethyl, Y^1, Y^2 and Y^3 are CH; R^5 is chloro, R^7 is methyl and R^8 is n-propyl.

In a further preferred embodiment of compounds of formula IB -B^1-B^2-B^3- is -C=N-O-, R^1 is trifluoromethyl, R^2 is 3-bromo-5-trifluoromethylphenyl, Y^1, Y^2 and Y^3 are CH, R^7 is methyl and R^8 is n-propyl.

In a further preferred embodiment of compounds of formula IB -B^1-B^2-B^3- is -C=N-O-, R^1 is trifluoromethyl, R^2 is 3-bromo-5-trifluoromethylphenyl, Y^1, Y^2 and Y^3 are CH, R^5 is chloro and R^7 is methyl.

In a further preferred embodiment of compounds of formula IB -B^1-B^2-B^3- is -C=N-O-, R^1 is trifluoromethyl, R^2 is 3-bromo-5-trifluoromethylphenyl, Y^1, Y^2 and Y^3 are CH, R^5 is chloro, R^7 is methyl and R^8 is n-propyl.

In one embodiment the compound of formula I is a compound of formula IC



(IC)

wherein B^1, B^2, B^3, R^1, R^2, Y^1, Y^2, Y^3, R^5 Z and k are as defined for a compound of formula I.

In compounds of formula IC preferred definitions of B^1, B^2, B^3, R^1, R^2, Y^1, Y^2, Y^3, R^5, Z and k are, in any combination, as set out below.

Preferably R^1 is trifluoromethyl, or chlorodifluoromethyl, most preferably trifluoromethyl.

Preferably X^1, X^3 and X^6 are independently hydrogen, halogen or trifluoromethyl, wherein at least two of X^1, X^3 and X^6 are not hydrogen. More preferably X^1, X^3 and X^6 are independently hydrogen,

chloro, bromo or trifluoromethyl, wherein at least two of X^1, X^3 and X^6 are not hydrogen. Preferably at least two of X^1, X^3 and X^6 are chloro, bromo or trifluoromethyl.

In one group of compounds R^2 is 3,5-dichlorophenyl-, 3-chloro-4-fluorophenyl-, 3-fluoro-4-chlorophenyl-, 3,4-dichlorophenyl-, 3-chloro-4-bromophenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-dichloro-4-iodophenyl-, 3,4,5-trifluorophenyl-, 3-chloro-5-bromophenyl-, 3-chloro-5-fluorophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,4-dichloro-5-(trifluoromethyl)phenyl-, 3,5-bis(trifluoromethyl)phenyl-, 4-chloro-3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3-bromo-5-(trifluoromethyl)phenyl-, more preferably 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-, more preferably R^2 is 3,5-dichloro-phenyl or 3,4,5-trichloro-phenyl, most preferably 3,5-dichloro-phenyl.

Preferably Y^1 is CH, Y^2 is CH, Y^3 is CH, or Y^1 is N, Y^2 is CH, Y^3 is CH, or Y^1 is N, Y^2 is N, Y^3 is CH, or Y^1 is CH, Y^2 is N, Y^3 is CH, or Y^1 is CH, Y^2 is CH, Y^3 is N. Most preferably Y^1 is CH, Y^2 is CH, and Y^3 is CH.

Preferably R^5 is chloro, bromo, fluoro, trifluoromethyl, methyl, ethyl, methoxy, nitro, trifluoromethoxy, cyano, cyclopropyl, more preferably R^5 is chloro, bromo, fluoro, trifluoromethyl, methyl, ethyl, nitro, cyano, cyclopropyl, even more preferably R^5 is cyano, chloro, bromo, fluoro, methyl, or trifluoromethyl, most preferably cyano.

Preferably each Z is independently halogen, cyano, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy, or C_1-C_4haloalkoxy, more preferably each Z is independently hydrogen, cyano, halogen, methyl, halomethyl, methoxy or halomethoxy, most preferably cyano or trifluoromethyl.

Preferably k is 0 or 1.

In one group of compounds of formula IC $-B^1$-B^2-B^3- is -C=N-O-.

In another group of compounds of formula IC $-B^1$-B^2-B^3- is -C=N-O-and Y^1 is CH, Y^2 is CH, Y^3 is CH.

In another group of compounds of formula IC $-B^1$-B^2-B^3- is -C=N-O-, Y^1 is CH, Y^2 is CH, Y^3 is CH and R^1 is CF_3.

In another group of compounds of formula IC $-B^1$-B^2-B^3- is -C=N-O-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 and R^5 is cyano.

In another group of compounds of formula IC $-B^1$-B^2-B^3- is -C=N-O-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, and k is 0 or k is 1 and Z is cyano or trifluoromethyl.

In another group of compounds of formula IC $-B^1$-B^2-B^3- is -C=N-O-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, R^5 is cyano and k is 0 or k is 1 and Z is cyano or trifluoromethyl.

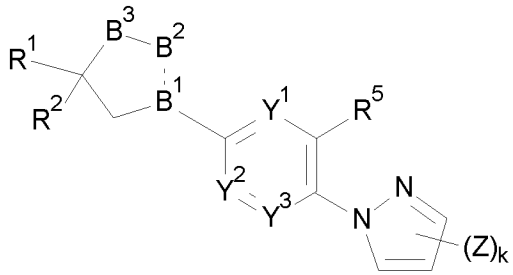
In another group of compounds of formula IC $-B^1$-B^2-B^3- is -C=N-O-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, R^5 is cyano and k is 0 or k is 1 and Z is cyano or trifluoromethyl and R^2 is 3-chloro-5-

bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-.

In another group of compounds of formula IC R^5 is cyano, k is 0 or 1 and Z is cyano or trifluoromethyl.

In another group of compounds of formula IC R^5 is cyano, R^1 is CF_3, $-B^1-B^2-B^3-$ is -C=N-O- , Y^1, Y^2 and Y^3 are CH, and k is 0.

In one embodiment the compound of formula I is a compound of formula ID



(ID)

wherein B^1, B^2, B^3, R^1, R^2, Y^1, Y^2, Y^3, R^5 Z and k are as defined for a compound of formula I

In compounds of formula ID preferred definitions of B^1, B^2, B^3, R^1, R^2, Y^1, Y^2, Y^3, R^5 Z and k are, in any combination, as set out below.

Preferably R^1 is trifluoromethyl, or chlorodifluoromethyl, most preferably trifluoromethyl.

Preferably X^1, X^3 and X^6 are independently hydrogen, halogen or trifluoromethyl, wherein at least two of X^1, X^3 and X^6 are not hydrogen. More preferably X^1, X^3 and X^6 are independently hydrogen, chloro, bromo or trifluoromethyl, wherein at least two of X^1, X^3 and X^6 are not hydrogen. Preferably at least two of X^1, X^3 and X^6 are chloro, bromo or trifluoromethyl.

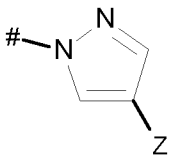
In one group of compounds R^2 is 3,5-dichlorophenyl-, 3-chloro-4-fluorophenyl-, 3-fluoro-4-chlorophenyl-, 3,4-dichlorophenyl-, 3-chloro-4-bromophenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-dichloro-4-iodophenyl-, 3,4,5-trifluorophenyl-, 3-chloro-5-bromophenyl-, 3-chloro-5-fluorophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,4-dichloro-5-(trifluoromethyl)phenyl-, 3,5-bis(trifluoromethyl)phenyl-, 4-chloro-3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3-bromo-5-(trifluoromethyl)phenyl-, more preferably 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-, more preferably R^2 is 3,5-dichloro-phenyl or 3,4,5-trichloro-phenyl, most preferably 3,5-dichloro-phenyl.

Preferably Y^1 is CH, Y^2 is CH, Y^3 is CH, or Y^1 is N, Y^2 is CH, Y^3 is CH, or Y^1 is N, Y^2 is N, Y^3 is CH, or Y^1 is CH, Y^2 is N, Y^3 is CH, or Y^1 is CH, Y^2 is CH, Y^3 is N. Most preferably Y^1 is CH, Y^2 is CH, and Y^3 is CH.

Preferably R^5 is chloro, bromo, fluoro, trifluoromethyl, methyl, ethyl, methoxy, nitro, trifluoromethoxy, cyano, cyclopropyl, more preferably R^5 is chloro, bromo, fluoro, trifluoromethyl, methyl, ethyl, nitro, cyano, cyclopropyl, even more preferably R^5 is cyano, chloro, bromo, fluoro, methyl, or trifluoromethyl, most preferably cyano.

Preferably each Z is independently halogen, cyano, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy, or C_1-C_4haloalkoxy, more preferably each Z is independently hydrogen, cyano, halogen, methyl, halomethyl, methoxy or halomethoxy, most preferably cyano or trifluoromethyl.

Preferably k is 0 or 1, more preferably 1. When k is 1 preferably Z is attached to the 4 position of the imidazole moiety as indicated below:



In one group of compounds of formula ID $-B^1-B^2-B^3-$ is -C=N-O-.

In another group of compounds of formula ID $-B^1-B^2-B^3-$ is -C=N-O-and Y^1 is CH, Y^2 is CH, Y^3 is CH.

In another group of compounds of formula ID $-B^1-B^2-B^3-$ is -C=N-O-, Y^1 is CH, Y^2 is CH, Y^3 is CH and R^1 is CF_3.

In another group of compounds of formula ID $-B^1-B^2-B^3-$ is -C=N-O-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 and R^5 is cyano.

In another group of compounds of formula ID $-B^1-B^2-B^3-$ is -C=N-O-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, and k is 0 or k is 1 and Z is cyano or trifluoromethyl.

In another group of compounds of formula ID $-B^1-B^2-B^3-$ is -C=N-O-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, R^5 is cyano and k is 0 or k is 1 and Z is cyano or trifluoromethyl.

In another group of compounds of formula ID $-B^1-B^2-B^3-$ is -C=N-O-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, R^5 is cyano and k is 0 or k is 1, preferably 1, and Z is cyano or trifluoromethyl, and when k is 1, Z is attached to the 4 position of the imidazole moiety.

In another group of compounds of formula ID $-B^1-B^2-B^3-$ is -C=N-O-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, R^5 is cyano and k is 0 or k is 1 and Z is cyano or trifluoromethyl and R^2 is 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-.

In another group of compounds of formula ID $-B^1-B^2-B^3-$ is -C=N-O-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, R^5 is cyano and k is 0 or 1 or k is 1, preferably 1, and Z is cyano or trifluoromethyl and R^2 is 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-,

2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-, and when k is 1, Z is attached to the 4 position of the imidazole moiety.

In one group of compounds of formula ID $-B^1-B^2-B^3-$ is $-C=N-CH_2-$.

In another group of compounds of formula ID $-B^1-B^2-B^3-$ is $-C=N-CH_2-$ and Y^1 is CH, Y^2 is CH, Y^3 is CH.

In another group of compounds of formula ID $-B^1-B^2-B^3-$ is $-C=N-CH_2-$, Y^1 is CH, Y^2 is CH, Y^3 is CH and R^1 is CF_3.

In another group of compounds of formula ID $-B^1-B^2-B^3-$ is $-C=N-CH_2-$, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 and R^5 is cyano.

In another group of compounds of formula ID $-B^1-B^2-B^3-$ is $-C=N-CH_2-$, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, and k is 0 or k is 1 and Z is cyano or trifluoromethyl.

In another group of compounds of formula ID $-B^1-B^2-B^3-$ is $-C=N-CH_2-$, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, R^5 is cyano and k is 0 or k is 1 and Z is cyano or trifluoromethyl.

In another group of compounds of formula ID $-B^1-B^2-B^3-$ is $-C=N-CH_2-$, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, R^5 is cyano and k is 0 or k is 1, preferably 1, and Z is cyano or trifluoromethyl, and when k is 1, Z is attached to the 4 position of the imidazole moiety.

In another group of compounds of formula ID $-B^1-B^2-B^3-$ is $-C=N-CH_2-$, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, R^5 is cyano and k is 0 or k is 1 and Z is cyano or trifluoromethyl and R^2 is 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-.

In another group of compounds of formula ID $-B^1-B^2-B^3-$ is $-C=N-CH_2-$, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, R^5 is cyano and k is 0 or k is 1, preferably 1, and Z is cyano or trifluoromethyl and R^2 is 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-, and when k is 1, Z is attached to the 4 position of the imidazole moiety.

In one group of compounds of formula ID $-B^1-B^2-B^3-$ is $-N-CH_2-CH_2-$.

In another group of compounds of formula ID $-B^1-B^2-B^3-$ is $-N-CH_2-CH_2-$ and Y^1 is CH, Y^2 is CH, Y^3 is CH.

In another group of compounds of formula ID $-B^1-B^2-B^3-$ is $-N-CH_2-CH_2-$, Y^1 is CH, Y^2 is CH, Y^3 is CH and R^1 is CF_3.

In another group of compounds of formula ID $-B^1-B^2-B^3-$ is $-N-CH_2-CH_2-$, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 and R^5 is cyano.

In another group of compounds of formula ID $-B^1-B^2-B^3-$ is $-N-CH_2-CH_2-$, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, and k is 0 or k is 1 and Z is cyano or trifluoromethyl.

In another group of compounds of formula ID $-B^1-B^2-B^3-$ is $-N-CH_2-CH_2-$, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, R^5 is cyano and k is 0 or k is 1 and Z is cyano or trifluoromethyl.

In another group of compounds of formula ID $-B^1-B^2-B^3-$ is $-N-CH_2-CH_2-$, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, R^5 is cyano and k is 0 or k is 1, preferably 1, and Z is cyano or trifluoromethyl, and when k is 1, Z is attached to the 4 position of the imidazole moiety.

In another group of compounds of formula ID $-B^1-B^2-B^3-$ is $-N-CH_2-CH_2-$, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, R^5 is cyano and k is 0 or k is 1 and Z is cyano or trifluoromethyl and R^2 is 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-.

In another group of compounds of formula ID $-B^1-B^2-B^3-$ is $-N-CH_2-CH_2-$, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, R^5 is cyano and k is 0 or k is 1, preferably 1, and Z is cyano or trifluoromethyl and R^2 is 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-, and when k is 1, Z is attached to the 4 position of the imidazole moiety.

In another group of compounds of formula D R^5 is cyano, k is 0 or 1 and Z is cyano or trifluoromethyl.

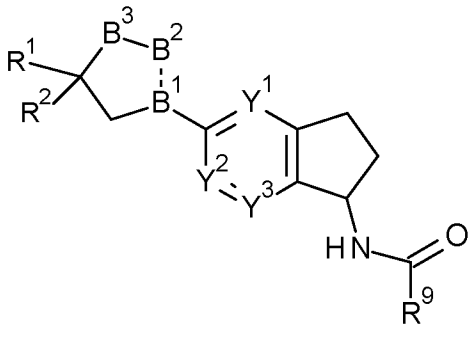
In another group of compounds of formula ID R^5 is cyano, k is 0 or 1, preferably 1, and Z is cyano or trifluoromethyl, and when k is 1, Z is attached to the 4 position of the imidazole moiety.

In another group of compounds of formula ID R^5 is cyano, k is 0 or 1 and Z is cyano or trifluoromethyl, R^1 is CF_3, $-B^1-B^2-B^3-$ is $-C=N-O-$ or $-C=N-CH_2-$, Y^1, Y^2 and Y^3 are CH.

In another group of compounds of formula ID R^5 is cyano, k is 0 or 1, preferably 1, and Z is cyano or trifluoromethyl, R^1 is CF_3, $-B^1-B^2-B^3-$ is $-C=N-O-$ or $-C=N-CH_2-$, Y^1, Y^2 and Y^3 are CH, and when k is 1, Z is attached to the 4 position of the imidazole moiety.

Groups of compounds of formula ID in which $-B^1-B^2-B^3-$ is $-C=N-O-$ are preferred.

In one embodiment the compound of formula I is a compound of formula IE



(IE)

wherein B^1, B^2, B^3, R^1, R^2, R^9, Y^1, Y^2, and Y^3 are as defined for a compound of formula I

In compounds of formula IE preferred definitions of B^1, B^2, B^3, R^1, R^2, R^9, Y^1, Y^2, Y^3, are, in any combination, as set out below.

Preferably R^1 is trifluoromethyl, or chlorodifluoromethyl, most preferably trifluoromethyl.

Preferably X^1, X^3 and X^6 are independently hydrogen, halogen or trifluoromethyl, wherein at least two of X^1, X^3 and X^6 are not hydrogen. More preferably X^1, X^3 and X^6 are independently hydrogen, chloro, bromo or trifluoromethyl, wherein at least two of X^1, X^3 and X^6 are not hydrogen. Preferably at least two of X^1, X^3 and X^6 are chloro, bromo or trifluoromethyl.

In one group of compounds R^2 is 3,5-dichlorophenyl-, 3-chloro-4-fluorophenyl-, 3-fluoro-4-chlorophenyl-, 3,4-dichlorophenyl-, 3-chloro-4-bromophenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-dichloro-4-iodophenyl-, 3,4,5-trifluorophenyl-, 3-chloro-5-bromophenyl-, 3-chloro-5-fluorophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,4-dichloro-5-(trifluoromethyl)phenyl-, 3,5-bis(trifluoromethyl)phenyl-, 4-chloro-3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3-bromo-5-(trifluoromethyl)phenyl-, more preferably 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-, more preferably R^2 is 3,5-dichloro-phenyl or 3,4,5-trichloro-phenyl, most preferably 3,5-dichloro-phenyl.

Preferably Y^1 is CH, Y^2 is CH, Y^3 is CH, or Y^1 is N, Y^2 is CH, Y^3 is CH, or Y^1 is N, Y^2 is N, Y^3 is CH, or Y^1 is CH, Y^2 is N, Y^3 is CH, or Y^1 is CH, Y^2 is CH, Y^3 is N. Most preferably Y^1 is CH, Y^2 is CH, and Y^3 is CH.

Preferably R^9 is C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkyl-O-CH_2-, C_1-C_4haloalkyl-O-CH_2-,C_3-C_6cycloalkyl, C_3-C_6cycloalkyl-CH_2-, C_1-C_4alkyl-S(O)-CH_2-, C_1-C_4alkyl-S(O_2)-CH_2-, more preferably C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkyl-O-CH_2-, C_1-C_4haloalkyl-O-CH_2-,C_3-C_6cycloalkyl, C_3-C_6cycloalkyl-CH_2-, more preferably C_1-C_4alkyl, C_1-C_4haloalkyl or C_3-C_4cycloalkyl, more preferably methyl, ethyl,propyl, CF_3CH_2- or cyclopropyl, even more preferably ethyl, CF_3CH_2- or cyclopropyl.

In one group of compounds R^9 is ethyl, or CF_3CH_2-.

Preferably Y^1 is CH, Y^2 is CH, Y^3 is CH, or Y^1 is N, Y^2 is CH, Y^3 is CH, or Y^1 is N, Y^2 is N, Y^3 is CH, or Y^1 is CH, Y^2 is N, Y^3 is CH, or Y^1 is CH, Y^2 is CH, Y^3 is N. Preferably Y^1 is CH, Y^2 is CH, and Y^3 is CH.

In one group of compounds of formula IE $-B^1-B^2-B^3-$ is -C=N-O-.

In another group of compounds of formula IE $-B^1-B^2-B^3-$ is -C=N-O- and Y^1 is CH, Y^2 is CH, Y^3 is CH.

In another group of compounds of formula IE $-B^1-B^2-B^3-$ is -C=N-O-, Y^1 is CH, Y^2 is CH, Y^3 is CH and R^1 is CF_3.

In another group of compounds of formula IE $-B^1-B^2-B^3-$ is -C=N-O-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 and R^9 is C_1-C_4alkyl.

In another group of compounds of formula IE $-B^1-B^2-B^3-$ is -C=N-O-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, and R^9 is C_1-C_4haloalkyl.

In another group of compounds of formula IE $-B^1-B^2-B^3-$ is -C=N-O-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, R^9 is C_3-C_4cycloalkyl.

In another group of compounds of formula IE $-B^1-B^2-B^3-$ is -C=N-O-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, R^9 is C_1-C_4alkyl, C_1-C_4haloalkyl or C_3-C_4cycloalkyl and R^2 is 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-.

In one group of compounds of formula IE $-B^1-B^2-B^3-$ is -C=N-CH_2-.

In another group of compounds of formula IE $-B^1-B^2-B^3-$ is -C=N-CH_2- and Y^1 is CH, Y^2 is CH, Y^3 is CH.

In another group of compounds of formula IE $-B^1-B^2-B^3-$ is -C=N-CH_2-, Y^1 is CH, Y^2 is CH, Y^3 is CH and R^1 is CF_3.

In another group of compounds of formula IE $-B^1-B^2-B^3-$ is -C=N-CH_2-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 and R^9 is C_1-C_4alkyl.

In another group of compounds of formula IE $-B^1-B^2-B^3-$ is -C=N-CH_2-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, and R^9 is C_1-C_4haloalkyl.

In another group of compounds of formula IE $-B^1-B^2-B^3-$ is -C=N-CH_2-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, R^9 is C_3-C_4cycloalkyl.

In another group of compounds of formula IE $-B^1-B^2-B^3-$ is -C=N-CH_2-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, R^9 is C_1-C_4alkyl, C_1-C_4haloalkyl or C_3-C_4cycloalkyl and R^2 is 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-.

In one group of compounds of formula IE -B^1-B^2-B^3- is -N-CH_2-CH_2-.

In another group of compounds of formula IE -B^1-B^2-B^3- is -N-CH_2-CH_2- and Y^1 is CH, Y^2 is CH, Y^3 is CH.

In another group of compounds of formula IE -B^1-B^2-B^3- is --N-CH_2-CH_2-, Y^1 is CH, Y^2 is CH, Y^3 is CH and R^1 is CF_3.

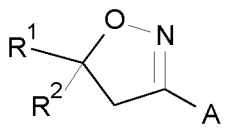
In another group of compounds of formula IE -B^1-B^2-B^3- is -N-CH_2-CH_2-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 and R^9 is C_1-C_4alkyl.

In another group of compounds of formula IE -B^1-B^2-B^3- is -N-CH_2-CH_2-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, and R^9 is C_1-C_4haloalkyl.

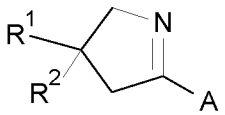
In another group of compounds of formula IE -B^1-B^2-B^3- is -N-CH_2-CH_2-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, R^9 is C_3-C_4cycloalkyl.

In another group of compounds of formula IE -B^1-B^2-B^3- is -N-CH_2-CH_2-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3, R^9 is C_1-C_4alkyl, C_1-C_4haloalkyl or C_3-C_4cycloalkyl and R^2 is 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-.

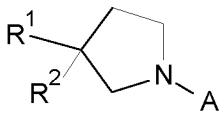
The following compounds of formula I-1, I-2 and I-3 illustrate the compounds of formula I when -B^1-B^2-B^3- is -C=N-O-, -C=N-CH_2- , or -N-CH_2-CH_2- respectively.



(I-1)

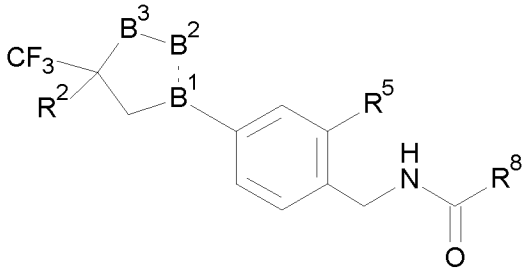


(I-2)



(I-3)

Tables 1 to 28 below illustrate compounds of the invention.



(Ia)

Table 1

Table 1 provides 304 compounds of formula Ia wherein R5 is hydrogen, B1-B2-B3 is C=N-O, and R2 and R8 are as defined in Table P.

Table 2

Table 2 provides 304 compounds of formula Ia wherein R5 is methyl, B1-B2-B3 is C=N-O, and R2 and R8 are as defined in Table P.

Table 3

Table 3 provides 304 compounds of formula Ia wherein R5 is trifluoromethyl, B1-B2-B3 is C=N-O, and R2 and R8 are as defined in Table P.

Table 4
Table 4 provides 304 compounds of formula Ia wherein R5 is chloro, B1-B2-B3 is C=N-O, and R2 and R8 are as defined in Table P.

Table 5
Table 5 provides 304 compounds of formula Ia wherein R5 is bromo, B1-B2-B3 is C=N-O, and R2 and R8 are as defined in Table P.

Table 6
Table 6 provides 304 compounds of formula Ia wherein R5 is hydrogen, B1-B2-B3 is C=N-CH2, and R2 and R8 are as defined in Table P.

Table 7
Table 7 provides 304 compounds of formula Ia wherein R5 is methyl, B1-B2-B3 is C=N-CH2, and R2 and R8 are as defined in Table P.

Table 8
Table 8 provides 304 compounds of formula Ia wherein R5 is trifluoromethyl, B1-B2-B3 is C=N-CH2, and R2 and R8 are as defined in Table P.

Table 9
Table 9 provides 304 compounds of formula Ia wherein R5 is chloro, B1-B2-B3 is C=N-CH2, and R2 and R8 are as defined in Table P.

Table 10
Table 10 provides 304 compounds of formula Ia wherein R5 is bromo, B1-B2-B3 is C=N-CH2, and R2 and R8 are as defined in Table P.

Table 11
Table 11 provides 304 compounds of formula Ia wherein R5 is hydrogen, B1-B2-B3 is N-CH2-CH2, and R2 and R8 are as defined in Table P.

Table 12
Table 12 provides 304 compounds of formula Ia wherein R5 is methyl, B1-B2-B3 is N-CH2-CH2, and R2 and R8 are as defined in Table P.

Table 13
Table 13 provides 304 compounds of formula Ia wherein R5 is trifluoromethyl, B1-B2-B3 is N-CH2-CH2, and R2 and R8 are as defined in Table P.

Table 14
Table 14 provides 304 compounds of formula Ia wherein R5 is chloro, B1-B2-B3 is N-CH2-CH2, and R2 and R8 are as defined in Table P.

Table 15
Table 15 provides 304 compounds of formula Ia wherein R5 is bromo, B1-B2-B3 is N-CH2-CH2, and R2 and R8 are as defined in Table P.

Table P

	R2	R8
1	3,5-dichlorophenyl	methyl
2	3-chloro-4-fluorophenyl	methyl
3	3-fluoro-4-chlorophenyl	methyl
4	3,4-dichlorophenyl	methyl
5	3-chloro-4-bromophenyl	methyl
6	3,5-dichloro-4-fluorophenyl	methyl
7	3,4,5-trichlorophenyl	methyl
8	3,5-dichloro-4-iodophenyl	methyl
9	3,4,5-trifluorophenyl	methyl
10	3-chloro-5-bromophenyl	methyl
11	3-chloro-5-fluorophenyl	methyl

12	3-chloro-5-(trifluoromethyl)phenyl	methyl
13	3,4-dichloro-5-(trifluoromethyl)phenyl	methyl
14	3,5-bis(trifluoromethyl)phenyl	methyl
15	4-chloro-3,5-bis(trifluoromethyl)phenyl	methyl
16	3-(trifluoromethyl)phenyl	methyl
17	2,6-dichloro-4-pyridyl	methyl
18	2,6-bis(trifluoromethyl)-4-pyridyl	methyl
19	3-bromo-5-trifluoromethylphenyl	methyl
20	3,5-dichlorophenyl	ethyl
21	3-chloro-4-fluorophenyl	ethyl
22	3-fluoro-4-chlorophenyl	ethyl
23	3,4-dichlorophenyl	ethyl
24	3-chloro-4-bromophenyl	ethyl
25	3,5-dichloro-4-fluorophenyl	ethyl
26	3,4,5-trichlorophenyl	ethyl
27	3,5-dichloro-4-iodophenyl	ethyl
28	3,4,5-trifluorophenyl	ethyl
29	3-chloro-5-bromophenyl	ethyl
30	3-chloro-5-fluorophenyl	ethyl
31	3-chloro-5-(trifluoromethyl)phenyl	ethyl
32	3,4-dichloro-5-(trifluoromethyl)phenyl	ethyl
33	3,5-bis(trifluoromethyl)phenyl	ethyl
34	4-chloro-3,5-bis(trifluoromethyl)phenyl	ethyl
35	3-(trifluoromethyl)phenyl	ethyl
36	2,6-dichloro-4-pyridyl	ethyl
37	2,6-bis(trifluoromethyl)-4-pyridyl	ethyl
38	3-bromo-5-trifluoromethylphenyl	ethyl
39	3,5-dichlorophenyl	propyl
40	3-chloro-4-fluorophenyl	propyl
41	3-fluoro-4-chlorophenyl	propyl
42	3,4-dichlorophenyl	propyl
43	3-chloro-4-bromophenyl	propyl
44	3,5-dichloro-4-fluorophenyl	propyl
45	3,4,5-trichlorophenyl	propyl
46	3,5-dichloro-4-iodophenyl	propyl
47	3,4,5-trifluorophenyl	propyl
48	3-chloro-5-bromophenyl	propyl
49	3-chloro-5-fluorophenyl	propyl
50	3-chloro-5-(trifluoromethyl)phenyl	propyl
51	3,4-dichloro-5-(trifluoromethyl)phenyl	propyl
52	3,5-bis(trifluoromethyl)phenyl	propyl
53	4-chloro-3,5-bis(trifluoromethyl)phenyl	propyl
54	3-(trifluoromethyl)phenyl	propyl
55	2,6-dichloro-4-pyridyl	propyl
56	2,6-bis(trifluoromethyl)-4-pyridyl	propyl
57	3-bromo-5-trifluoromethylphenyl	propyl

58	3,5-dichlorophenyl	isopropyl
59	3-chloro-4-fluorophenyl	isopropyl
60	3-fluoro-4-chlorophenyl	isopropyl
61	3,4-dichlorophenyl	isopropyl
62	3-chloro-4-bromophenyl	isopropyl
63	3,5-dichloro-4-fluorophenyl	isopropyl
64	3,4,5-trichlorophenyl	isopropyl
65	3,5-dichloro-4-iodophenyl	isopropyl
66	3,4,5-trifluorophenyl	isopropyl
67	3-chloro-5-bromophenyl	isopropyl
68	3-chloro-5-fluorophenyl	isopropyl
69	3-chloro-5-(trifluoromethyl)phenyl	isopropyl
70	3,4-dichloro-5-(trifluoromethyl)phenyl	isopropyl
71	3,5-bis(trifluoromethyl)phenyl	isopropyl
72	4-chloro-3,5-bis(trifluoromethyl)phenyl	isopropyl
73	3-(trifluoromethyl)phenyl	isopropyl
74	2,6-dichloro-4-pyridyl	isopropyl
75	2,6-bis(trifluoromethyl)-4-pyridyl	isopropyl
76	3-bromo-5-trifluoromethylphenyl	isopropyl
77	3,5-dichlorophenyl	CH3CH2CH(CH3)-
78	3-chloro-4-fluorophenyl	CH3CH2CH(CH3)-
79	3-fluoro-4-chlorophenyl	CH3CH2CH(CH3)-
80	3,4-dichlorophenyl	CH3CH2CH(CH3)-
81	3-chloro-4-bromophenyl	CH3CH2CH(CH3)-
82	3,5-dichloro-4-fluorophenyl	CH3CH2CH(CH3)-
83	3,4,5-trichlorophenyl	CH3CH2CH(CH3)-
84	3,5-dichloro-4-iodophenyl	CH3CH2CH(CH3)-
85	3,4,5-trifluorophenyl	CH3CH2CH(CH3)-
86	3-chloro-5-bromophenyl	CH3CH2CH(CH3)-
87	3-chloro-5-fluorophenyl	CH3CH2CH(CH3)-
88	3-chloro-5-(trifluoromethyl)phenyl	CH3CH2CH(CH3)-
89	3,4-dichloro-5-(trifluoromethyl)phenyl	CH3CH2CH(CH3)-
90	3,5-bis(trifluoromethyl)phenyl	CH3CH2CH(CH3)-
91	4-chloro-3,5-bis(trifluoromethyl)phenyl	CH3CH2CH(CH3)-
92	3-(trifluoromethyl)phenyl	CH3CH2CH(CH3)-
93	2,6-dichloro-4-pyridyl	CH3CH2CH(CH3)-
94	2,6-bis(trifluoromethyl)-4-pyridyl	CH3CH2CH(CH3)-
95	3-bromo-5-trifluoromethylphenyl	CH3CH2CH(CH3)-
96	3,5-dichlorophenyl	CH3OCH2-
97	3-chloro-4-fluorophenyl	CH3OCH2-
98	3-fluoro-4-chlorophenyl	CH3OCH2-
99	3,4-dichlorophenyl	CH3OCH2-
100	3-chloro-4-bromophenyl	CH3OCH2-
101	3,5-dichloro-4-fluorophenyl	CH3OCH2-
102	3,4,5-trichlorophenyl	CH3OCH2-
103	3,5-dichloro-4-iodophenyl	CH3OCH2-

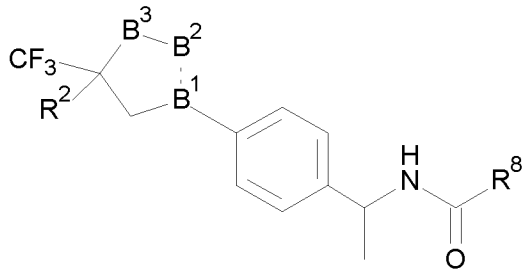
104	3,4,5-trifluorophenyl	CH3OCH2-
105	3-chloro-5-bromophenyl	CH3OCH2-
106	3-chloro-5-fluorophenyl	CH3OCH2-
107	3-chloro-5-(trifluoromethyl)phenyl	CH3OCH2-
108	3,4-dichloro-5-(trifluoromethyl)phenyl	CH3OCH2-
109	3,5-bis(trifluoromethyl)phenyl	CH3OCH2-
110	4-chloro-3,5-bis(trifluoromethyl)phenyl	CH3OCH2-
111	3-(trifluoromethyl)phenyl	CH3OCH2-
112	2,6-dichloro-4-pyridyl	CH3OCH2-
113	2,6-bis(trifluoromethyl)-4-pyridyl	CH3OCH2-
114	3-bromo-5-trifluoromethylphenyl	CH3OCH2-
115	3,5-dichlorophenyl	CH3OCH2CH2-
116	3-chloro-4-fluorophenyl	CH3OCH2CH2-
117	3-fluoro-4-chlorophenyl	CH3OCH2CH2-
118	3,4-dichlorophenyl	CH3OCH2CH2-
119	3-chloro-4-bromophenyl	CH3OCH2CH2-
120	3,5-dichloro-4-fluorophenyl	CH3OCH2CH2-
121	3,4,5-trichlorophenyl	CH3OCH2CH2-
122	3,5-dichloro-4-iodophenyl	CH3OCH2CH2-
123	3,4,5-trifluorophenyl	CH3OCH2CH2-
124	3-chloro-5-bromophenyl	CH3OCH2CH2-
125	3-chloro-5-fluorophenyl	CH3OCH2CH2-
126	3-chloro-5-(trifluoromethyl)phenyl	CH3OCH2CH2-
127	3,4-dichloro-5-(trifluoromethyl)phenyl	CH3OCH2CH2-
128	3,5-bis(trifluoromethyl)phenyl	CH3OCH2CH2-
129	4-chloro-3,5-bis(trifluoromethyl)phenyl	CH3OCH2CH2-
130	3-(trifluoromethyl)phenyl	CH3OCH2CH2-
131	2,6-dichloro-4-pyridyl	CH3OCH2CH2-
132	2,6-bis(trifluoromethyl)-4-pyridyl	CH3OCH2CH2-
133	3-bromo-5-trifluoromethylphenyl	CH3OCH2CH2-
134	3,5-dichlorophenyl	CH3OCH(CH3)CH2-
135	3-chloro-4-fluorophenyl	CH3OCH(CH3)CH2-
136	3-fluoro-4-chlorophenyl	CH3OCH(CH3)CH2-
137	3,4-dichlorophenyl	CH3OCH(CH3)CH2-
138	3-chloro-4-bromophenyl	CH3OCH(CH3)CH2-
139	3,5-dichloro-4-fluorophenyl	CH3OCH(CH3)CH2-
140	3,4,5-trichlorophenyl	CH3OCH(CH3)CH2-
141	3,5-dichloro-4-iodophenyl	CH3OCH(CH3)CH2-
142	3,4,5-trifluorophenyl	CH3OCH(CH3)CH2-
143	3-chloro-5-bromophenyl	CH3OCH(CH3)CH2-
144	3-chloro-5-fluorophenyl	CH3OCH(CH3)CH2-
145	3-chloro-5-(trifluoromethyl)phenyl	CH3OCH(CH3)CH2-
146	3,4-dichloro-5-(trifluoromethyl)phenyl	CH3OCH(CH3)CH2-
147	3,5-bis(trifluoromethyl)phenyl	CH3OCH(CH3)CH2-
148	4-chloro-3,5-bis(trifluoromethyl)phenyl	CH3OCH(CH3)CH2-
149	3-(trifluoromethyl)phenyl	CH3OCH(CH3)CH2-

150	2,6-dichloro-4-pyridyl	CH3OCH(CH3)CH2-
151	2,6-bis(trifluoromethyl)-4-pyridyl	CH3OCH(CH3)CH2-
152	3-bromo-5-trifluoromethylphenyl	CH3OCH(CH3)CH2-
153	3,5-dichlorophenyl	cyclopropyl
154	3-chloro-4-fluorophenyl	cyclopropyl
155	3-fluoro-4-chlorophenyl	cyclopropyl
156	3,4-dichlorophenyl	cyclopropyl
157	3-chloro-4-bromophenyl	cyclopropyl
158	3,5-dichloro-4-fluorophenyl	cyclopropyl
159	3,4,5-trichlorophenyl	cyclopropyl
160	3,5-dichloro-4-iodophenyl	cyclopropyl
161	3,4,5-trifluorophenyl	cyclopropyl
162	3-chloro-5-bromophenyl	cyclopropyl
163	3-chloro-5-fluorophenyl	cyclopropyl
164	3-chloro-5-(trifluoromethyl)phenyl	cyclopropyl
165	3,4-dichloro-5-(trifluoromethyl)phenyl	cyclopropyl
166	3,5-bis(trifluoromethyl)phenyl	cyclopropyl
167	4-chloro-3,5-bis(trifluoromethyl)phenyl	cyclopropyl
168	3-(trifluoromethyl)phenyl	cyclopropyl
169	2,6-dichloro-4-pyridyl	cyclopropyl
170	2,6-bis(trifluoromethyl)-4-pyridyl	cyclopropyl
171	3-bromo-5-trifluoromethylphenyl	cyclopropyl
172	3,5-dichlorophenyl	Cyclopropyl-CH2-
173	3-chloro-4-fluorophenyl	Cyclopropyl-CH2-
174	3-fluoro-4-chlorophenyl	Cyclopropyl-CH2-
175	3,4-dichlorophenyl	Cyclopropyl-CH2-
176	3-chloro-4-bromophenyl	Cyclopropyl-CH2-
177	3,5-dichloro-4-fluorophenyl	Cyclopropyl-CH2-
178	3,4,5-trichlorophenyl	Cyclopropyl-CH2-
179	3,5-dichloro-4-iodophenyl	Cyclopropyl-CH2-
180	3,4,5-trifluorophenyl	Cyclopropyl-CH2-
181	3-chloro-5-bromophenyl	Cyclopropyl-CH2-
182	3-chloro-5-fluorophenyl	Cyclopropyl-CH2-
183	3-chloro-5-(trifluoromethyl)phenyl	Cyclopropyl-CH2-
184	3,4-dichloro-5-(trifluoromethyl)phenyl	Cyclopropyl-CH2-
185	3,5-bis(trifluoromethyl)phenyl	Cyclopropyl-CH2-
186	4-chloro-3,5-bis(trifluoromethyl)phenyl	Cyclopropyl-CH2-
187	3-(trifluoromethyl)phenyl	Cyclopropyl-CH2-
188	2,6-dichloro-4-pyridyl	Cyclopropyl-CH2-
189	2,6-bis(trifluoromethyl)-4-pyridyl	Cyclopropyl-CH2-
190	3-bromo-5-trifluoromethylphenyl	Cyclopropyl-CH2-
191	3,5-dichlorophenyl	cyclobutyl
192	3-chloro-4-fluorophenyl	cyclobutyl
193	3-fluoro-4-chlorophenyl	cyclobutyl
194	3,4-dichlorophenyl	cyclobutyl
195	3-chloro-4-bromophenyl	cyclobutyl

196	3,5-dichloro-4-fluorophenyl	cyclobutyl
197	3,4,5-trichlorophenyl	cyclobutyl
198	3,5-dichloro-4-iodophenyl	cyclobutyl
199	3,4,5-trifluorophenyl	cyclobutyl
200	3-chloro-5-bromophenyl	cyclobutyl
201	3-chloro-5-fluorophenyl	cyclobutyl
202	3-chloro-5-(trifluoromethyl)phenyl	cyclobutyl
203	3,4-dichloro-5-(trifluoromethyl)phenyl	cyclobutyl
204	3,5-bis(trifluoromethyl)phenyl	cyclobutyl
205	4-chloro-3,5-bis(trifluoromethyl)phenyl	cyclobutyl
206	3-(trifluoromethyl)phenyl	cyclobutyl
207	2,6-dichloro-4-pyridyl	cyclobutyl
208	2,6-bis(trifluoromethyl)-4-pyridyl	cyclobutyl
209	3-bromo-5-trifluoromethylphenyl	cyclobutyl
210	3,5-dichlorophenyl	CH3-S-CH2-
211	3-chloro-4-fluorophenyl	CH3-S-CH2-
212	3-fluoro-4-chlorophenyl	CH3-S-CH2-
213	3,4-dichlorophenyl	CH3-S-CH2-
214	3-chloro-4-bromophenyl	CH3-S-CH2-
215	3,5-dichloro-4-fluorophenyl	CH3-S-CH2-
216	3,4,5-trichlorophenyl	CH3-S-CH2-
217	3,5-dichloro-4-iodophenyl	CH3-S-CH2-
218	3,4,5-trifluorophenyl	CH3-S-CH2-
219	3-chloro-5-bromophenyl	CH3-S-CH2-
220	3-chloro-5-fluorophenyl	CH3-S-CH2-
221	3-chloro-5-(trifluoromethyl)phenyl	CH3-S-CH2-
222	3,4-dichloro-5-(trifluoromethyl)phenyl	CH3-S-CH2-
223	3,5-bis(trifluoromethyl)phenyl	CH3-S-CH2-
224	4-chloro-3,5-bis(trifluoromethyl)phenyl	CH3-S-CH2-
225	3-(trifluoromethyl)phenyl	CH3-S-CH2-
226	2,6-dichloro-4-pyridyl	CH3-S-CH2-
227	2,6-bis(trifluoromethyl)-4-pyridyl	CH3-S-CH2-
228	3-bromo-5-trifluoromethylphenyl	CH3-S-CH2-
229	3,5-dichlorophenyl	CH3-S(O)-CH2-
230	3-chloro-4-fluorophenyl	CH3-S(O)-CH2-
231	3-fluoro-4-chlorophenyl	CH3-S(O)-CH2-
232	3,4-dichlorophenyl	CH3-S(O)-CH2-
233	3-chloro-4-bromophenyl	CH3-S(O)-CH2-
234	3,5-dichloro-4-fluorophenyl	CH3-S(O)-CH2-
235	3,4,5-trichlorophenyl	CH3-S(O)-CH2-
236	3,5-dichloro-4-iodophenyl	CH3-S(O)-CH2-
237	3,4,5-trifluorophenyl	CH3-S(O)-CH2-
238	3-chloro-5-bromophenyl	CH3-S(O)-CH2-
239	3-chloro-5-fluorophenyl	CH3-S(O)-CH2-
240	3-chloro-5-(trifluoromethyl)phenyl	CH3-S(O)-CH2-
241	3,4-dichloro-5-(trifluoromethyl)phenyl	CH3-S(O)-CH2-

242	3,5-bis(trifluoromethyl)phenyl	CH3-S(O)-CH2-
243	4-chloro-3,5-bis(trifluoromethyl)phenyl	CH3-S(O)-CH2-
244	3-(trifluoromethyl)phenyl	CH3-S(O)-CH2-
245	2,6-dichloro-4-pyridyl	CH3-S(O)-CH2-
246	2,6-bis(trifluoromethyl)-4-pyridyl	CH3-S(O)-CH2-
247	3-bromo-5-trifluoromethylphenyl	CH3-S(O)-CH2-
248	3,5-dichlorophenyl	CH3-S(O2)-CH2-
249	3-chloro-4-fluorophenyl	CH3-S(O2)-CH2-
250	3-fluoro-4-chlorophenyl	CH3-S(O2)-CH2-
251	3,4-dichlorophenyl	CH3-S(O2)-CH2-
252	3-chloro-4-bromophenyl	CH3-S(O2)-CH2-
253	3,5-dichloro-4-fluorophenyl	CH3-S(O2)-CH2-
254	3,4,5-trichlorophenyl	CH3-S(O2)-CH2-
255	3,5-dichloro-4-iodophenyl	CH3-S(O2)-CH2-
256	3,4,5-trifluorophenyl	CH3-S(O2)-CH2-
257	3-chloro-5-bromophenyl	CH3-S(O2)-CH2-
258	3-chloro-5-fluorophenyl	CH3-S(O2)-CH2-
259	3-chloro-5-(trifluoromethyl)phenyl	CH3-S(O2)-CH2-
260	3,4-dichloro-5-(trifluoromethyl)phenyl	CH3-S(O2)-CH2-
261	3,5-bis(trifluoromethyl)phenyl	CH3-S(O2)-CH2-
262	4-chloro-3,5-bis(trifluoromethyl)phenyl	CH3-S(O2)-CH2-
263	3-(trifluoromethyl)phenyl	CH3-S(O2)-CH2-
264	2,6-dichloro-4-pyridyl	CH3-S(O2)-CH2-
265	2,6-bis(trifluoromethyl)-4-pyridyl	CH3-S(O2)-CH2-
266	3-bromo-5-trifluoromethylphenyl	CH3-S(O2)-CH2-
267	3,5-dichlorophenyl	tetrahydrofuran-2-yl
268	3-chloro-4-fluorophenyl	tetrahydrofuran-2-yl
269	3-fluoro-4-chlorophenyl	tetrahydrofuran-2-yl
270	3,4-dichlorophenyl	tetrahydrofuran-2-yl
271	3-chloro-4-bromophenyl	tetrahydrofuran-2-yl
272	3,5-dichloro-4-fluorophenyl	tetrahydrofuran-2-yl
273	3,4,5-trichlorophenyl	tetrahydrofuran-2-yl
274	3,5-dichloro-4-iodophenyl	tetrahydrofuran-2-yl
275	3,4,5-trifluorophenyl	tetrahydrofuran-2-yl
276	3-chloro-5-bromophenyl	tetrahydrofuran-2-yl
277	3-chloro-5-fluorophenyl	tetrahydrofuran-2-yl
278	3-chloro-5-(trifluoromethyl)phenyl	tetrahydrofuran-2-yl
279	3,4-dichloro-5-(trifluoromethyl)phenyl	tetrahydrofuran-2-yl
280	3,5-bis(trifluoromethyl)phenyl	tetrahydrofuran-2-yl
281	4-chloro-3,5-bis(trifluoromethyl)phenyl	tetrahydrofuran-2-yl
282	3-(trifluoromethyl)phenyl	tetrahydrofuran-2-yl
283	2,6-dichloro-4-pyridyl	tetrahydrofuran-2-yl
284	2,6-bis(trifluoromethyl)-4-pyridyl	tetrahydrofuran-2-yl
285	3-bromo-5-trifluoromethylphenyl	tetrahydrofuran-2-yl
286	3,5-dichlorophenyl	tetrahydrofuran-3-yl
287	3-chloro-4-fluorophenyl	tetrahydrofuran-3-yl

288	3-fluoro-4-chlorophenyl	tetrahydrofuran-3-yl
289	3,4-dichlorophenyl	tetrahydrofuran-3-yl
290	3-chloro-4-bromophenyl	tetrahydrofuran-3-yl
291	3,5-dichloro-4-fluorophenyl	tetrahydrofuran-3-yl
292	3,4,5-trichlorophenyl	tetrahydrofuran-3-yl
293	3,5-dichloro-4-iodophenyl	tetrahydrofuran-3-yl
294	3,4,5-trifluorophenyl	tetrahydrofuran-3-yl
295	3-chloro-5-bromophenyl	tetrahydrofuran-3-yl
296	3-chloro-5-fluorophenyl	tetrahydrofuran-3-yl
297	3-chloro-5-(trifluoromethyl)phenyl	tetrahydrofuran-3-yl
298	3,4-dichloro-5-(trifluoromethyl)phenyl	tetrahydrofuran-3-yl
299	3,5-bis(trifluoromethyl)phenyl	tetrahydrofuran-3-yl
300	4-chloro-3,5-bis(trifluoromethyl)phenyl	tetrahydrofuran-3-yl
301	3-(trifluoromethyl)phenyl	tetrahydrofuran-3-yl
302	2,6-dichloro-4-pyridyl	tetrahydrofuran-3-yl
303	2,6-bis(trifluoromethyl)-4-pyridyl	tetrahydrofuran-3-yl
304	3-bromo-5-trifluoromethylphenyl	tetrahydrofuran-3-yl



(Ib)

Table 16

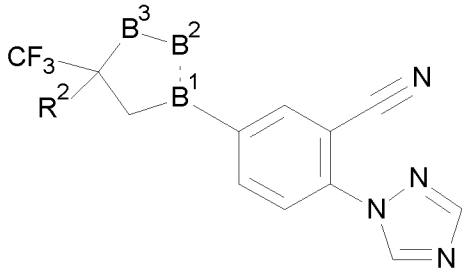
Table 16 provides 304 compounds of formula Ib wherein B1-B2-B3 is C=N-O, and R2 and R8 are as defined in Table P.

Table 17

Table 17 provides 304 compounds of formula Ib wherein B1-B2-B3 is C=N-CH2, and R2 and R8 are as defined in Table P.

Table 18

Table 18 provides 304 compounds of formula Ib wherein B1-B2-B3 is N-CH2-CH2, and R2 and R8 are as defined in Table P.



(Ic)

Table 19

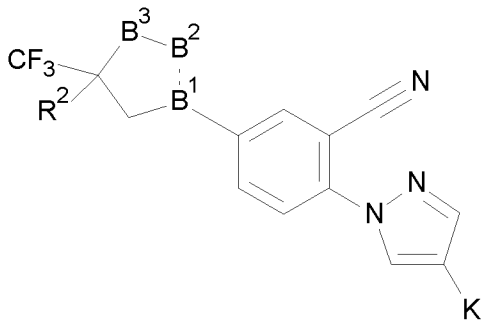
Table 19 provides 19 compounds of formula Ic wherein B1-B2-B3 is C=N-O, and R2 is as defined in Table Q.

Table 20

Table 20 provides 19 compounds of formula Ic wherein B1-B2-B3 is C=N-CH2, and R2 is as defined in Table Q.

Table 21

Table 21 provides 19 compounds of formula Ic wherein B1-B2-B3 is N-CH2-CH2, and R2 is as defined in Table Q.



(Id)

Table 22

Table 22 provides 19 compounds of formula Id wherein k is CN, B1-B2-B3 is C=N-O and R2 is as defined in Table Q.

Table 23

Table 23 provides 19 compounds of formula Id wherein k is CF3, B1-B2-B3 is C=N-O and R2 is as defined in Table Q.

Table 24

Table 24 provides 19 compounds of formula Id wherein k is CN, B1-B2-B3 is C=N-CH2 and R2 is as defined in Table Q.

Table 25

Table 25 provides 19 compounds of formula Id wherein k is CF3, B1-B2-B3 is C=N-CH2 and R2 is as defined in Table Q.

Table 26

Table 26 provides 19 compounds of formula Id wherein k is CN, B1-B2-B3 is N-CH2-CH2 and R2 is as defined in Table Q.

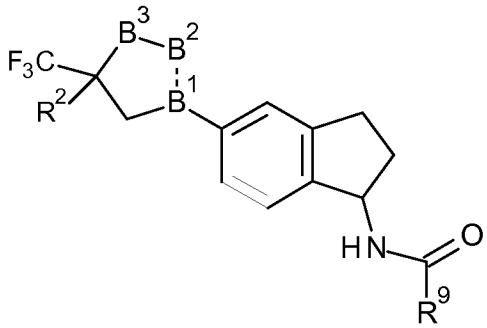
Table 27

Table 27 provides 19 compounds of formula Id wherein k is CF3, B1-B2-B3 is N-CH2-CH2 and R2 is as defined in Table Q.

Table Q

	R2
1	3,5-dichlorophenyl
2	3-chloro-4-fluorophenyl
3	3-fluoro-4-chlorophenyl
4	3,4-dichlorophenyl
5	3-chloro-4-bromophenyl
6	3,5-dichloro-4-fluorophenyl
7	3,4,5-trichlorophenyl
8	3,5-dichloro-4-iodophenyl
9	3,4,5-trifluorophenyl
10	3-chloro-5-bromophenyl
11	3-chloro-5-fluorophenyl

12	3-chloro-5-(trifluoromethyl)phenyl
13	3,4-dichloro-5-(trifluoromethyl)phenyl
14	3,5-bis(trifluoromethyl)phenyl
15	4-chloro-3,5-bis(trifluoromethyl)phenyl
16	3-(trifluoromethyl)phenyl
17	2,6-dichloro-4-pyridyl
18	2,6-bis(trifluoromethyl)-4-pyridyl
19	3-bromo-5-trifluoromethylphenyl



(Ie)

Table 28
Table 28 provides 114 compounds of formula Ie wherein B1-B2-B3 is C=N-O, and R2 and R9 are as defined in Table S.

Table 29
Table 29 provides 114 compounds of formula Ie wherein B1-B2-B3 is C=N-CH2, and R2 and R9 are as defined in Table S.

Table 30
Table 30 provides 114 compounds of formula Ie wherein B1-B2-B3 is N-CH2-CH2, and R2 and R9 are as defined in Table S.

Table S

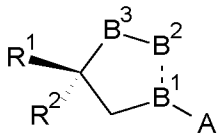
	R2	R9
1	3,5-dichlorophenyl	methyl
2	3-chloro-4-fluorophenyl	methyl
3	3-fluoro-4-chlorophenyl	methyl
4	3,4-dichlorophenyl	methyl
5	3-chloro-4-bromophenyl	methyl
6	3,5-dichloro-4-fluorophenyl	methyl
7	3,4,5-trichlorophenyl	methyl
8	3,5-dichloro-4-iodophenyl	methyl
9	3,4,5-trifluorophenyl	methyl
10	3-chloro-5-bromophenyl	methyl
11	3-chloro-5-fluorophenyl	methyl
12	3-chloro-5-(trifluoromethyl)phenyl	methyl
13	3,4-dichloro-5-(trifluoromethyl)phenyl	methyl
14	3,5-bis(trifluoromethyl)phenyl	methyl
15	4-chloro-3,5-bis(trifluoromethyl)phenyl	methyl
16	3-(trifluoromethyl)phenyl	methyl
17	2,6-dichloro-4-pyridyl	methyl

18	2,6-bis(trifluoromethyl)-4-pyridyl	methyl
19	3-bromo-5-trifluoromethylphenyl	methyl
20	3,5-dichlorophenyl	ethyl
21	3-chloro-4-fluorophenyl	ethyl
22	3-fluoro-4-chlorophenyl	ethyl
23	3,4-dichlorophenyl	ethyl
24	3-chloro-4-bromophenyl	ethyl
25	3,5-dichloro-4-fluorophenyl	ethyl
26	3,4,5-trichlorophenyl	ethyl
27	3,5-dichloro-4-iodophenyl	ethyl
28	3,4,5-trifluorophenyl	ethyl
29	3-chloro-5-bromophenyl	ethyl
30	3-chloro-5-fluorophenyl	ethyl
31	3-chloro-5-(trifluoromethyl)phenyl	ethyl
32	3,4-dichloro-5-(trifluoromethyl)phenyl	ethyl
33	3,5-bis(trifluoromethyl)phenyl	ethyl
34	4-chloro-3,5-bis(trifluoromethyl)phenyl	ethyl
35	3-(trifluoromethyl)phenyl	ethyl
36	2,6-dichloro-4-pyridyl	ethyl
37	2,6-bis(trifluoromethyl)-4-pyridyl	ethyl
38	3-bromo-5-trifluoromethylphenyl	ethyl
39	3,5-dichlorophenyl	cyclopropyl
40	3-chloro-4-fluorophenyl	cyclopropyl
41	3-fluoro-4-chlorophenyl	cyclopropyl
42	3,4-dichlorophenyl	cyclopropyl
43	3-chloro-4-bromophenyl	cyclopropyl
44	3,5-dichloro-4-fluorophenyl	cyclopropyl
45	3,4,5-trichlorophenyl	cyclopropyl
46	3,5-dichloro-4-iodophenyl	cyclopropyl
47	3,4,5-trifluorophenyl	cyclopropyl
48	3-chloro-5-bromophenyl	cyclopropyl
49	3-chloro-5-fluorophenyl	cyclopropyl
50	3-chloro-5-(trifluoromethyl)phenyl	cyclopropyl
51	3,4-dichloro-5-(trifluoromethyl)phenyl	cyclopropyl
52	3,5-bis(trifluoromethyl)phenyl	cyclopropyl
53	4-chloro-3,5-bis(trifluoromethyl)phenyl	cyclopropyl
54	3-(trifluoromethyl)phenyl	cyclopropyl
55	2,6-dichloro-4-pyridyl	cyclopropyl
56	2,6-bis(trifluoromethyl)-4-pyridyl	cyclopropyl
57	3-bromo-5-trifluoromethylphenyl	cyclopropyl
58	3,5-dichlorophenyl	CF3CH2-
59	3-chloro-4-fluorophenyl	CF3CH2-
60	3-fluoro-4-chlorophenyl	CF3CH2-
61	3,4-dichlorophenyl	CF3CH2-
62	3-chloro-4-bromophenyl	CF3CH2-
63	3,5-dichloro-4-fluorophenyl	CF3CH2-

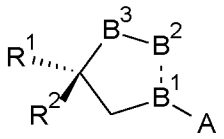
64	3,4,5-trichlorophenyl	CF3CH2-
65	3,5-dichloro-4-iodophenyl	CF3CH2-
66	3,4,5-trifluorophenyl	CF3CH2-
67	3-chloro-5-bromophenyl	CF3CH2-
68	3-chloro-5-fluorophenyl	CF3CH2-
69	3-chloro-5-(trifluoromethyl)phenyl	CF3CH2-
70	3,4-dichloro-5-(trifluoromethyl)phenyl	CF3CH2-
71	3,5-bis(trifluoromethyl)phenyl	CF3CH2-
72	4-chloro-3,5-bis(trifluoromethyl)phenyl	CF3CH2-
73	3-(trifluoromethyl)phenyl	CF3CH2-
74	2,6-dichloro-4-pyridyl	CF3CH2-
75	2,6-bis(trifluoromethyl)-4-pyridyl	CF3CH2-
76	3-bromo-5-trifluoromethylphenyl	CF3CH2-
77	3,5-dichlorophenyl	cyclopropyl-CH2-
78	3-chloro-4-fluorophenyl	cyclopropyl-CH2-
79	3-fluoro-4-chlorophenyl	cyclopropyl-CH2-
80	3,4-dichlorophenyl	cyclopropyl-CH2-
81	3-chloro-4-bromophenyl	cyclopropyl-CH2-
82	3,5-dichloro-4-fluorophenyl	cyclopropyl-CH2-
83	3,4,5-trichlorophenyl	cyclopropyl-CH2-
84	3,5-dichloro-4-iodophenyl	cyclopropyl-CH2-
85	3,4,5-trifluorophenyl	cyclopropyl-CH2-
86	3-chloro-5-bromophenyl	cyclopropyl-CH2-
87	3-chloro-5-fluorophenyl	cyclopropyl-CH2-
88	3-chloro-5-(trifluoromethyl)phenyl	cyclopropyl-CH2-
89	3,4-dichloro-5-(trifluoromethyl)phenyl	cyclopropyl-CH2-
90	3,5-bis(trifluoromethyl)phenyl	cyclopropyl-CH2-
91	4-chloro-3,5-bis(trifluoromethyl)phenyl	cyclopropyl-CH2-
92	3-(trifluoromethyl)phenyl	cyclopropyl-CH2-
93	2,6-dichloro-4-pyridyl	cyclopropyl-CH2-
94	2,6-bis(trifluoromethyl)-4-pyridyl	cyclopropyl-CH2-
95	3-bromo-5-trifluoromethylphenyl	cyclopropyl-CH2-
96	3,5-dichlorophenyl	isopropyl
97	3-chloro-4-fluorophenyl	isopropyl
98	3-fluoro-4-chlorophenyl	isopropyl
99	3,4-dichlorophenyl	isopropyl
100	3-chloro-4-bromophenyl	isopropyl
101	3,5-dichloro-4-fluorophenyl	isopropyl
102	3,4,5-trichlorophenyl	isopropyl
103	3,5-dichloro-4-iodophenyl	isopropyl
104	3,4,5-trifluorophenyl	isopropyl
105	3-chloro-5-bromophenyl	isopropyl
106	3-chloro-5-fluorophenyl	isopropyl
107	3-chloro-5-(trifluoromethyl)phenyl	isopropyl
108	3,4-dichloro-5-(trifluoromethyl)phenyl	isopropyl
109	3,5-bis(trifluoromethyl)phenyl	isopropyl

110	4-chloro-3,5-bis(trifluoromethyl)phenyl	isopropyl
111	3-(trifluoromethyl)phenyl	isopropyl
112	2,6-dichloro-4-pyridyl	isopropyl
113	2,6-bis(trifluoromethyl)-4-pyridyl	isopropyl
114	3-bromo-5-trifluoromethylphenyl	isopropyl

Compounds of formula I include at least one chiral centre and may exist as compounds of formula I* or compounds of formula I**. Compounds I* and I** are enantiomers if there is no other chiral center or epimers otherwise.



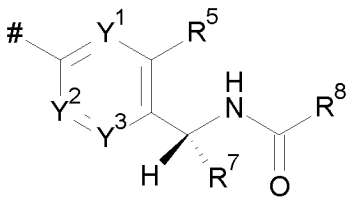
(I*)



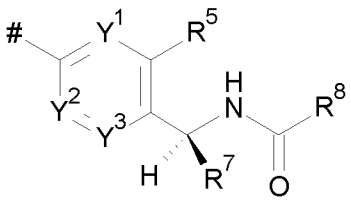
(I**)

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 mixtures 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. Each compound disclosed in Tables 1 to 30 represents a disclosure of a compound according to the compound of formula I* and a compound according to the compound of formula I**.

Likewise, group A2 may be group A2* or A2**.



(A2*)



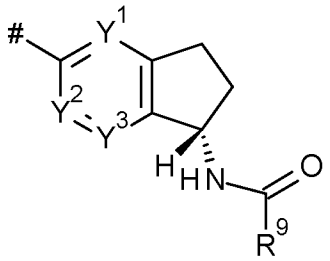
(A2**)

The invention includes mixtures of compounds of formula I with A2 as A2* and A2** 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 with A2 as A2*, the molar proportion of formula I with A2 as A2* 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 with A2 as A2**, the molar proportion

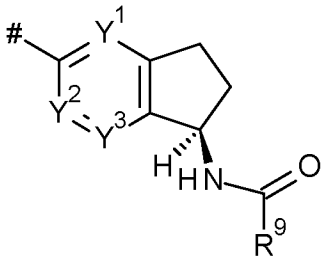
of the compound of formula I with A2 as A2**, compared to the total amount of both enantiomers (or epimers) is for example greater than 50%, e.g. at least 55, 60, 65, 70, 75, 80, 85, 90, 95, 96, 97, 98, or at least 99%. Enantiomerically (or epimerically) enriched mixtures of formula I with A2 as A2** are preferred.

Each compound disclosed in Tables 16 to 18 represents a disclosure of I with A2 as A2* and a compound I with A2 as A2**. Each compound disclosed in Tables 16 to 18 represents a disclosure of a compound according to formula I* with A2 as A2*. Each compound disclosed in Tables 16 to 18 represents a disclosure of a compound according to formula I** with A2 as A2*. Each compound disclosed in Tables 16 to 18 represents a disclosure of a compound according to formula I* with A2 as A2**. Each compound disclosed in Tables 16 to 18 represents a disclosure of a compound according to formula I** with A2 as A2**. Enantiomerically (or epimerically) enriched mixtures of formula I** with A2 as A2** are preferred.

Likewise, group A5 may be A5* or A5**



(A5*)



(A5**)

The invention includes mixtures of compounds of formula I with A5 as A5* and A5** 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 with A5 as A5*, the molar proportion of formula I with A5 as A5* 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 with A5 as A5**, the molar proportion of the compound of formula I with A5 as A5**, 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%. Compounds of formula A5* are preferred.

Each compound disclosed in Tables 28 to 30 represents a disclosure of I with A5 as A5* and a compound I with A5 as A5**. Each compound disclosed in Tables 28 to 30 represents a disclosure of a compound according to formula I* with A5 as A5*. Each compound disclosed in Tables 28 to 30 represents a disclosure of a compound according to formula I** with A5 as A5*. Each compound disclosed in Tables 28 to 30 represents a disclosure of a compound according to formula I* with A5 as A5**. Each compound disclosed in Tables 28 to 30 represents a disclosure of a compound according to formula I** with A5 as A5**.

Reference to compounds of the invention also includes reference to salts and N-oxides.

The compounds of formula I may be prepared as described in WO 2008/128711, WO 2010/043315, The compounds of formula I may be prepared as described in WO 2008/128711, WO 2010/043315, WO 2011/051455, WO 2007/105814, WO 2008/122375, WO 2009/035004, WO 2009/045999, WO 2009/072621, WO 2009/097992, WO 2010/133336, WO 2010/043315, WO 2011/051455, WO 2011/080211, JP2010235590, JP2011037817, JP2011178724, CN102210317, CN102246777, WO 2009/07261, WO 2009/097992, WO 2009/051956, each of which is incorporated herein by reference.

In one embodiment the invention provides a compound selected from Tables 1 to 15 for use against rice pests.

In one embodiment the invention provides a compound selected from Tables 16 to 18 for use against rice pests.

In one embodiment the invention provides a compound selected from Table 19 to 21 for use against rice pests.

In one embodiment the invention provides a compound selected from Tables 22 to 27 for use against rice pests.

In one embodiment the invention provides a compound selected from Tables 28 to 30 for use against rice pests.

In one embodiment the invention provides a compound selected from Tables 1 to 15 for use against stemborer, particularly in rice.

In one embodiment the invention provides a compound selected from Tables 16 to 18 for use against stemborer, particularly in rice.

In one embodiment the invention provides a compound selected from Table 19 to 21 for use against stemborer, particularly in rice.

In one embodiment the invention provides a compound selected from Tables 22 to 27 for use against stemborer, particularly in rice.

In one embodiment the invention provides a compound selected from Tables 28 to 30 for use against stemborer, particularly in rice.

Examples of stemborers include *Chilo sp, Chilo suppressalis, Chilo polychrysus, Chilo auricilius, Scirpophaga spp., Scirpophaga incertulas, Scirpophaga innotata, Scirpophaga nivella Sesamia sp, Sesamia inferens.*

In one embodiment the invention provides a compound selected from Tables 1 to 15 for use against leaffolder, particularly in rice.

In one embodiment the invention provides a compound selected from Tables 16 to 18 for use against leaffolder, particularly in rice.

In one embodiment the invention provides a compound selected from Table 19 to 21 for use against leaffolder, particularly in rice.

In one embodiment the invention provides a compound selected from Tables 22 to 28 for use against leaffolder, particularly in rice.

In one embodiment the invention provides a compound selected from Tables 28 to 30 for use against leaffolder, particularly in rice.

Examples of leaffolders include *Cnaphalocrocis spp., Cnaphalocrocis medinalis, Marasmia spp., Marasmia patnalis, Marasmia exigua.*

In one embodiment the invention provides a compound selected from Tables 1 to 15 for use against hoppers, particularly in rice.

In one embodiment the invention provides a compound selected from Tables 16 to 18 for use against hoppers, particularly in rice.

In one embodiment the invention provides a compound selected from Table 19 to 21 for use against hoppers, particularly in rice.

In one embodiment the invention provides a compound selected from Tables 22 to 27 for use against hoppers, particularly in rice.

In one embodiment the invention provides a compound selected from Tables 28 to 30 for use against hoppers, particularly in rice.

Examples of Hoppers include *Nephotettix spp., Nephotettix virescens, Nephotettix nigropictus, Nephotettix malayanus, Nephotettix cincticeps, Nilaparvata lugens, Sogatella furcifera.*

In one embodiment the invention provides a compound selected from Tables 1 to 15 for use against gallmidge, particularly in rice.

In one embodiment the invention provides a compound selected from Tables 16 to 18 for use against gallmidge, particularly in rice.

In one embodiment the invention provides a compound selected from Table 19 to 21 for use against gallmidge, particularly in rice.

In one embodiment the invention provides a compound selected from Tables 22 to 27 for use against gallmidge, particularly in rice.

In one embodiment the invention provides a compound selected from Tables 28 to 30 for use against gallmidge, particularly in rice.

Examples of Gall midge include *Orseolia sp, Orseolia oryzae.*

In one embodiment the invention provides a compound selected from Tables 1 to 15 for use against whorl maggot, particularly in rice.

In one embodiment the invention provides a compound selected from Tables 16 to 18 for use against whorl maggot, particularly in rice.

In one embodiment the invention provides a compound selected from Table 19 to 21 for use against whorl maggot, particularly in rice.

In one embodiment the invention provides a compound selected from Tables 22 to 28 for use against whorl maggot, particularly in rice.

In one embodiment the invention provides a compound selected from Tables 28 to 30 for use against whorl maggot, particularly in rice.

Examples of whorl maggots include *Hydrellia sp, Hydrellia philippina.*

In one embodiment the invention provides a compound selected from Tables 1 to 15 for use against Rice bugs, particularly in rice.

In one embodiment the invention provides a compound selected from Tables 16 to 18 for use against Rice bugs, particularly in rice.

In one embodiment the invention provides a compound selected from Table 19 to 21 for use against Rice bugs, particularly in rice.

In one embodiment the invention provides a compound selected from Tables 22 to 27 for use against Rice bugs, particularly in rice.

In one embodiment the invention provides a compound selected from Tables 29 to 30 for use against Rice bugs, particularly in rice.

Examples of rice bugs include *Leptocorisa sp, Leptocorisa oratorius, Leptocorisa chinensis, Leptocorisa acuta.*

In one embodiment the invention provides a compound selected from Tables 1 to 15 for use against Black bugs, particularly in rice.

In one embodiment the invention provides a compound selected from Tables 16 to 18 for use against Black bugs, particularly in rice.

In one embodiment the invention provides a compound selected from Table 19 to 21 for use against Black bugs, particularly in rice.

In one embodiment the invention provides a compound selected from Tables 22 to 27 for use against Black bugs, particularly in rice.

In one embodiment the invention provides a compound selected from Tables 28 to 30 for use against Black bugs, particularly in rice.

Examples of Black bugs include *Scotinophara sp, Scotinophara coarctata, Scotinophara lurida, Scotinophara latiuscula.*

The term "locus" of a useful plant as used herein is intended to embrace the place on which the useful plants are growing, where the plant propagation materials of the useful plants are sown or where the plant propagation materials of the useful plants will be placed into the soil. An example for such a locus is a field, on which crop plants are growing.

The term "plant propagation material" is understood to denote generative parts of a plant, such as seeds, which can be used for the multiplication of the latter, and vegetative material, such as cuttings or tubers, for example potatoes. There may be mentioned for example seeds (in the strict sense), roots, fruits, tubers, bulbs, rhizomes and parts of plants. Germinated plants and young plants which are to be transplanted after germination or after emergence from the soil, may also be mentioned. These young

plants may be protected before transplantation by a total or partial treatment by immersion. Preferably "plant propagation material" is understood to denote seeds.

Application may be before infestation or when the pest is present. Application of the compounds of the invention can be performed according to any of the usual modes of application, e.g. foliar, drench, soil, in furrow etc. However, control of *Anthonomus grandis* s is usually achieved by foliar application, which is the preferred mode of application according to the invention.

Application of the compounds of the invention is preferably to a crop of cotton plants, the locus thereof or propagation material thereof.

The compounds of the invention may be applied to plant parts. Plant parts are to be understood as meaning all parts and organs of plants above and below the ground, such as shoot, leaf, flower and root, examples which may be mentioned being leaves, needles, stalks, stems, flowers, fruit bodies, fruits, seeds, roots, tubers and rhizomes. The plant parts also include harvested material, and vegetative and generative propagation material, for example cuttings, tubers, rhizomes, offshoots and seeds. Treatment according to the invention of the plants and plant parts with the active compounds can be carried out directly or by allowing the compounds to act on their surroundings, habitat or storage space by the customary treatment methods, for example by immersion, spraying, evaporation, fogging, scattering, painting on, injecting and, in the case of propagation material, in particular in the case of seed, also by applying one or more coats.

The compounds of the invention are suitable for use on any plant (preferably cotton plant), including those that have been genetically modified to be resistant to active ingredients such as herbicides, or to produce biologically active compounds that control infestation by plant pests.

The term "plant" as used herein includes seedlings, bushes and trees. Crops are to be understood as also including those crops which have been rendered tolerant to herbicides or classes of herbicides (e.g. ALS-, GS-, EPSPS-, PPO- and HPPD-inhibitors) by conventional methods of breeding or by genetic engineering. An example of a crop that has been rendered tolerant to imidazolinones, e.g. imazamox, by conventional methods of breeding is Clearfield® summer rape (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® and LibertyLink®.

Compounds of formula I may be used on transgenic plants (including cultivars) obtained by genetic engineering methods and/or by conventional methods. These are understood as meaning plants having novel properties ("traits") which have been obtained by conventional breeding, by mutagenesis or by recombinant DNA techniques. Depending on the plant species or plant cultivars, their location and growth conditions (soils, climate, vegetation period, diet), the treatment according to the invention may also result in superadditive "synergistic") effects.

Thus, for example, reduced application rates and/or a widening of the activity spectrum and/or an increase in the activity of the substances and compositions which can be used according to the invention,

better plant growth, increased tolerance to high or low temperatures, increased tolerance to drought or to water or soil salt content, increased flowering performance, easier harvesting, accelerated maturation, higher harvest yields, higher quality and/or a higher nutritional value of the harvested products, better storage stability and/or processability of the harvested products are possible, which exceed the effects which were actually to be expected.

The preferred transgenic plants or plant cultivars which are to be treated according to the invention include all plants which, by virtue of the genetic modification, received genetic material which imparts particularly advantageous, useful traits to these plants. Examples of such traits are better plant growth, increased tolerance to high or low temperatures, increased tolerance to drought or to water or soil salt content, increased flowering performance, easier harvesting, accelerated maturation, higher harvest yields, higher quality and/or a higher nutritional value of the harvested products, better storage stability and/or processability of the harvested products.

Further and particularly emphasized examples of such traits are a better defence of the plants against animal and microbial pests, such as against insects, mites, phytopathogenic fungi, bacteria and/or viruses, and also increased tolerance of the plants to certain herbicidally active compounds.

Examples of transgenic plants which may be mentioned are the important crop plants, such as cereals (wheat, rice), maize, soybean, potatoes, sugar beet, tomatoes, peas and other vegetable varieties, cotton, tobacco, oilseed rape and also fruit plants (with the fruits apples, pears, citrus fruits and grapes). Transgenic cotton is of particular interest.

Compounds of formula I may be used on transgenic plants that are capable of producing one or more pesticidal proteins which confer upon the transgenic plant tolerance or resistance to harmful pests, e.g. insect pests, nematode pests and the like. Such pesticidal proteins include, without limitation, Cry proteins from *Bacillus thuringiensis* Cry1Ab, Cry1Ac, Cry1F, Cry2Ab, Cry2Ae, Cry3A, Cry3Bb, or Cry9C; engineered proteins such as modified Cry3A (US Patent 7,030,295) or Cry1A.105; or vegetative insecticidal proteins such as Vip1, Vip2 or Vip3. A full list of Bt Cry proteins and VIPs useful in the invention can be found on the worldwide web at *Bacillus thuringiensis* Toxin Nomenclature Database maintained by the University of Sussex (*see also*, Crickmore *et al.* (1998) *Microbiol. Mol. Biol. Rev.* 62:807-813). Other pesticidal proteins useful in the invention include proteins of bacteria colonizing nematodes, e.g. *Photorhabdus spp.* or *Xenorhabdus spp.*; toxins produced by animals, such as scorpion toxins, arachnid toxins, wasp toxins, or other insect-specific neurotoxins; toxins produced by fungi, such *Streptomycetes* toxins, plant lectins, such as pea or barley lectins; agglutinins; proteinase inhibitors, such as trypsin inhibitors, serine protease inhibitors, patatin, cystatin or papain inhibitors; ribosome-inactivating proteins (RIP), such as ricin, maize-RIP, abrin, luffin, saporin or bryodin; steroid metabolism enzymes, such as 3-hydroxysteroid oxidase, ecdysteroid-IDP-glycosyl-transferase, cholesterol oxidases, ecdysone inhibitors or HMG-CoA-reductase; ion channel blockers, such as blockers of sodium or calcium channels; juvenile hormone esterase; diuretic hormone receptors (helicokinin receptors); stilben synthase, bibenzyl synthase, chitinases or glucanases. Further examples of such pesticidal proteins or transgenic

plants capable of synthesizing such proteins are disclosed, e.g., in EP-A 374753, WO 93/007278, WO 95/34656, EP-A 427529, EP-A 451878, WO 03/18810 and WO 03/52073. The methods for producing such transgenic plants are generally known to the person skilled in the art and some of which are commercially available such as Agrisure®CB (P1) (corn producing Cry1Ab), Agrisure®RW (P2) (corn producing mCry3A), Agrisure® Viptera (P3) (corn hybrids producing Vip3Aa); Agrisure300GT (P4) (corn hybrids producing Cry1Ab and mCry3A); YieldGard® (P5) (corn hybrids producing the Cry1Ab protein), YieldGard® Plus (P6) (corn hybrids producing Cry1Ab and Cry3Bb1), Genuity® SmartStax® (P7) (corn hybrids with Cry1A.105, Cry2Ab2, Cry1F, Cry34/35, Cry3Bb) ; Herculex® I (P8) (corn hybrids producing Cry1Fa) and Herculex®RW (P9) (corn hybrids producing Cry34Ab1, Cry35Ab1 and the enzyme Phosphinothricin-N-Acetyltransferase [PAT]) ; NuCOTN®33B (P10) (cotton cultivars producing Cry1Ac), Bollgard®I (P11) (cotton cultivars producing Cry1Ac), Bollgard®II (P12) (cotton cultivars producing Cry1Ac and Cry2Ab2) and VIPCOT® (P13) (cotton cultivars producing a Vip3Aa). Soybean Cyst Nematode resistance soybean (SCN® - Syngenta (P14)) and soybean with Aphid resistant trait (AMT® (P15)) are also of interest.

Further examples of such transgenic crops are:

1. **Bt11 Maize** from Syngenta Seeds SAS, Chemin de l'Hobit 27, F-31 790 St. Sauveur, France, registration number C/FR/96/05/10 (P16). Genetically modified *Zea mays* which has been rendered resistant to attack by the European corn borer (*Ostrinia nubilalis* and *Sesamia nonagrioides*) by transgenic expression of a truncated CryIA(b) toxin. Bt11 maize also transgenically expresses the enzyme PAT to achieve tolerance to the herbicide glufosinate ammonium.

2. **Bt176 Maize** from Syngenta Seeds SAS, Chemin de l'Hobit 27, F-31 790 St. Sauveur, France, registration number C/FR/96/05/10 (P17). Genetically modified *Zea mays* which has been rendered resistant to attack by the European corn borer (*Ostrinia nubilalis* and *Sesamia nonagrioides*) by transgenic expression of a CryIA(b) toxin. Bt176 maize also transgenically expresses the enzyme PAT to achieve tolerance to the herbicide glufosinate ammonium.

3. **MIR604 Maize** from Syngenta Seeds SAS, Chemin de l'Hobit 27, F-31 790 St. Sauveur, France, registration number C/FR/96/05/10 (P18). Maize which has been rendered insect-resistant by transgenic expression of a modified CryIIIA toxin. This toxin is Cry3A055 modified by insertion of a cathepsin-D-protease recognition sequence. The preparation of such transgenic maize plants is described in WO 03/018810.

4. **MON 863 Maize** from Monsanto Europe S.A. 270-272 Avenue de Tervuren, B-1150 Brussels, Belgium, registration number C/DE/02/9 (P19). MON *863* expresses a CryIIIB(b1) toxin and has resistance to certain Coleoptera insects.

5. **IPC 531 Cotton** from Monsanto Europe S.A. 270-272 Avenue de Tervuren, B-1150 Brussels, Belgium, registration number C/ES/96/02. (P20)

6. **1507 Maize** from Pioneer Overseas Corporation, Avenue Tedesco, 7 B-1160 Brussels, Belgium, registration number C/NL/00/10. (P21) Genetically modified maize for the expression of the

protein Cry1F for achieving resistance to certain Lepidoptera insects and of the PAT protein for achieving tolerance to the herbicide glufosinate ammonium.

7. **NK603 × MON 810 Maize** from Monsanto Europe S.A. 270-272 Avenue de Tervuren, B-1150 Brussels, Belgium, registration number C/GB/02/M3/03. Consists of conventionally bred hybrid maize varieties by crossing the genetically modified varieties NK603 and MON 810. NK603 × MON 810 Maize transgenically expresses the protein CP4 EPSPS, obtained from *Agrobacterium sp.* strain CP4, which imparts tolerance to the herbicide Roundup® (contains glyphosate), and also a CryIA(b) toxin obtained from *Bacillus thuringiensis subsp. kurstaki* which brings about tolerance to certain Lepidoptera, include the European corn borer.

Further examples of transgenic plants, and of very high interest, are those carrying traits conferring resistance to 2.4D (e.g. Enlist®) (e.g. WO 2011066384) (, glyphosate (e.g. Roundup Ready® (P24), Roundup Ready 2 Yield® (P25)), sulfonylurea (e.g. STS®) (P26), glufosinate (e.g. Liberty Link® (P27), Ignite® (P28)), Dicamba (P29) (Monsanto), HPPD tolerance (P30) (e.g. isoxaflutole herbicide) (Bayer CropScience, Syngenta). Double or triple stacks of any of the traits described here are also of interest, including glyphosate and sulfonyl-urea tolerance ((e.g. Optimum GAT®) (P31), plants stacked with STS® and Roundup Ready® (P32) or plants stacked with STS® and Roundup Ready 2 Yield® (P33)), dicamba and glyphosate tolerance (P34) (Monsanto). Of particular interest are soybean plants carrying trains conferring resistance to 2.4D (e.g. Enlist®), glyphosate (e.g. Roundup Ready®, Roundup Ready 2 Yield®), sulfonylurea (e.g. STS®), glufosinate (e.g. Liberty Link®, Ignite®), Dicamba (Monsanto) HPPD tolerance (e.g. isoxaflutole herbicide) (Bayer CropScience, Syngenta).

Transgenic crops of insect-resistant plants are also described in BATS (Zentrum für Biosicherheit und Nachhaltigkeit, Zentrum BATS, Clarastrasse 13, 4058 Basel, Switzerland) Report 2003, (http://bats.ch).

Examples of cotton transgenic events include MON 531 / 757 / 1076 (Bollgard I ® - Monsanto), MON1445 (Roundup ready cotton ®– Monsanto), MON531 x MON1445 (Bollgard I + RR ®– Monsanto), MON15985 (Genuity Bollgard II cotton ®– Monsanto), MON88913 (Genuity RR FLEX cotton ®– Monsanto), MON15985 x MON1445 (Genuity Bollgard II + RR FELX cotton ®– Monsanto), MON15983 x MON88913 (Genuity Bollgard II + RR FLEX cotton ® - Monsanto), MON15985 (FibreMax Bollgard II Cotton ® - Monsanto), LL25 (FibreMax LL cotton ® – BCS Stoneville), GHB614 (FibreMax GlyTol cotton ®– BCS Stoneville), LL25 x MON15985 (FibreMax LL Bollgard II cotton ® – BCS Stoneville / Monsanto), GHB614 x LL25 (FibreMax LL GlyTol cotton ® – BCS Stoneville), GHB614 x LL25 x MON15985 (FibreMax RR GlyTol Bollgard II cotton ® – BCS Stoneville), MON88913 x MON15985 (FibreMax LL GlyTol Bollgard II cotton ® – Monsanto), MON88913 (FibreMax RR Flex cotton ® – Monsanto), GHB119 + T304-40 (Twinlink ® – BCS Stoneville), GHB119 + T304-40 x LL25 x GHB614 (Twinlink LL GT ® – BCS Stoneville), 3006-210-23 x 281-24-236 (PhytoGen Widestrike Insect Protection ® – Dow), 3006-210-23 x 281-24-236 x MON88913 (PhytoGen Widestrike Insect Protection + RR FLEX – ® Dow / Monsanto), 3006-210-23 x 281-24-236 x MON1445

((PhytoGen Widestrike Insect Protection + RR ® – Dow / Monsanto), MON1445 (PhytoGen Roundup Ready ® – Monsanto), MON88913 (PhytoGen Roundup Ready FLEX ® – Monsanto), COT102 x COT67B (Vipcot ® - Syngenta), COT102 x COT67B x MON88913 (Vipcot RR FLEX ® – Syngenta / Monsanto), 281-24-236 (Dow), 3006-210-23 (Dow), COT102 (Syngenta), COT67B (Syngenta), T304-40 (BCS Stoneville).

Examples of Soy transgenic events include MON87701 x MON89788 (Genuity Roundup ready 2 Yield soybeans® - Monsanto), MON89788 (Roundup Ready2Yield®, RR2Y® - Monsanto), MON87708 (Monsanto), 40-3-2 (Roundup Ready®, RR1® - Monsanto), MON87701 (Monsanto), DAS-68416 (Enlist Weed Control System® – Dow), DP356043 (Optimum GAT® - Pioneer), A5547-127 (LibertyLink soybean® - Bayercropscience), A2704-12 (Bayercropscience), GU262 (Bayercropscience), W62 W98 (Bayercropscience), CRV127 (Cultivance® – BASF / EMBRAPA), SYHT0H2 (WO2012/082548).

Examples of Maize transgenic events include T25 (LibertyLink®, LL® – Bayerscropscience), DHT-1 (Dow), TC1507 (Herculex I® – Dow), DAS59122-7 (Herculex RW® – Dow), TC1507 + DAS59122-7 – Herculex Xtra® - Dow), TC1507 x DAS-59122-7 x NK603 (Herculex Xtra + RR® – Dow), TC1507 x DAS-59122- x MON88017 x MON89034 (Genuity Smartstax corn®, Genuity Smartstax RIB complete® – Monsanto / Dow), MON89034 x NK603 (Genuity VT double PRO® – Monsanto), MON89034 + MON88017 (Genuity VT Triple PRO® – Monsanto), NK603 (Roundup Ready 2®, RR2® – Monsanto), MON810 (YieldGard BT®, Yieldgard cornborer® – Monsanto), MON810 x NK603 (YieldGard cornborer RR Corn 2® – Monasnto), MON810 x MON863 (YieldGard Plus® – Monsanto), MON863 x MON810 x NK603 (YieldGard Plus + RR Corn2® / YieldGard RR Maize® – Monsanto), MON863 x NK603 (YieldGard Rotworm + RR Corn 2® – Monsanto), MON863 (YieldBard RW® – Monsanto), MON89034 (YieldGard RW® – Monsanto), MON88017 (YieldGard VT RW® – Monsanto), MON810 + MON88017 (YieldGard VT Triple® – Monsanto), MON88017 + MON89034 (YieldGard VT Triple Pro® – Monsanto), Bt11 + MIR604 + GA21 (Agrisure 3000® – Syngenta), Bt11 + TC1507 + MIR604 + 5307 + GA21 (Syngenta), Bt11 + TC1507 + MIR604 + DAS59122 + GA21 (Agrisure 3122® – Syngenta), BT11 (Agrisure CB® – Syngenta), GA21 – (Agrisure GT® – Syngenta), MIR604 (Agrisure RW® – Syngenta), Bt11 + MIR162 (Agrisure TL VIP® – Syngenta), BT11 + MIR162 + GA21 (Agrisure Viptra 3110® – Syngenta), BT11 + MIR162 + MIR604 (Agrisure TM 3100® – Syngenta), Event3272 + BT11 + MIR604 + GA21 (Syngenta), BT11 + MIR1692 + MIR604 + GA21 (Agrisure Viptera 3111® – Syngenta), BT11 + MIR 162 + TC1507 + GA21 (Agrisure Viptera 3220® – Syngenta), BT11 + MIR162 + TC1507 + MIR604 + 5307 + GA21 (Agrisure Viptera 3222® – Syngenta), MIR162 (Syngenta), BT11 + GA21 + MIR162 + MIR604 + 5307 (Syngenta), 5307 (Syngenta).

Herbicide-resistant plants (plants bred in a conventional manner for herbicide tolerance) which may be mentioned include the varieties sold under the name Clearfield(®) (for example maize).

These statements also apply to plant cultivars having these genetic traits or genetic traits still to be developed, which plant cultivars will be developed and/or marketed in the future.

The compounds of the invention are suitable for use on any cotton plant, including those that have been genetically modified to be resistant to active ingredients such as herbicides, or to produce biologically active compounds that control infestation by plant pests, e.g. BT cotton.

A compound of the invention may be used in mixtures with fertilizers (for example nitrogen-, potassium- or phosphorus-containing fertilizers). Suitable formulation types include granules of fertilizer. The mixtures preferably contain up to 25% by weight of the compound of the invention.

The invention therefore also provides a fertilizer composition comprising a fertilizer and a compound of the invention.

The compositions of this invention may contain other compounds having biological activity, for example micronutrients or compounds having fungicidal activity or which possess plant growth regulating, herbicidal, insecticidal, nematicidal or acaricidal activity.

The compositions of this invention may contain other compounds having biological activity, for example micronutrients or compounds having fungicidal activity or which possess plant growth regulating, herbicidal, insecticidal, nematicidal or acaricidal activity.

The compound of formula (I) may be the sole active ingredient of the composition or it may be admixed with one or more additional active ingredients such as a pesticide, e.g. a insecticide, fungicide or herbicide, or a synergist or plant growth regulator where appropriate. An additional active ingredient may provide a composition having a broader spectrum of activity or increased persistence at a locus; synergize the activity or complement the activity (for example by increasing the speed of effect or overcoming repellency) of the compound of formula (I); or help to overcome or prevent the development of resistance to individual components. The particular additional active ingredient will depend upon the intended utility of the composition. Examples of suitable pesticides include the following:

a) Pyrethroids, such as permethrin, cypermethrin, fenvalerate, esfenvalerate, deltamethrin, cyhalothrin (in particular lambda-cyhalothrin and gamma cyhalothrin), bifenthrin, fenpropathrin, cyfluthrin, tefluthrin, fish safe pyrethroids (for example ethofenprox), natural pyrethrin, tetramethrin, S-bioallethrin, fenfluthrin, prallethrin, acrinathirin, etofenprox or 5-benzyl-3-furylmethyl-(E)-(1R,3S)-2,2-dimethyl- 3-(2-oxothiolan-3-ylidenemethyl)cyclopropane carboxylate;

b) Organophosphates, such as profenofos, sulprofos, acephate, methyl parathion, azinphos-methyl, demeton-s-methyl, heptenophos, thiometon, fenamiphos, monocrotophos, profenofos, triazophos, methamidophos, dimethoate, phosphamidon, malathion, chlorpyrifos, phosalone, terbufos, fensulfothion, fonofos, phorate, phoxim, pirimiphos-methyl, pirimiphos-ethyl, fenitrothion, fosthiazate or diazinon;

c) Carbamates (including aryl carbamates), such as pirimicarb, triazamate, cloethocarb, carbofuran, furathiocarb, ethiofencarb, aldicarb, thiofurox, carbosulfan, bendiocarb, fenobucarb, propoxur, methomyl or oxamyl;

d) Benzoyl ureas, such as diflubenzuron, triflumuron, hexaflumuron, flufenoxuron, diafenthiuron, lufeneron, novaluron, noviflumuron or chlorfluazuron;

e) Organic tin compounds, such as cyhexatin, fenbutatin oxide or azocyclotin;

f) Pyrazoles, such as tebufenpyrad, tolfenpyrad, ethiprole, pyriprole, fipronil, and fenpyroximate;

g) Macrolides, such as avermectins or milbemycins, for example abamectin, emamectin benzoate, ivermectin, milbemycin, spinosad, azadirachtin, milbemectin, lepimectin or spinetoram;

h) Hormones or pheromones;

i) Organochlorine compounds, such as endosulfan (in particular alpha-endosulfan), benzene hexachloride, DDT, chlordane or dieldrin;

j) Amidines, such as chlordimeform or amitraz;

k) Fumigant agents, such as chloropicrin, dichloropropane, methyl bromide or metam;

l) Neonicotinoid compounds, such as imidacloprid, thiacloprid, acetamiprid, nitenpyram, dinotefuran, thiamethoxam, clothianidin, or nithiazine;

m) Diacylhydrazines, such as tebufenozide, chromafenozide or methoxyfenozide;

n) Diphenyl ethers, such as diofenolan or pyriproxifen;

o) Ureas such as Indoxacarb or metaflumizone;

p) Ketoenols, such as Spirotetramat, spirodiclofen or spiromesifen;

q) Diamides, such as flubendiamide, chlorantraniliprole (Rynaxypyr®) or cyantraniliprole;

r) Essential oils such as Bugoil® - (PlantImpact); or

s) a comopund selected from buprofezine, flonicamid, acequinocyl, bifenazate, cyenopyrafen, cyflumetofen, etoxazole, flometoquin, fluacrypyrim, fluensulfone, flufenerim, flupyradifuone, harpin, iodomethane, dodecadienol, pyridaben, pyridalyl, pyrimidifen, flupyradifurone, 4-[(6-Chloro-pyridin-3-ylmethyl)-(2,2-difluoro-ethyl)-amino]-5H-furan-2-one (DE 102006015467), CAS: 915972-17-7 (WO 2006129714; WO2011/147953; WO2011/147952), CAS: 26914-55-8 (WO 2007020986), chlorfenapyr, pymetrozine, sulfoxaflor and pyrifluqinazon.

In addition to the major chemical classes of pesticide listed above, other pesticides having particular targets may be employed in the composition, if appropriate for the intended utility of the composition. For instance, selective insecticides for particular crops, for example stemborer specific insecticides (such as cartap) or hopper specific insecticides (such as buprofezin) for use in rice may be employed. Alternatively insecticides or acaricides specific for particular insect species/stages may also be included in the compositions (for example acaricidal ovo-larvicides, such as clofentezine, flubenzimine, hexythiazox or tetradifon; acaricidal motilicides, such as dicofol or propargite; acaricides, such as bromopropylate or chlorobenzilate; or growth regulators, such as hydramethylnon, cyromazine, methoprene, chlorfluazuron or diflubenzuron).

Examples of fungicidal compounds which may be included in the composition of the invention are (E)-*N*-methyl-2-[2-(2,5-dimethylphenoxymethyl)phenyl]-2-methoxy-iminoacetamide (SSF-129), 4-bromo-2-cyano-*N*,*N*-dimethyl-6-trifluoromethylbenzimidazole-1-sulfonamide, α-[*N*-(3-chloro-2,6-xylyl)-2-methoxyacetamido]-γ-butyrolactone, 4-chloro-2-cyano-*N*,*N*-dimethyl-5-*p*-tolylimidazole-1-sulfonamide (IKF-916, cyamidazosulfamid), 3-5-dichloro-*N*-(3-chloro-1-ethyl-1-methyl-

2-oxopropyl)-4-methylbenzamide (RH-7281, zoxamide), *N*-allyl-4,5,-dimethyl-2-trimethylsilylthiophene-3-carboxamide (MON65500), *N*-(1-cyano-1,2-dimethylpropyl)-2-(2,4-dichlorophenoxy)propionamide (AC382042), *N*-(2-methoxy-5-pyridyl)-cyclopropane carboxamide, acibenzolar (CGA245704) (e.g. acibenzolar-S-methyl), alanycarb, aldimorph, anilazine, azaconazole, azoxystrobin, benalaxyl, benomyl, benthiavalicarb, biloxazol, bitertanol, bixafen, blasticidin S, boscalid, bromuconazole, bupirimate, captafol, captan, carbendazim, carbendazim chlorhydrate, carboxin, carpropamid, carvone, CGA41396, CGA41397, chinomethionate, chlorothalonil, chlorozolinate, clozylacon, copper containing compounds such as copper oxychloride, copper oxyquinolate, copper sulfate, copper tallate and Bordeaux mixture, cyclufenamid, cymoxanil, cyproconazole, cyprodinil, debacarb, di-2-pyridyl disulfide 1,1'-dioxide, dichlofluanid, diclomezine, dicloran, diethofencarb, difenoconazole, difenzoquat, diflumetorim, *O*,*O*-di-*iso*-propyl-*S*-benzyl thiophosphate, dimefluazole, dimetconazole, dimethomorph, dimethirimol, diniconazole, dinocap, dithianon, dodecyl dimethyl ammonium chloride, dodemorph, dodine, doguadine, edifenphos, epoxiconazole, ethirimol, ethyl-(Z)-*N*-benzyl-*N*-([methyl(methyl-thioethylideneamino-oxycarbonyl)amino]thio)-β-alaninate, etridiazole, famoxadone, fenamidone (RPA407213), fenarimol, fenbuconazole, fenfuram, fenhexamid (KBR2738), fenpiclonil, fenpropidin, fenpropimorph, fentin acetate, fentin hydroxide, ferbam, ferimzone, fluazinam, fludioxonil, flumetover, fluopyram, fluoxastrobin, fluoroimide, fluquinconazole, flusilazole, flutolanil, flutriafol, fluxapyroxad, folpet, fuberidazole, furalaxyl, furametpyr, guazatine, hexaconazole, hydroxyisoxazole, hymexazole, imazalil, imibenconazole, iminoctadine, iminoctadine triacetate, ipconazole, iprobenfos, iprodione, iprovalicarb (SZX0722), isopropanyl butyl carbamate, isoprothiolane, isopyrazam, kasugamycin, kresoxim-methyl, LY186054, LY211795, LY248908, mancozeb, mandipropamid, maneb, mefenoxam, metalaxyl, mepanipyrim, mepronil, metalaxyl, metconazole, metiram, metiram-zinc, metominostrobin, myclobutanil, neoasozin, nickel dimethyldithiocarbamate, nitrothal-*iso*propyl, nuarimol, ofurace, organomercury compounds, oxadixyl, oxasulfuron, oxolinic acid, oxpoconazole, oxycarboxin, pefurazoate, penconazole, pencycuron, penflufen, penthiopyrad, phenazin oxide, phosetyl-Al, phosphorus acids, phthalide, picoxystrobin (ZA1963), polyoxinD, polyram, probenazole, prochloraz, procymidone, propamocarb, propiconazole, propineb, propionic acid, prothioconazole, pyrazophos, pyrifenox, pyrimethanil, pyraclostrobin, pyroquilon, pyroxyfur, pyrrolnitrin, quaternary ammonium compounds, quinomethionate, quinoxyfen, quintozene, sedaxane, sipconazole (F-155), sodium pentachlorophenate, spiroxamine, streptomycin, sulfur, tebuconazole, tecloftalam, tecnazene, tetraconazole, thiabendazole, thifluzamid, 2-(thiocyanomethylthio)benzothiazole, thiophanate-methyl, thiram, timibenconazole, tolclofos-methyl, tolylfluanid, triadimefon, triadimenol, triazbutil, triazoxide, tricyclazole, tridemorph, trifloxystrobin (CGA279202), triforine, triflumizole, triticonazole, validamycin A, vapam, vinclozolin, zineb and ziram, N-[9-(dichloromethylene)-1,2,3,4-tetrahydro-1,4-methanonaphthalen-5-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide [1072957-71-1], 1-methyl-3-difluoromethyl-1H-pyrazole-4-carboxylic acid (2-dichloromethylene-3-ethyl-1-methyl-indan-4-yl)-amide, and 1-methyl-3-difluoromethyl-4H-pyrazole-4-carboxylic acid [2-(2,4-dichloro-phenyl)-2-methoxy-1-methyl-ethyl]-amide.

In addition, biological agents may be included in the composition of the invention e.g. *Baciullus* species such as *Bacillus firmus*, *Bacillus cereus*, *Bacillus subtilis*, and *Pasteuria* species such as *Pasteuria penetrans* and *Pasteuria nishiza*wae. A suitable *Bacillus firmus* strain is strain CNCM I-1582 which is commercially available as BioNem™. A suitable *Bacillus cereus* strain is strain CNCM I-1562. Of both *Bacillus* strains more details can be found in US 6,406,690. Other biological organisms that may be included in the compositions of the invention are bacteria such as *Streptomyces spp.* such as *S. avermitilis*, and fungi such as *Pochonia spp.* such as P. *chlamydosporia*. Also of interest are *Metarhizium spp.* such as *M. anisopliae*; *Pochonia spp.* such as *P. chlamydosporia*.

The compounds of the invention may be mixed with soil, peat or other rooting media for the protection of plants against seed-borne, soil-borne or foliar fungal diseases.

Examples of suitable synergists for use in the compositions include piperonyl butoxide, sesamex, safroxan and dodecyl imidazole.

Suitable herbicides and plant-growth regulators for inclusion in the compositions will depend upon the intended target and the effect required.

An example of a rice selective herbicide which may be included is propanil. An example of a plant growth regulator for use in cotton is PIX™.

Some mixtures may comprise active ingredients which have significantly different physical, chemical or biological properties such that they do not easily lend themselves to the same conventional formulation type. In these circumstances other formulation types may be prepared. For example, where one active ingredient is a water insoluble solid and the other a water insoluble liquid, it may nevertheless be possible to disperse each active ingredient in the same continuous aqueous phase by dispersing the solid active ingredient as a suspension (using a preparation analogous to that of an SC) but dispersing the liquid active ingredient as an emulsion (using a preparation analogous to that of an EW). The resultant composition is a suspoemulsion (SE) formulation.

Unless otherwise stated the weight ratio of the compound of I with an additional active ingredient may generally be between 1000 : 1 and 1 : 1000. In other embodiments that weight ratio of the compound of formula I to the additional active ingredient may be between 500 : 1 to 1 : 500, for example between 100 : 1 to 1 : 100, for example between 1 : 50 to 50 : 1, for example 1 : 20 to 20 : 1, for example 1:10 to 10:1, for example 1:5 to 5:1, for example 1:1, 1:2, 1:3, 1:4, 1:5, 2:1, 3:1, 4:1, or 5:1.

Mixtures with pyrethroids, in particular pymetrozine, are of particular interest for the present invention.

Compositions of the invention include those prepared by premixing prior to application, e.g. as a readymix or tankmix, or by simultaneous application or sequential application to the plant.

In order to apply a compounds of the invention as an insecticide, acaricide, nematicide or molluscicide to a pest, a locus of pest, or to a plant susceptible to attack by a pest, compounds of the invention is usually formulated into a composition which includes, in addition to the compound of the invention, a suitable inert diluent or carrier and, optionally, a surface active agent (SFA). SFAs are

chemicals which are able to modify the properties of an interface (for example, liquid/solid, liquid/air or liquid/liquid interfaces) by lowering the interfacial tension and thereby leading to changes in other properties (for example dispersion, emulsification and wetting). It is preferred that all compositions (both solid and liquid formulations) comprise, by weight, 0.0001 to 95%, more preferably 1 to 85%, for example 5 to 60%, of a compound of the invention. The composition is generally used for the control of pests such that a compound of the invention is applied at a rate of from 0.1g to10kg per hectare, preferably from 1g to 6kg per hectare, more preferably from 1g to 1kg per hectare.

In one embodiment the compounds of the invention are used for pest control on cotton at 1:500 g/ha, for example 10-70g/ha. However, it should be noted that due to the very damaging effect of the *Anthonomus grandis* (quantity and quality on yield), sprays are often very intense and at very low threshold levels and can be down to almost zero tolerance.

When used in a seed dressing, a compound of the invention is used at a rate of 0.0001g to 10g (for example 0.001g or 0.05g), preferably 0.005g to 10g, more preferably 0.005g to 4g, per kilogram of seed.

Compositions comprising a compound of the invention can be chosen from a number of formulation types, including dustable powders (DP), soluble powders (SP), water soluble granules (SG), water dispersible granules (WG), wettable powders (WP), granules (GR) (slow or fast release), soluble concentrates (SL), oil miscible liquids (OL), ultra low volume liquids (UL), emulsifiable concentrates (EC), dispersible concentrates (DC), emulsions (both oil in water (EW) and water in oil (EO)), micro-emulsions (ME), suspension concentrates (SC), aerosols, fogging/smoke formulations, capsule suspensions (CS) and seed treatment formulations. The formulation type chosen in any instance will depend upon the particular purpose envisaged and the physical, chemical and biological properties of the compound of the invention.

Dustable powders (DP) may be prepared by mixing a compound of the invention with one or more solid diluents (for example natural clays, kaolin, pyrophyllite, bentonite, alumina, montmorillonite, kieselguhr, chalk, diatomaceous earths, calcium phosphates, calcium and magnesium carbonates, sulfur, lime, flours, talc and other organic and inorganic solid carriers) and mechanically grinding the mixture to a fine powder.

Soluble powders (SP) may be prepared by mixing a compound of the invention with one or more water-soluble inorganic salts (such as sodium bicarbonate, sodium carbonate or magnesium sulfate) or one or more water-soluble organic solids (such as a polysaccharide) and, optionally, one or more wetting agents, one or more dispersing agents or a mixture of said agents to improve water dispersibility/solubility. The mixture is then ground to a fine powder. Similar compositions may also be granulated to form water soluble granules (SG).

Wettable powders (WP) may be prepared by mixing a compound of the invention with one or more solid diluents or carriers, one or more wetting agents and, preferably, one or more dispersing agents and, optionally, one or more suspending agents to facilitate the dispersion in liquids. The mixture is then

ground to a fine powder. Similar compositions may also be granulated to form water dispersible granules (WG).

Granules (GR) may be formed either by granulating a mixture of a compound of the invention and one or more powdered solid diluents or carriers, or from pre-formed blank granules by absorbing a compound of the invention (or a solution thereof, in a suitable agent) in a porous granular material (such as pumice, attapulgite clays, fuller's earth, kieselguhr, diatomaceous earths or ground corn cobs) or by adsorbing a compound of the invention (or a solution thereof, in a suitable agent) on to a hard core material (such as sands, silicates, mineral carbonates, sulfates or phosphates) and drying if necessary. Agents which are commonly used to aid absorption or adsorption include solvents (such as aliphatic and aromatic petroleum solvents, alcohols, ethers, ketones and esters) and sticking agents (such as polyvinyl acetates, polyvinyl alcohols, dextrins, sugars and vegetable oils). One or more other additives may also be included in granules (for example an emulsifying agent, wetting agent or dispersing agent).

Dispersible Concentrates (DC) may be prepared by dissolving a compound of the invention in water or an organic solvent, such as a ketone, alcohol or glycol ether. These solutions may contain a surface active agent (for example to improve water dilution or prevent crystallization in a spray tank).

Emulsifiable concentrates (EC) or oil-in-water emulsions (EW) may be prepared by dissolving a compound of the invention in an organic solvent (optionally containing one or more wetting agents, one or more emulsifying agents or a mixture of said agents). Suitable organic solvents for use in ECs include aromatic hydrocarbons (such as alkylbenzenes or alkylnaphthalenes, exemplified by SOLVESSO 100, SOLVESSO 150 and SOLVESSO 200; SOLVESSO is a Registered Trade Mark), ketones (such as cyclohexanone or methylcyclohexanone) and alcohols (such as benzyl alcohol, furfuryl alcohol or butanol), *N*-alkylpyrrolidones (such as *N*-methylpyrrolidone or *N*-octylpyrrolidone), dimethyl amides of fatty acids (such as C_8-C_{10} fatty acid dimethylamide) and chlorinated hydrocarbons. An EC product may spontaneously emulsify on addition to water, to produce an emulsion with sufficient stability to allow spray application through appropriate equipment. Preparation of an EW involves obtaining a compound of the invention either as a liquid (if it is not a liquid at room temperature, it may be melted at a reasonable temperature, typically below 70°C) or in solution (by dissolving it in an appropriate solvent) and then emulsifiying the resultant liquid or solution into water containing one or more SFAs, under high shear, to produce an emulsion. Suitable solvents for use in EWs include vegetable oils, chlorinated hydrocarbons (such as chlorobenzenes), aromatic solvents (such as alkylbenzenes or alkylnaphthalenes) and other appropriate organic solvents which have a low solubility in water.

Microemulsions (ME) may be prepared by mixing water with a blend of one or more solvents with one or more SFAs, to produce spontaneously a thermodynamically stable isotropic liquid formulation. A compound of the invention is present initially in either the water or the solvent/SFA blend. Suitable solvents for use in MEs include those hereinbefore described for use in ECs or in EWs. An ME may be either an oil-in-water or a water-in-oil system (which system is present may be determined by conductivity measurements) and may be suitable for mixing water-soluble and oil-soluble pesticides in

the same formulation. An ME is suitable for dilution into water, either remaining as a microemulsion or forming a conventional oil-in-water emulsion.

Suspension concentrates (SC) may comprise aqueous or non-aqueous suspensions of finely divided insoluble solid particles of a compound of the invention. SCs may be prepared by ball or bead milling the solid compound of the invention in a suitable medium, optionally with one or more dispersing agents, to produce a fine particle suspension of the compound. One or more wetting agents may be included in the composition and a suspending agent may be included to reduce the rate at which the particles settle. Alternatively, a compound of the invention may be dry milled and added to water, containing agents hereinbefore described, to produce the desired end product.

Aerosol formulations comprise a compound of the invention and a suitable propellant (for example *n*-butane). A compound of the invention may also be dissolved or dispersed in a suitable medium (for example water or a water miscible liquid, such as *n*-propanol) to provide compositions for use in non-pressurized, hand-actuated spray pumps.

A compound of the invention may be mixed in the dry state with a pyrotechnic mixture to form a composition suitable for generating, in an enclosed space, a smoke containing the compound.

Capsule suspensions (CS) may be prepared in a manner similar to the preparation of EW formulations but with an additional polymerization stage such that an aqueous dispersion of oil droplets is obtained, in which each oil droplet is encapsulated by a polymeric shell and contains a compound of the invention and, optionally, a carrier or diluent therefor. The polymeric shell may be produced by either an interfacial polycondensation reaction or by a coacervation procedure. The compositions may provide for controlled release of the compound of the invention and they may be used for seed treatment. A compound of the invention may also be formulated in a biodegradable polymeric matrix to provide a slow, controlled release of the compound.

A composition may include one or more additives to improve the biological performance of the composition (for example by improving wetting, retention or distribution on surfaces; resistance to rain on treated surfaces; or uptake or mobility of a compound of the invention). Such additives include surface active agents, spray additives based on oils, for example certain mineral oils or natural plant oils (such as soy bean and rape seed oil), and blends of these with other bio-enhancing adjuvants (ingredients which may aid or modify the action of a compound of the invention).

A compound of the invention may also be formulated for use as a seed treatment, for example as a powder composition, including a powder for dry seed treatment (DS), a water soluble powder (SS) or a water dispersible powder for slurry treatment (WS), or as a liquid composition, including a flowable concentrate (FS), a solution (LS) or a capsule suspension (CS). The preparations of DS, SS, WS, FS and LS compositions are very similar to those of, respectively, DP, SP, WP, SC and DC compositions described above. Compositions for treating seed may include an agent for assisting the adhesion of the composition to the seed (for example a mineral oil or a film-forming barrier).

Wetting agents, dispersing agents and emulsifying agents may be surface SFAs of the cationic, anionic, amphoteric or non-ionic type.

Suitable SFAs of the cationic type include quaternary ammonium compounds (for example cetyltrimethyl ammonium bromide), imidazolines and amine salts.

Suitable anionic SFAs include alkali metals salts of fatty acids, salts of aliphatic monoesters of sulfuric acid (for example sodium lauryl sulfate), salts of sulfonated aromatic compounds (for example sodium dodecylbenzenesulfonate, calcium dodecylbenzenesulfonate, butylnaphthalene sulfonate and mixtures of sodium di-*iso*propyl- and tri-*iso*propyl-naphthalene sulfonates), ether sulfates, alcohol ether sulfates (for example sodium laureth-3-sulfate), ether carboxylates (for example sodium laureth-3-carboxylate), phosphate esters (products from the reaction between one or more fatty alcohols and phosphoric acid (predominately mono-esters) or phosphorus pentoxide (predominately di-esters), for example the reaction between lauryl alcohol and tetraphosphoric acid; additionally these products may be ethoxylated), sulfosuccinamates, paraffin or olefine sulfonates, taurates and lignosulfonates.

Suitable SFAs of the amphoteric type include betaines, propionates and glycinates.

Suitable SFAs of the non-ionic type include condensation products of alkylene oxides, such as ethylene oxide, propylene oxide, butylene oxide or mixtures thereof, with fatty alcohols (such as oleyl alcohol or cetyl alcohol) or with alkylphenols (such as octylphenol, nonylphenol or octylcresol); partial esters derived from long chain fatty acids or hexitol anhydrides; condensation products of said partial esters with ethylene oxide; block polymers (comprising ethylene oxide and propylene oxide); alkanolamides; simple esters (for example fatty acid polyethylene glycol esters); amine oxides (for example lauryl dimethyl amine oxide); and lecithins.

Suitable suspending agents include hydrophilic colloids (such as polysaccharides, polyvinylpyrrolidone or sodium carboxymethylcellulose) and swelling clays (such as bentonite or attapulgite).

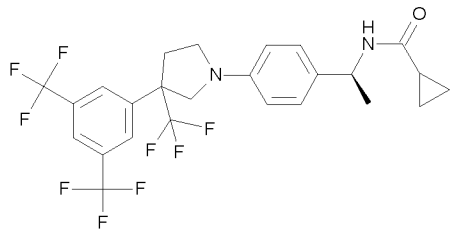
A compound of the invention may be applied by any of the known means of applying pesticidal compounds. For example, it may be applied, formulated or unformulated, to the pests or to a locus of the pests (such as a habitat of the pests, or a growing plant liable to infestation by the pests) or to any part of the plant, including the foliage, stems, branches or roots, to the seed before it is planted or to other media in which plants are growing or are to be planted (such as soil surrounding the roots, the soil generally, paddy water or hydroponic culture systems), directly or it may be sprayed on, dusted on, applied by dipping, applied as a cream or paste formulation, applied as a vapor or applied through distribution or incorporation of a composition (such as a granular composition or a composition packed in a water-soluble bag) in soil or an aqueous environment.

A compound of the invention may also be injected into plants or sprayed onto vegetation using electrodynamic spraying techniques or other low volume methods, or applied by land or aerial irrigation systems.

Compositions for use as aqueous preparations (aqueous solutions or dispersions) are generally supplied in the form of a concentrate containing a high proportion of the active ingredient, the concentrate being added to water before use. These concentrates, which may include DCs, SCs, ECs, EWs, MEs, SGs, SPs, WPs, WGs and CSs, are often required to withstand storage for prolonged periods and, after such storage, to be capable of addition to water to form aqueous preparations which remain homogeneous for a sufficient time to enable them to be applied by conventional spray equipment. Such aqueous preparations may contain varying amounts of a compound of the invention (for example 0.0001 to 10%, by weight) depending upon the purpose for which they are to be used.

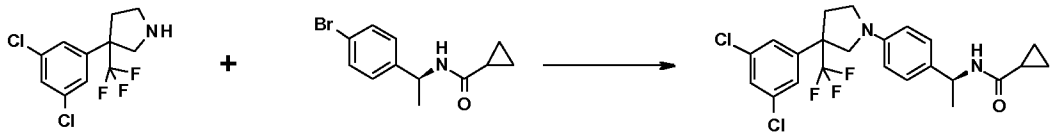
The following Examples illustrate but do not limit the invention.

Example 1: Preparation of N-[(1S)-1-[4-[3-[3,5-bis(trifluoromethyl)phenyl]-3-(trifluoromethyl)pyrrolidin-1-yl]phenyl]ethyl]cyclopropanecarboxamide



To a solution of 3-[3,5-bis(trifluoromethyl)phenyl]-3-(trifluoromethyl)pyrrolidine (0.15 g, 0.4271 mmol, prepared as described in WO 2008/128711) and N-[(1S)-1-(4-bromophenyl)ethyl]cyclopropanecarboxamide (0.134 g, 0.4997 mmol, prepared as described in WO 2012/001107) in Toluene (6.03 mL), stirred under argon were added tris(dibenzylideneacetone)dipalladium(0) (9 mg), 4,5-Bis(diphenylphosphino)-9,9-dimethylxanthene (18 mg) and sodium tert-butoxide (96 mg). The mixture was heated in a microwave at 130°C for 15 min. The reaction was then diluted with ethylacetate and water then brine and then the mixture was extracted with ethyl acetate. The organic layers were combined and dried over magnesium sulphate, filtered then concentrated under reduced pressure to give a yellow oil which was purified by chromatography on a column (cyclohexane/EtOAc as solvent) to afford the desired product as a white foam (172 mg).
^{1}H NMR (CDCl3, 400MHz): d = 7.92 (s, 1 H), 7.86 (s, 2 H), 7.27 (m, 2 H), 6.63 (d, *J*=8.4 Hz, 2 H), 5.74 (d, *J*=7.7 Hz, 1 H), 5.09 (t, *J*=7.3 Hz, 1 H), 4.16 (d, *J*=10.3 Hz, 1 H), 3.85 (d, *J*=10.3 Hz, 1 H), 3.60 (d, *J*=8.1 Hz, 1 H), 3.51 (d, *J*=2.9 Hz, 1 H), 2.91 - 3.03 (m, 1 H), 2.61 (d, *J*=13.6 Hz, 1 H), 1.50 (d, *J*=7.0 Hz, 3 H), 1.17 - 1.34 (m, 1 H), 0.90 - 1.04 (m, 2 H), 0.63 - 0.80 ppm (m, 2 H)

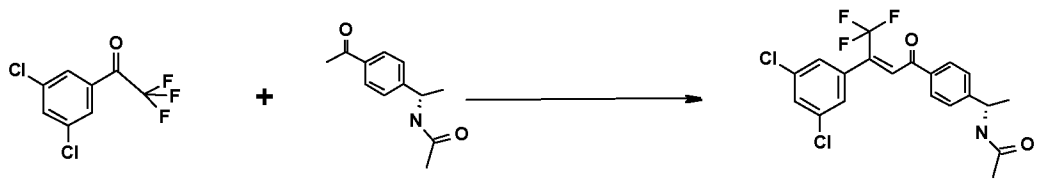
Example 2: Preparation of N-[(1S)-1-[4-[3-(3,5-dichlorophenyl)-3-(trifluoromethyl)pyrrolidin-1-yl]phenyl]ethyl]cyclopropanecarboxamide



Tris(dibenzylideneacetone)dipalladium(0) (32 mg), 4,5-bis(diphenylphosphino)-9,9-dimethylxanthene (61 mg) and sodium tert-butoxide (190 mg) were added to a solution of 3-(3,5-dichlorophenyl)-3-(trifluoromethyl)pyrrolidine (520 mg, prepared as described in WO 2008/128711) and N-[(1S)-1-(4-bromophenyl)ethyl]cyclopropanecarboxamide (prepared as described in WO 2012/001107, 520 mg) in toluene (15 mL) under argon atmosphere. The mixture was heated in a microwave at 130°C for 30 min. The reaction was then diluted with ethylacetate and water then brine and then the mixture was extracted with ethyl acetate. The organic layers were combined and dried over sodium sulphate, filtered then concentrated under reduced pressure to give a yellow oil which was purified by chromatography on column (Heptane/EtOAc as solvent (10/0 to 0/10) to afford the desired product as a white foam (650 mg). ^{1}H NMR (CDCl3, 400MHz): d = 7.40 (s, 1 H), 7.31 (s, 2 H), 7.26 (m, 2 H), 6.62 (d, 2 H), 5.73 (d, 1 H), 5.09 (t, 1 H), 4.06 (d, 1 H), 3.85 (d, 1 H), 3.57 (m, 1 H), 3.50 (m, 1 H), 2.84 (m, 1 H), 2.56 (m, 1 H), 1.50 (d, 3 H), 1.2 (m, 1 H), 0.99 (m, 2 H), 0.72 ppm (m, 2 H)

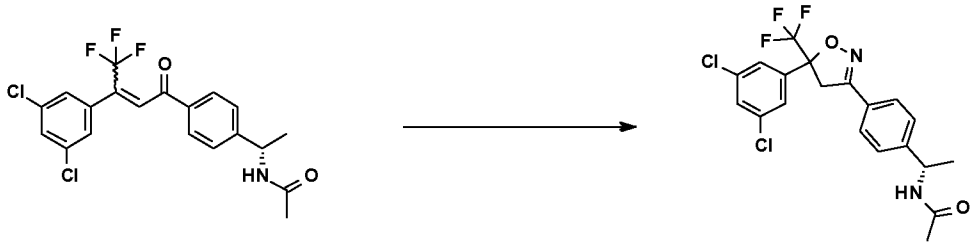
Example 3: Preparation of N-[(1S)-1-[4-[5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]phenyl]ethyl]acetamide

Step 1:



To a suspension of N-[(1S)-1-(4-acetylphenyl)ethyl]acetamide (3 g) and 1-(3,5-dichlorophenyl)-2,2,2-trifluoro-ethanone (3.6 g) in 1,2-dichloroethane (40 mL) was added triethylamine (0.2 mL) and potassium carbonate (1 g). The solution was stirred at 80°C. After 40 minutes more potassium carbonate (1 g) was added. The solution was heated at 80°C for another 20 minutes then more potassium carbonate (1 g) was added and the suspension was refluxed for 16 hours. The mixture was then cooled to room temperature, and water was added. The mixture was extracted with dichloromethane then washed with brine. The organic layers were combined and dried over magnesium sulphate, filtered then concentrated under reduced pressure to give a yellow oil which was purified by chromatography on column (Heptane/EtOAc as solvent (1/0 to 3/7) to afford the desired product as a yellow oil (5 g).
1H NMR (CDCl3, 400MHz): d = 7.78 - 7.87 (m, 2 H), 7.42 - 7.40 (m, 2 H), 7.33 (m, 1 H), 7.16 (d, 2 H), 5.69 (d, 1 H), 5.02 - 5.26 (m, 1 H), 2.02 (s, 3 H), 1.48 - 1.51 ppm (d, 3 H)

Step 2:

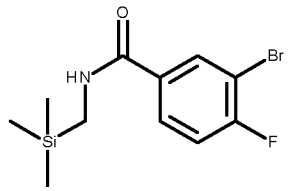


To a solution of N-[(1S)-1-[4-[3-(3,5-dichlorophenyl)-4,4,4-trifluoro-but-2-enoyl]phenyl]ethyl]acetamide (100 mg) in 1,2-dichloroethane (4 mL) was added tetrabutylammonium hydrobromide (40 mg), hydroxylamine (0.03 mL, 50% in water) and sodium hydroxide (0.46 mL, 1M) at room temperature. The solution was stirred at room temperature for 6 hours then a solution of saturated ammonium chloride was added. The mixture was extracted with DCM then washed with brine. The organic layers were combined and dried over magnesium sulphate, filtered then concentrated under reduced pressure to give a yellow oil which was purified by chromatography on column (Heptane/EtOAc as solvent (1/0 to 1/1) to afford the desired product as a yellow oil (77 mg).

^{1}H NMR (CDCl3, 400MHz): d = 7.59 - 7.69 (m, 2 H), 7.49 - 7.57 (m, 2 H), 7.43 (t, *J*=1.8 Hz, 1 H), 7.34 - 7.41 (m, *J*=8.4 Hz, 2 H), 5.65 (d, *J*=7.3 Hz, 1 H), 5.15 (t, *J*=7.2 Hz, 1 H), 4.01 - 4.13 (m, 1 H), 3.68 (d, *J*=17.2 Hz, 1 H), 2.01 (s, 3 H), 1.50 (d, *J*=7.0 Hz, 3 H), 1.27 ppm (t, *J*=7.2 Hz, 1 H).

Example 4: Preparation of 2-(1,2,4-triazol-1-yl)-5-[3-(3,4,5-trichlorophenyl)-3-(trifluoromethyl)-2,4-dihydropyrrol-5-yl]benzonitrile

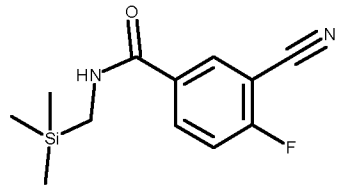
Step 1: Preparation of 3-bromo-4-fluoro-N-(trimethylsilylmethyl)benzamide



To a solution of 3-bromo-4-fluoro-benzoic acid (500 mg, 2.2830 mmol) in dichloromethane (15 mL) was added N,N-dimethylpyridin-4-amine (28mg, 0.22830 mmol) , EDCI HCl (570mg, 2.9679 mmol). To this was added trimethylsilylmethanamine (260mg, 2.5113 mmol) and the reaction was stirred at room temperature under nitrogen atmosphere overnight and monitored by TLC. The reaction mass was diluted with water (10 mL) and extracted with DCM (3 x 50 mL). The combined organic layer was dried over sodium sulphate and concentrated under vacuum. Purification by chromatography (hexane/ethyl acetate) provided 3-bromo-4-fluoro-N-(trimethylsilylmethyl)benzamide (550 mg,).

^{1}H NMR (400MHz, CDCl3): 7.94(dd,1H); 7.65(m,1H); 7.15(t, 1H); 5.9(brs, 1H); 2.94(d, 2H); 0.12(s, 9H), LCMS (methanol, ESI): retention time = 2.06, m/z = 302.0(M-H)

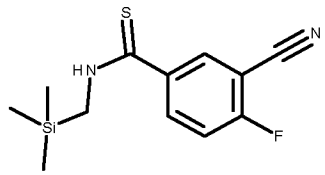
Step 2: Preparation of 3-cyano-4-fluoro-N-(trimethylsilylmethyl)benzamide



In a sealed tube was taken a solution of 3-bromo-4-fluoro-N-(trimethylsilylmethyl)benzamide (10 g, 32.870 mmol) in N,N-dimethylformamide (60 mL) was added zinc formonitrile (7.85 g, 65.740 mmol) followed by palladium(0)tetrakis(triphenylphosphine) (7.61 g, 6.5740 mmol) . The reaction was degassed and purged with nitrogen and stirred at 100°C for 4-5 hours. The reaction was diluted with water (100 mL) extracted with ethylacetate (3 x 100 mL), and washed with sodium bicarbonate (50 mL) . The combined organic layer was dried over sodium sulphate and concentrated under vacuum. Purification by chromatography (hexane/ethyl acetate) provided 3-cyano-4-fluoro-N-(trimethylsilylmethyl)benzamide(6.7 g)

^{1}H NMR (400MHz, CDCl3): 7.98-8.02(m, 2H); 7.3(m, 1H); 5.94(brs, 1H); 2.95-2.98(m, 2H); 0.13(s, 9H). LCMS (methanol, APCI): retention time = 4.11, m/z = 249.09(M-H)

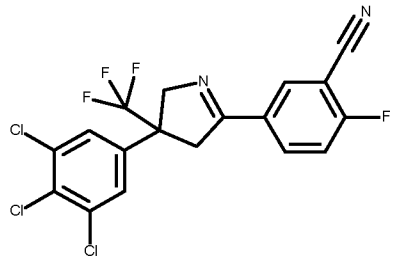
Step 3: Preparation of 3-cyano-4-fluoro-N-(trimethylsilylmethyl)benzenecarbothioamide



A solution of 3-cyano-4-fluoro-N-(trimethylsilylmethyl)benzamide (6.5 g, 26 mmol) and 2,4-bis(4-methoxyphenyl)-2,4-dithioxo-1,3,2,4-dithiadiphosphetane (11g, 26 mmol) in tetrahydrofuran (75 mL) was refluxed for 2 hours. The reaction mass was concentrated to remove THF, diluted with water (50 mL), and extracted with ethylacetate (3 x 100 mL). The combined organic layer was dried over sodium sulphate and concentrated under vacuum. Purification by chromatography (hexane/ethyl acetate) provided 3-cyano-4-fluoro-N-(trimethylsilylmethyl) benzenecarbothioamide (4.8g).

^{1}H NMR (400MHz, CDCl3): 8.2(m,1H); 7.93-7.99(m,1H); 7.64(brs, 1H);7.22(m,1H); 3.52(d, 2H); 0.18(s, 9H), LCMS (methanol, APCI): retention time = 4.55, m/z = 265.45(M-H).

Step 4: Preparation of 2-fluoro-5-[3-(3,4,5-trichlorophenyl)-3-(trifluoromethyl)-2,4-dihydropyrrol-5-yl]benzonitrile

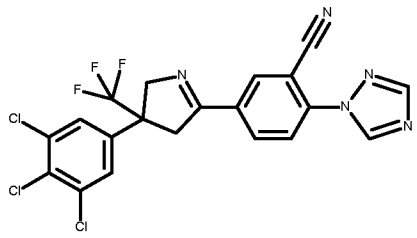


To a solution of 3-cyano-4-fluoro-N-(trimethylsilylmethyl)benzenecarbothioamide (4 g, 15.02 mmol) in N,N-dimethylformamide (40 mL) was added dipotassium carbonic acid (5.26 g, 37.54 mmol). To this was added iodomethane (21.31 g, 150.2 mmol). The reaction mass was stirred at room temperature for 3 hours and monitored by TLC. The reaction mass was quenched with water (10 mL) and extracted with ethylacetate (3 x 50mL). The combined organic layer was dried over sodium sulphate and concentrated under vacuum to give methyl-3-cyano-4-fluoro-N-(trimethylsilylmethyl) benzenecarboximidothioate.

To a -5°C cooled solution of methyl-3-cyano-4-fluoro-N-(trimethylsilylmethyl) benzenecarboximidothioate (4 g, 14.27 mmol) and 1,2,3-trichloro-5-[1-(trifluoromethyl)vinyl]benzene (3.97g., 14.41 mmol) in tetrahydrofuran (5 mL) was slowly added tetrabutylammonium hydrofluoride (7.13 mL, 7.133 mmol, 1 mol/L) . The reaction was stirred at -5°C for 30 mins, then allowed to come to room temperature, and stirred at room temperature for 2 hours under nitrogen atmosphere. The reaction was diluted with water (50 mL) and extracted with ethylacetate (3 x 100 mL). The combined organic layer was dried over sodium sulphate and concentrated under vacuum. Purification by chromatography (hexane/ethyl acetate) provided 2-fluoro-5-[3-(3,4,5-trichlorophenyl)-3-(trifluoromethyl)-2,4-dihydropyrrol-5-yl]benzonitrile (2.5 g).

^{1}H NMR(400MHz, $CDCl_3$): 8.04-8.13(m, 2H); 7.37(s, 2H); 7.35(m, 1H); 4.82(dd, 1H); 4.36(d, 1H); 3.7(dd, 1H); 3.35(d, 1H) ,LCMS (methanol, APCI): retention time = 5.05, m/z = 434.88(M+H)

Step 5: Preparation of 2-(1,2,4-triazol-1-yl)-5-[3-(3,4,5-trichlorophenyl)-3-(trifluoromethyl)-2,4-dihydropyrrol-5-yl]benzonitrile

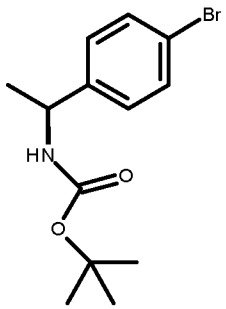


A solution of 2-fluoro-5-[3-(3,4,5-trichlorophenyl)-3-(trifluoromethyl)-2,4-dihydropyrrol-5-yl]benzonitrile (1.0 g, 2.3 mmol) , dipotassium carbonic acid (390 mg, 2.8 mmol) and 1H-1,2,4-triazole (190mg, 2.8 mmol) were heated at 120°C for 2-3 hours and monitored by TLC. The reaction was diluted with water (10 mL) and extracted with ethylacetate (3 x 30 mL). The combined organic layer was dried over sodium sulphate and concentrated under vacuum. Purification by chromatography (hexane/ethyl

acetate) provided 2-(1,2,4-triazol-1-yl)-5-[3-(3,4,5-trichlorophenyl)-3-(trifluoromethyl)-2,4-dihydropyrrol-5-yl]benzonitrile as solid (950 mg). Melting point: 162-164°C.
^{1}H NMR (400MHz, $CDCl_3$): 8.9(s, 1H), 8.29-8.34(m, 2H); 8.21(s, 1H); 7.93(d, 1H); 7.40(s, 2H); 4.94(d, 1H); 4.51(d, 1H); 3.84(d, 1H); 3.54(d, 1H);, LCMS (methanol, APCI): retention time =4.96, m/z = 483.94(M+H)

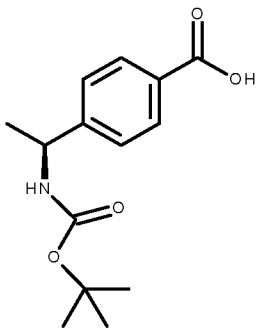
Example 5: Preparation of N-[(1S)-1-[4-[5-(3,4,5-trichlorophenyl)-3-(trifluoromethyl)-2,4-dihydropyrrol-3-yl]phenyl]ethyl]cyclopropanecarboxamide

Step 1: Preparation of tert-butyl N-[(1S)-1-(4-bromophenyl)ethyl]carbamate



To a stirring solution of compound (1S)-1-(4-bromophenyl)ethanamine (50 mmol) in a 50 mL roundbottom flask and tert-butoxycarbonyl tert-butyl carbonate (50 mmol) was added over period of 20 min and stirring was continued vigorously, After 5 min solid was precipitated out from reaction mass and thus obtained solid was filtered and washed with hexane and dried under vacuum. Weight: 13 g
^{1}H-NMR (400 MHz, $CDCl_3$): 7.45(2H, d), 7.18(2H, d), 4.74(1H, m), 1.40-1.48 (12H, m).

Step 2: Preparation of 4-[(1S)-1-(tert-butoxycarbonylamino)ethyl]benzoic acid

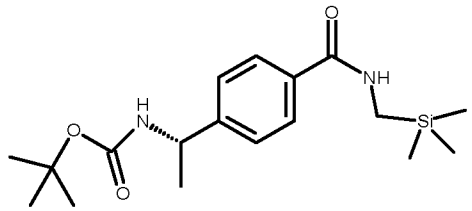


To a stirring solution of compound tert-butyl N-[(1S)-1-(4-bromophenyl)ethyl]carbamate (1 g, 3.331 mmol) in THF (30 mL) cooled to -78°C, methyl lithium (5.33 mmol, 1.6 eq.) was added drop wise under nitrogen atmosphere and stirring was continued for 15 mins followed by addition of butyllithium (5.33 mmol, 1.6 eq.) drop wise and stirring was continued for 30 mins. Dry carbon dioxide was added and stirring continued for 1 hour at -70°C to room temperature. The reaction mass was quenched with water (50 mL) and the compound was extracted with ethylacetate (30 mL x 2) in order to remove debromo

compound. The aqueous layer was acidified with ammonium chloride and extracted with ethylacetate (30 mL x 2). The combined organic layers were dried with sodium sulfate and evaporated off under vacuum and dried under vacuum. Weight: 0.61 g

^{1}H-NMR (400 MHz, $CDCl_3$): 7.86(2H, d), 7.37(2H, d), 4.64(1H, m), 1.28-1.31 (12H, m). LC-MS (methanol, ESI): m/z =264(M-H), RT 1.95-2.07.

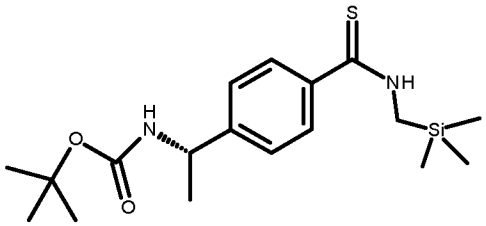
Step 3: Preparation of tert-butyl N-[(1S)-1-[4-(trimethylsilylmethylcarbamoyl)phenyl]ethyl]carbamate



To a stirring solution of 4-[(1S)-1-(tert-butoxycarbonylamino)ethyl]benzoic acid (1 g, 3.769 mmol), 1-hydroxybenzotriazole hydrate (542 mg, 3.5mmol) in DMF (5 mL), in DCM (30 mL), trimethylsilylmethanamine (0.38 g, 3.7 mmol), trimethylsilylmethanamine (0.38 g, 3.7 mmol) and the reaction mass was cooled to 0°C and 3-(ethyliminomethyleneamino)-N,N-dimethyl-propan-1-amine hydrochloride (848 mg, 4.4234 mmol) was added and the reaction was stirred at 0°C to room temperature overnight. TLC showed the reaction was completed. The reaction mass was quenched with water (30 mL) and extracted with DCM (35 mL x 2) and the combined organic layer was washed with water (20 mL x 2) and dried with sodium sulfate and evaporated of under reduced pressure and compound was purified by combiflash. Weight: 0.93 g

^{1}H-NMR (400 MHz, $CDCl_3$): 7.68 (2H, d), 7.34(2H, d), 5.93(1H, m). 4.81 (2H, d), 2.95(2H, d), 1.40-1.45 (12H, m). LC-MS (methanol, ESI): m/z =349(M-H), RT 1.95-2.07 .

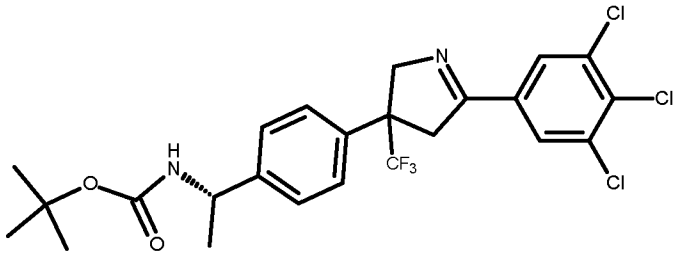
Step 4: Preparation of tert-butyl N-[(1S)-1-[4(trimethylsilylmethylcarbamothioyl)phenyl]ethyl]carbamate



To a solution of tert-butyl N-[(1S)-1-[4-(trimethylsilylmethylcarbamoyl)phenyl]ethyl]carbamate (1 g, 2.853 mmol) in THF (25 mL) was added 2,4-bis(4-methoxyphenyl)-1,3,2,4-dithiadiphosphetane-2,4-disulfide (1 eq, 2.853 mmol,) and reaction mass was stirred at 65 °C for 4hours. TLC showed the reaction was completed. The solvent was removed from the reaction mass on a rotary evaporator and the resultant reaction mass was diluted with ethylacetate and washed with water (twice). The organic layer was dried over anhydrous sodium sulfate and concentrated under reduced pressure. The crude mass thus obtained was purified by combiflash (silica gel). Weight: 0.8 g

^{1}H-NMR (400 MHz, $CDCl_3$): 7.65 (2H, d), 7.51-7.52 (1H, m), 7.30(2H, d), 4.76-4.81 (2H, m), 3.51 (2H, d), 1.40-1.45 (12H, m). LC-MS (methanol, ESI): m/z =365 (M-H), RT 2.51-2.57.

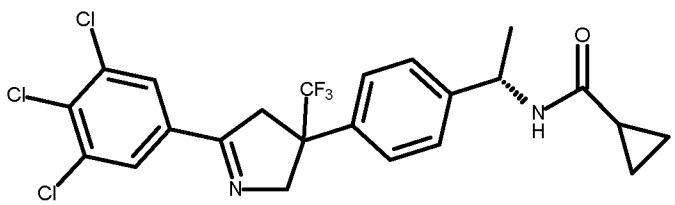
Step 5: Preparation of tert-butyl N-[(1S)-1-[4-[5-(3,4,5-trichlorophenyl)-3-(trifluoromethyl)-2,4-dihydropyrrol-3-yl]phenyl]ethyl]carbamate



To stirring solution of compound tert-butyl N-[(1S)-1-[4-(trimethylsilylcarbamothioyl)phenyl]ethyl]carbamate (0.5 g, 1 mmol) in DMF (25 mL), potassium carbonate (2 eq., 2 mmol) was added followed by addition of iodomethane (10 eq., 10 mmol) over period of 1 hour and stirring was continued for 3 ours. After completion of the reaction (monitored by TLC), the reaction mass was diluted with ethylacetate and washed with water (20 mL x 3) and dried with sodium sulphate and evaporated off under vacuum. The obtained reaction mass was taken into THF (25 mL) and 1,2,3-trichloro-5-[1-(trifluoromethyl)vinyl] benzene (1 eq., 1 mmol) was added into it. The mixture was cooled to 0°C, TBAF (1 eq, 1 mmol) was added and stirring was continued for 3 hours at room temperature. After completion of the reaction (monitored by TLC), the solvent was evaporated off under vacuum and the reaction mass was diluted with ethylacetate and washed with water (30 mL x 2) and dried with sodium sulphate and evaporated off under vacuum. The compound was purified by combiflash, (25-30% EtOAC-hexane). Weight: 0.11g

^{1}H-NMR (400 MHz, $CDCl_3$): **7.97** (2H, d), 7.33-7.56 (4H, m), 4.85-4.92 (2H, m), 4.50 (1H, dd), 3.91 (1H, dd), 3.58 (1H, dd), 1.40-1.45 (12H, m). LC-MS (methanol, ESI): m/z = 533 (M-H), RT 2.51-2.57.

Step 6: Preparation of N-[(1S)-1-[4-[5-(3,4,5-trichlorophenyl)-3-(trifluoromethyl)-2,4-dihydropyrrol-3-yl]phenyl]ethyl]cyclopropanecarboxamide



To a solution of tert-butyl N-[(1S)-1-[4-[5-(3,4,5-trichlorophenyl)-3-(trifluoromethyl)-2,4-dihydropyrrol-3-yl]phenyl]ethyl]carbamate (0.35 g) in DCM (20 mL) was added 2,2,2-trifluoroacetic acid (3 eq.) and the reaction mass was stirred for 5 hours at room temperature. After completion of the reaction, the solvent was removed under vacuum and the compound thus obtained was directly taken for the next step.

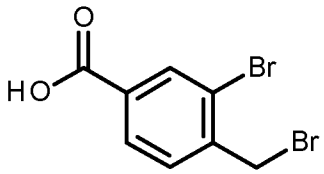
A Solution of (1S)-1-[4-[5-(3,4,5-trichlorophenyl)-3-(trifluoromethyl)-2,4-dihydropyrrol-3-yl]phenyl]ethanamine TFA salt (0.3 g, 0.7 mmol), in DCM (20 mL) was cooled at 0^0C. To the cooled mixture was added triethylamine (2.2 eq, 1.54 mmol) followed by dropwise addition of cyclopropane carboxylic acid chloride (1 eq., 0.7 mmol) over period of 5 min and stirring was continued overnight. After completion of the reaction (monitored by TLC), the reaction mass was diluted with DCM (20 mL) and washed with water (20 mL). The organic layer was then dried over anhydrous sodium sulphate, and the solvent was removed under vacuum. The compound was purified by Combiflash (35 % EtOAC-hexane). Weight: 0.2 g, melting point: 80-82^{0}C.

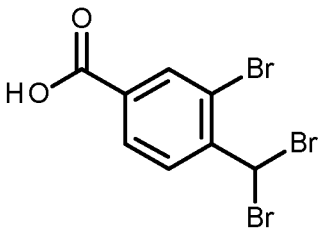
^{1}H-NMR (400 MHz, $CDCl_3$): 7.82(2H, d), 7.35-7.41 (4H, m), 6.05 (1H, m), 5.13 (1H, m), 4.86 (1H, dd), 4.42 (1H, dd), 3.78 (1H, dd), 3.45 (1H, dd). 1.46-1.50 (4H, m), 0.93-0.96 (2H, m), 0.72-0.731 (2H, m)

LC-MS (methanol, ESI): m/z = 501(M-H), RT 2.23-2.30.

Example 6: Preparation of N-{2-bromo-4- [4-(3,5-dichlorophenyl)-4-trifluoromethyl-4,5-dihydro-3H-pyrrol-2yl]-benzyl}acetamide.

Step 1: Bromination of 3-bromo-4-methyl benzoic acid.

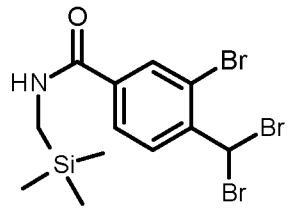




3-bromo-4-methyl benzoic acid (10 g, 46.72 mmol), NBS (8.7 g, 49.15 mmol)) and benzoylperoxide (0.5 g, 2 mmol)) were suspended in CCl_4 and then heated to reflux for 5 hours. After completion of the reaction (TLC monitoring) water was added to the reaction mixture. The organic layer was separated, dried over anhydrous sodium sulphate and concentrated in vaccuo. The crude mixture thus obtained containing 3-bromo-4-bromomethyl benzoic acid and the 3-bromo-4-dibromomethyl benzoic acid was taken directly into the next step.

LC-MS (methanol, ESI): m/z =291 (M-H) and 368 (M-H)

Step 2: Preparation of 3-bromo-4-(dibromomethyl)-N-[(trimethylsilyl)methyl]benzamide.

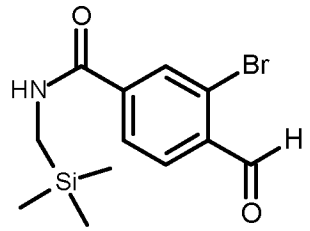


A mixture of of 3-bromo-4-(bromomethyl)-N-[(trimethylsilyl)methyl]benzamide and 3-bromo-4-(dibromomethyl)-N-[(trimethylsilyl)methyl]benzamide (19 g, 51 mmol), 1-(trimethylsilyl)methylamine (5.78 g, 56 mmol), N,N-dimethylaminopyridine (0.1 g) and N-(3-dimethylaminopropyl)-N'-ethylcarbodiimide.HCl (12.74 g, 66 mmol) was dissolved in tetrahydrofuran solvent and stirred for 1 hour at room temperature. After completion of the reaction (TLC monitoring), the reaction mixture was concentrated on a rotary evaporator. Water was added to the reaction mixture, followed by extraction with ethylacetate. The organic layer was separated and dried using sodium sulphate. The residue was purified by silica gel chromatography to obtain 3-bromo-4-(dibromomethyl)-N-[(trimethylsilyl) methyl] benzamide (16 g).

LC-MS (methanol, ESI): m/z =456 (M+H).

1H-NMR (400 MHz, CDCl3): 8.01 (1H, dd), 7.87(1H, d), 7.04(1H, dd), 6.13(1H,bs) , 3.51 (2H, d), 0.17 (9H,s).

Step 3: Preparation of 3-bromo-4-formyl-N-[(trimethylsilyl)methyl]benzamide.

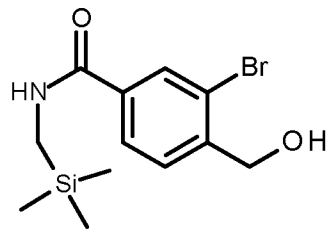


3-bromo-4-(dibromomethyl)-N-[(trimethylsilyl)methyl]benzamide (0.25 g, 0.69 mmol) was taken in acetone (5 mL) and water (2.5 mL). Silver nitrate (0.3 g, 1.7 mmol) was added to the reaction mixture. The reaction was stirred at room termperature for 6 hours. The reaction mass was then concentrated and extracted with ethylacetate. The organic layer was separated and dried using sodium sulphate. The organic layer was concentrated to obtain the product 3-bromo-4-formyl-N-[(trimethylsilyl)methyl]benzamide. (0.15 g).

LC-MS (methanol, ESI): m/z =314(M+H).

1H-NMR (400 MHz, CDCl3): 10.33(1H,s),7.90 (1H, m), 7.60 (1H, dd), 7.56 (1H, m), 5.99(1H,s),2.99 (2H, d), 0.17 (9H,s).

Step 4: Preparation of 3-bromo-4-hydroxymethyl-N-[trimethylsilaylmethyl] benzamide.



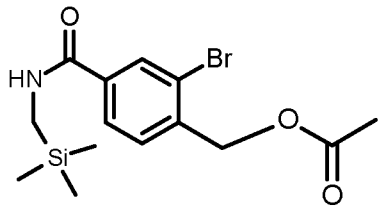
3-bromo-4-formyl-N-[(trimethylsilyl)methyl]benzamide(0.1 g, 0.3 mmol) was dissolved in methanol and to this was added $NaBH_4$ (0.014 g, 0.38 mmol). The reaction was stirred at room temperature for 1 hour.

Methanol was removed under vaccuo and water was added to the reaction mass which was then extracted using ethyl acetate. The organic layer was separated and dried using sodium sulphate followed by concentration to get the product 3-bromo-4-hydroxymethyl-N-[trimethylsilaylmethyl] benzamide (0.05 g).

LC-MS (methanol, ESI): m/z =316 (M+H).

1H-NMR (400 MHz, CDCl3): 7.90 (1H, m), 7.60 (1H, m), 7.53 (1H, m), 6.02(1H, s),4.75 (2H,s),2.99(2H,s), 0.17 (9H,s).

Step 5: Preparation of Acetic acid 2-bromo-4- (trimethylsilanylmethyl-carbamoyl)-benzylester.

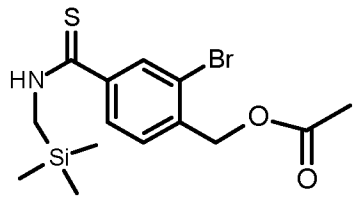


3-bromo-4-hydroxymethyl-N-[trimethylsilaylmethyl] benzamide (0.25 g, 0.7 mmol) was dissolved in DMF solvent, triethyl amine (0.159 g, 1.5 mmol) and acetyl chloride (0.061 g, 0.8 mmol) were added to the reaction mixture at room temperature. The reaction was stirred at room temperature for 30 min. Water was added and the reaction mass was then extracted with ethyl acetate. The organic layer was separated, dried using sodium sulphate and concentrated to get the product: acetic acid 2-bromo-4-(trimethylsilanylmethyl-carbamoyl)-benzylester (0.15 g).

LC-MS (methanol): m/z =358 (M+H).

^{1}H-NMR (400 MHz, CDCl3): 7.90 (1H, m), 7.60 (1H, m), 7.38 (1H, m), 6.14(1H, bs), 5.11(2H, s), 2.99 (2H, d), 2.15 (3H, s), 0.17 (9H, s).

Step 6: Preparation of 3-bromo-4-(2-oxo-propyl)-N-trimethylsilanylmethyl-thiobenzamide.

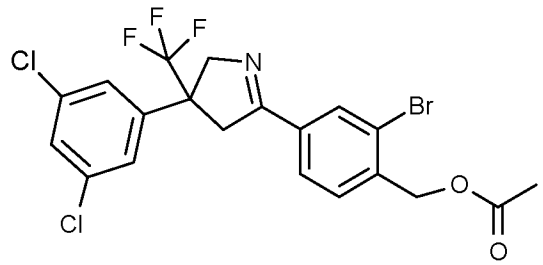


Acetic acid 2-bromo-4- (trimethylsilanylmethyl-carbamoyl)-benzylester (2.4 g, 7.6 mmol) and Lawesson reagent (2.7 g,6.6 mmol) were suspended in THF. The mixture was heated to reflux for 3 hours, concentrated, washed with water and extracted with ethyl acetate. The organic layer was separated and dried using sodium sulphate. The residue was purified by silica gel chromatography to obtain 3-bromo-4-(2-oxo-propyl)-N-trimethylsilanylmethyl-thiobenzamide (1.8 g).

LC-MS (methanol, ESI): m/z =374(M+H).

^{1}H-NMR (400 MHz, CDCl3): 7.90 (1H, m), 7.60 (1H, m), 7.38 (1H, m), 6.01(1H, br s), 5.11 (2H, d), 2.99 (2H, d), 2.15 (3H, s), 0.17 (9H, s)

Step 7: Preparation of Acetic acid 2-bromo-4- [4-(3,5-dichlorophenyl)-4-trifluoromethyl-4,5-dihydro-3H-pyrrol-2yl]-benzylester.

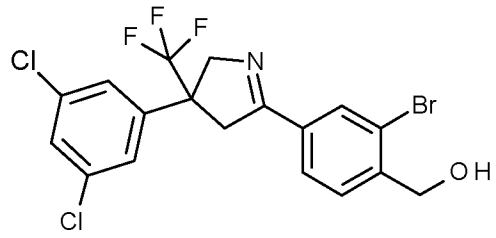


A mixed solution of methyliodide (0.69 g,4.8 mmol), potassium carbonate (0.80 g, 5.7 mmol) and 3-bromo-4-(2-oxo-propyl)-N-trimethylsilanylmethyl-thiobenzamide (1.8 g, 5.4 mmol) in DMF (25 mL) was stirred at 0°C for 4 hours.The reaction mixture was poured into ice-cold water and extracted with ethyl acetate. The organic layer was separated, dried using sodium sulphate and concentrated to get the crude acetic acid 2-bromo-4{methylsulfanyl-[(E)- trimethylsilanylmethylimino]-methyl}-benzyl ester.(0.95g) which was dissolved in THF and cooled to 0°C under nitrogen atmosphere. A solution of TBAF (1.0 M in THF) (0.56 mL) was added gradually into it and reaction mixture was stirred for 8 hours at room temperature. The reaction mass was then concentrated and extracted with ethylacetate. The organic layer was separated and dried using sodium sulphate. The resulting mixture was then purified by silica gel chromatography to obtain acetic acid 2-bromo-4- [4-(3,5-dichlorophenyl)-4-trifluoromethyl-4,5-dihydro-3H-pyrrol-2yl]-benzylester (1.1g).

LC-MS (methanol, ESI): m/z =508 (M+H).

^{1}H-NMR (400 MHz, CDCl3): 8.07 (1H, m), 7.71 (1H, m), 7.47 (1H, m), 7.38 (1H, m), 7.24(2H, m), 5.23(2H, s), 4.90 (1H, m),4.43 (1H, d), 3.75 (1H, m), 3.43 (1H, d), 2.17 (3H, s).

Step 8: Preparation of 2-bromo-4- [4-(3,5-dichlorophenyl)-4-trifluoromethyl-4,5-dihydro-3H-pyrrol-2yl]-phenyl-methanol.

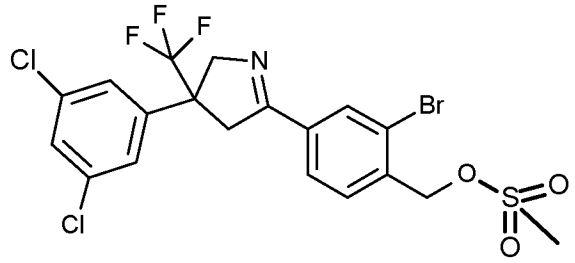


To a solution of acetic acid 2-bromo-4- [4-(3,5-dichlorophenyl)-4-trifluoromethyl-4,5-dihydro-3H-pyrrol-2yl]-benzylester (1.1 g, 2.1 mmol) in methanol (20 mL) was added sodium methoxide (0.1 g, 1.85 mmol) and the solution was stirred for 1 hour at room temperature. The reaction mass was then concentrated and extracted with ethylacetate. The organic layer was separated and dried using sodium sulphate. The resulting mixture was then purified by silica gel chromatography to obtain 2-bromo-4- [4-(3,5-dichlorophenyl)-4-trifluoromethyl-4,5-dihydro-3H-pyrrol-2yl]-phenyl-methanol (0.95g).

LC-MS (methanol, ESI): m/z =466 (M+H).

^{1}H-NMR (400 MHz, CDCl3): 8.07 (1H, m), 7.78 (1H, m), 7.59 (1H, m), 7.38 (3H, m), 4.90 (3H, d),4.43 (1H, d), 3.75 (1H, m), 3.43 (1H, d).

Step 9: Preparation of Methanesulfonic acid-2-bromo-4- [4-(3,5-dichlorophenyl)-4-trifluoromethyl-4,5-dihydro-3H-pyrrol-2yl]-benzylester.

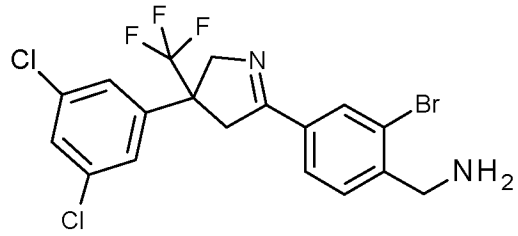


To a solution of 2-bromo-4- [4-(3,5-dichlorophenyl)-4-trifluoromethyl-4,5-dihydro-3H-pyrrol-2yl]-phenyl-methanol (0.95 g, 2 mmol) and triethylamine (0.4 g, 4.0 mmol) in THF was added methanesulfonyl chloride (0.35 g, 3.0 mmol) gradually. The mixture was stirred for 1 hour at room temperature. The reaction mixture was washed with water. The organic layer was separated and dried using sodium sulphate. The organic layer was evaporated to obtain the solid compound methanesulfonic acid-2-bromo-4- [4-(3,5-dichlorophenyl)-4-trifluoromethyl-4,5-dihydro-3H-pyrrol-2yl]-benzylester (0.9 g).

LC-MS (methanol, ESI): m/z =544 (M+H).

^{1}H-NMR (400 MHz, CDCl3): 8.13 (1H, m), 7.81 (1H, m), 7.58 (1H, m), 7.38 (1H, m), 7.24(2H,m),5.36(2H, s), 4.90 (1H, m),4.43 (1H, d), 3.75 (1H, m), 3.43 (1H, d), 3.04 (3H,s).

Step 10: Preparation of 2-bromo-4- [4-(3,5-dichlorophenyl)-4-trifluoromethyl-4,5-dihydro-3H-pyrrol-2yl]-benzylamine.

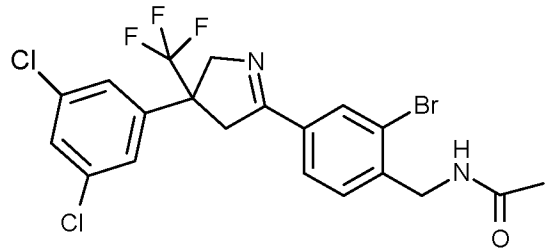


To a solution of methanesulfonic acid-2-bromo-4- [4-(3,5-dichlorophenyl)-4-trifluoromethyl-4,5-dihydro-3H-pyrrol-2yl]-benzylester (1.0 g,1.8 mmol) in THF (30 mL) and MeOH (30 mL) was added dropwise to a mixed solution of aq. ammonia (30%), 30 mL, and the reaction was stirred for 12 hours at room temperature. The reaction mass was then concentrated and extracted with ethylacetate. The organic layer was separated and dried using sodium sulphate. The organic layer was evaporated to provide the gummy compound 2-bromo-4- [4-(3,5-dichlorophenyl)-4-trifluoromethyl-4,5-dihydro-3H-pyrrol-2yl]-benzylamine.

LC-MS (methanol, ESI): m/z = 467(M+H).

^{1}H-NMR (400 MHz, CDCl3): 8.07 (1H, m), 7.71 (1H, m), 7.59 (1H, m), 7.38 (1H, m), 7.24(2H,m), 4.90 (1H, d),4.43 (3H, m), 3.75 (1H, m), 3.43 (1H, d).

Step 11: Preparation of N-{2-bromo-4- [4-(3,5-dichlorophenyl)-4-trifluoromethyl-4,5-dihydro-3H-pyrrol-2yl]-benzyl}acetamide.



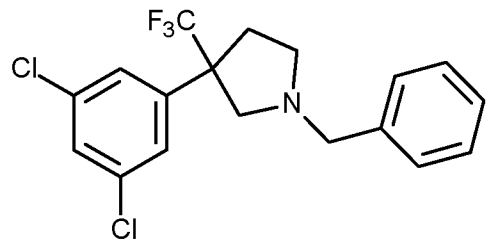
To a solution of 2-bromo-4- [4-(3,5-dichlorophenyl)-4-trifluoromethyl-4,5-dihydro-3H-pyrrol-2yl]-benzylamine (0.15 g, 0.32 mmol) in THF was added acetic anhydride (0.04 g, 0.39 mmol) and the mixture was stirred at room temperature for 1 hour. The reaction mass was then concentrated under reduced pressure and extracted with ethylacetate. The organic layer was separated and dried using sodium sulphate. The resulting mixture was then purified by silica gel chromatography to obtain N-{2-bromo-4-[4-(3,5-dichlorophenyl)-4-trifluoromethyl-4,5-dihydro-3H-pyrrol-2yl]-benzyl}acetamide.

LC-MS (methanol,ESI): m/z = 509 (M+H).

^{1}H-NMR (400 MHz, CDCl3): 8.07 (1H, m), 7.71 (1H, m), 7.47 (1H, m), 7.38 (1H, m), 7.24(2H,m),5.98(1H, s), 4.90 (1H, d),4.43 (3H, m), 3.75 (1H, m), 3.43 (1H, d), 2.04 (3H,s).

Example 7: Preparation of N-{4-[3-(3,5-dichlorophenyl)-3-(trifluoromethyl)pyrrolidin1-yl]- 2-methyl-benzyl)acetamide.

Step 1: Preparation of 1-Benzyl-3-(3,5-dichlorophenyl)-3-(trifluoromethyl)pyrrolidine.



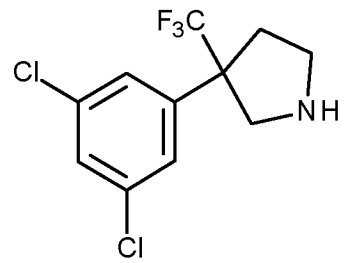
To a cooled solution of 1,3-dichloro-5(1-trifluoromethyl)vinyl)benzene (0.5 g, 2.0 mmol) and N-benzyl-1-methoxy-N-9trimethylsilyl)methyl)methanamine (0.4 g, 2.0 mmol) in DCM (10 mL) was added dropwise a solution of TFA (0.024 g, 0.2 mmol) in DCM (1 mL). The reaction mixture was stirred for 3 hours at room temperature. The organic layer was washed with water (2 x 10 mL) and 10% aq sodium carbonate solution (10 mL). The organic layer was separated, dried with sodium sulphate and concentrated under reduced pressure The residue was purified by silica gel chromatography to yield 1-

Benzyl-3-(3,5-dichlorophenyl)-3-(trifluoromethyl)pyrrolidine (0.5 g).

LC-MS (methanol, ESI): m/z = 374 (M+H).

^{1}H-NMR (400 MHz, CDCl3): 7.36 (4H, m), 7.30(2H, m), 7.23 (2H, m), 3.67 (2H, s), 3.08 (2H, dd), 2.69 (2H,m), 2.53 (1H, m), 2.27(1H,m).

Step 2: Preparation of 3-(3,5-dichlorophenyl)-3-(trifluoromethyl)pyrrolidine.

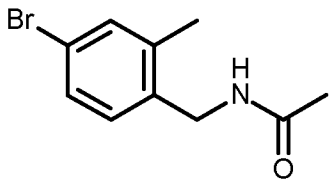


To a solution of 1-benzyl-3-(-(3,5-dichlorophenyl)-3-(trifluoromethyl)pyrrolidine (0.22 g, 0.59 mmol) and 1-chloroethylchloroformate(0.17 g, 1.2 mmol) in DCM was heated for reflux for 3 hours. The mixture was cooled to room temperature and concentrated under reduced pressure. Methanol was added to the residue which was then heated with stirring for 3 hours at 60°C. The mixture was concentrated and water was added to it. The residue was extracted with ethylacetate (20 mL x 3) washed with brine, dried over sodium sulphate and concentrated under reduced pressure. Purification over silica gel yielded 3-(3,5-dichlorophenyl)-3-(trifluoromethyl)pyrrolidine (4.2 g).

LC-MS (methanol, ESI): m/z = 284 (M+H).

^{1}H-NMR (400 MHz, CDCl3): 7.35 (1H, t), 7.25 (2H, d), 3.74 (1H, d), 3.19 (2H, m), 2.97(1H,m),2.53 (1H, m), 2.27(1H,m).

Step 3: Preparation of N-(4-bromo-2-methyl-benzyl)acetamide.



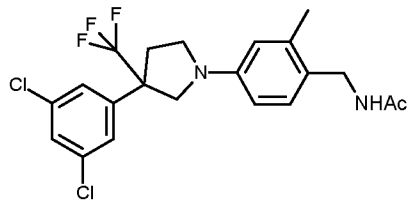
4-bromo-2-methyl benzonitrile (2.0 g, 0.01 mol) was taken in methanol along with $NiCl_2$ (2.41 g, 0.01 mol). In the same pot acetic anhydride was taken (2.0 g, 0.020 mol). The reaction was cooled to 0°C. $NaBH_4$ (2.7 g, 0.07 mol) was added slowly to the reaction while stirring at the same temperature for 1 hour. The reaction mixture was concentrated under reduced pressure and was extracted with ethylacetate. The organic layer was separated, dried using sodium sulphate and concentrated under reduced pressure. The residue thus obtained was purified by silica gel chromatography to yield N-(4-bromo-2-methyl-benzyl)acetamide.(1.1 g).

LC-MS (methanol, ESI): m/z = 242 (M+H).

1H-NMR (400 MHz, CDCl3): 7.71 (1H, m), 7.47 (1H, m), 7.38 (1H, m), 5.98(1H, s), 3.75 (1H, m), 3.43

(1H, d), 2.31 (3H, s),2.04 (3H, s).

Step 4: Preparation of N-{4-[3-(3,5-dichlorophenyl)-3-(trifluoromethyl)pyrrolidin1-yl]- 2-methyl-benzyl)acetamide.



To the mixture of 3-(3,5-dichlorophenyl)-3-(trifluoromethyl)pyrrolidine (0.25 g, 0.88 mmol) and the N-(4-bromo-2-methyl-benzyl)acetamide (0.8 g, 0.7 mmol) in anhydrous toluene under nitrogen atmosphere was added tris(dibenzylidineacetone)dipalladium (0.02 g, 0.02 mmol) and the ligand xanthphos (0.03 g, 0.053 mmol) followed by the addition of sodium tertiary butoxide (0.127 g, 1.3 mmol). The reaction mixture was heated at 80°C for 3hours. After completion of the reaction (TLC monitoring), the reaction mass was filtered over celite. The filtrate was concentrated and purified using column chromatography.
LC-MS (methanol, ESI): m/z = 445 (M+H).
1H-NMR (400 MHz, CDCl3): 7.37 (1H, d), 7.29 (2H, m), 7.11 (1H, d), 6.41 (2H, m), 5.45(1H,b s), 4.35 (2H, s),4.01 (1H, d), 3.75 (1H, d), 3.43 (2H, m), 2.81 (1H,d),2.51 (1H,d),2.31 (3H,s),1.97 (3H,s).

The following examples were prepared according to methods described in US 2009/0156643 and were analysed by the LCMS methods described below:

Method A:

ZQ Mass Spectrometer from Waters (Single quadrupole mass spectrometer)

Instrument Parameter:
Ionization method: Electrospray
Polarity: positive and negative ions
Capillary: 3.00 kV
Cone: 30.00 V
Extractor: 2.00 V
Source Temperature: 100°C,
Desolvation Temperature: 250°C
Cone Gas Flow: 50 L/Hr
Desolvation Gas Flow: 400 L/Hr
Mass range: 100 to 900 Da

HP 1100 HPLC from Agilent:

Solvent degasser, quaternary pump, heated column compartment and diode-array detector.

Type of column: Phenomenex Gemini C18; Column length: 30 mm; Internal diameter of column: 3 mm; Particle Size: 3 micron; Temperature: 60°C.

DAD Wavelength range (nm): 210 to 500

Solvent Gradient:

A = H2O + 5% MeOH + 0.05 % HCOOH

B= Acetonitril + 0.05 % HCOOH

Time	A%	B%	Flow (mL/min)
0.00	100	0	1.700
2.00	0	100.0	1.700
2.80	0	100.0	1.700
2.90	100	0	1.700
3.00	100	0	1.700

Method B:

ACQUITY SQD Mass Spectrometer from Waters (Single quadrupole mass spectrometer)

Ionisation method: Electrospray

Polarity: positive ions

Capillary (kV) 3.00, Cone (V) 20.00, 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: 100 to 800 Da

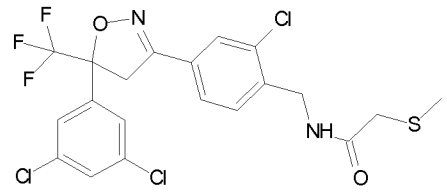
DAD Wavelength range (nm): 210 to 400

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

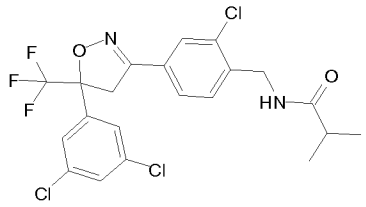
Type of column: Waters ACQUITY UPLC BEH C18; Column length: 50 mm; Internal diameter of column: 2.1 mm; Particle Size: 1.7 micron; Temperature: 60°C.

Example 8:



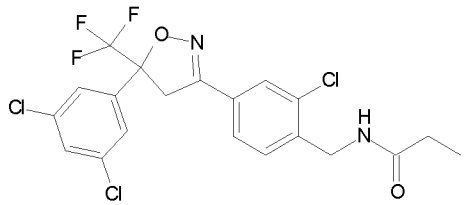
Method A, retention time 2.17 min, MH+ 511

Example 9:



Method A, retention time 2.19 min, MH+ 493

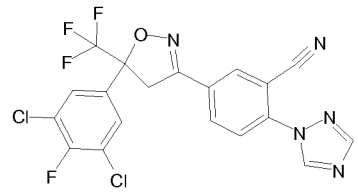
Example 10:



Method B, retention time 1.98 min, MH+ 479

The following Example was prepared according to methods described in WO 2008/150393.

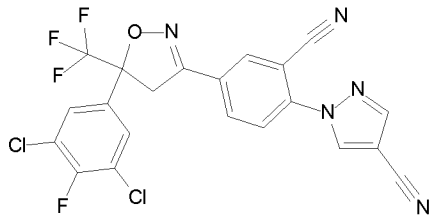
Example 11:



Method A, retention time 2.1 min, MH+ 470

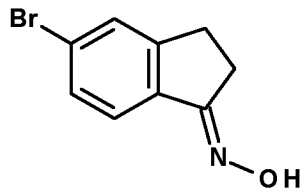
The following Example was prepared according to methods described in WO 2009/051956.

Example 12:



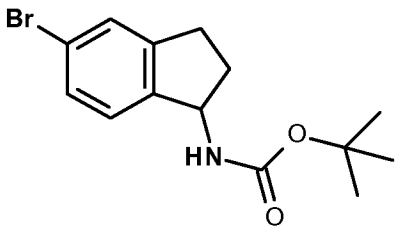
1H NMR in CDCl3: 3.73 ppm (d, 1H), 4.12 ppm (d, 1H), 7.58 ppm (d, 2H), 7.93 (m, 1H), 8.07-8.12 (m, 3H), 8.62 (s, 1H)

Example 13: Preparation of 5-bromo-N-hydroxyindan-1-imine:



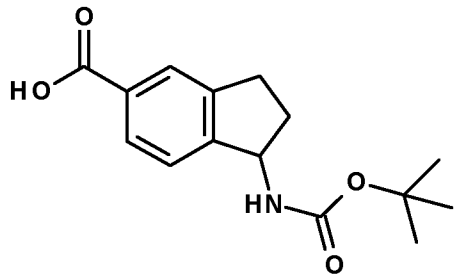
A solution of 5-bromoindane-1-one (10.0 g, 47.38 mmol) in methanol (50 mL), treated with hydroxylamine hydrochloride (3.65 g, 52.17 mmol) and sodium acetate (4.27 g, 52.17 mmol) and stirred at room temperature for 20 hours. The solvent was evaporated, and the residue was treated with water (25 mL) and extracted with ethylacetate (2 x 50 mL). The combined organic layers were dried over sodium sulfate and concentrated to give 5-bromo-N-hydroxyindan-1-imine (10 g). ^{1}H-NMR (400 MHz, $CDCl_3$): 7.65 (1H d), 7.5 (1H, s), 7.4 (1H, d), 3.05 (2H, m), 3.10 (2H, m). LC-MS (methanol, ESI): m/z = 227 (M+H, retention time = 1.75).

Example 14: Preparation of ter-butyl (5-bromo-2,3-dihydro-1H-inde-1-yl)carbamate:



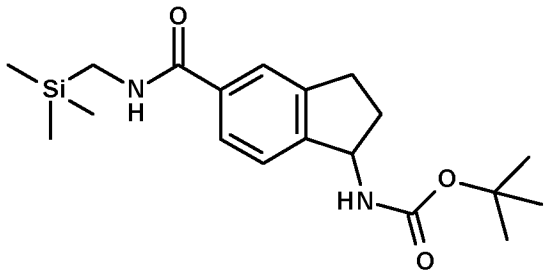
A solution of 5-bromo-N-hydroxyindan-1-imine (16 g, 70.77 mmol) in methanol (400 mL) and dioxane (200 mL) was treated with di-ter-butyl bicarbonate (31 g, 141.55mmol) and nickel chloride (4.68 g, 35.39 mmol). The reaction mixture was cooled to -20°C, sodium borohydride (10.7 g, 283.1 mmol) was added slowly and stirred for 1hour. The reaction mixture was then treated with diethylenetriamine (16 mL), and stirred for 30 min. The reaction mixture was diluted by adding water, extracted with ethyl acetate. The combined organic layers were dried over sodium sulfate, concentrated and purified by column chromatography (hexane/ethylacetate 1:9 as eluent) to give ter-butyl (5-bromo-2,3-dihydro-1H-inde-1-yl)carbamate (10.5 g). ^{1}H-NMR (400 MHz, $CDCl_3$): 7.1 (1H, d), 7.2 (1H, s), 7.3 (1H, d), 5.15 (1H, m), 4.7 (1H, m), 2.9 (1H, m), 2.8 (1H, m), 2.5 (1H, m), 1.8 (1H, m), 1.45 (s, 9H).

Example 15: Preparation of 1-(tert-butoxycarbonylamino)indane-5-carboxylic acid:



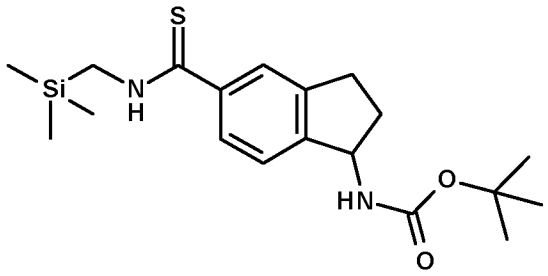
A solution of ter-butyl (5-bromo-2,3-dihydro-1H-inde-1-yl)carbamate (10 g, 32 mmol) in tetrahydrofuran (200 mL) was cooled to -78 ^{0}C, treated dropwise with methyl lithium (16 mL, 48 mmol) and stirred for 10 min, followed by addition of n-BuLi (29 mL, 64 mmol) and further stirred for 1 hour. The reaction mixture was treated with dry ice slowly and stirred for 30 min. It was then quenched with a saturated solution of ammonium chloride and extracted with ethylacetate (2 x 50 mL). The combined organic layers were dried over sodium sulfate, concentrated under reduced pressure to afford crude solid material, and then triturated with hexane/diethyl ether to afford pure 1-(tert-butoxycarbonylamino)indane-5-carboxylic acid (3.8 g). ^{1}H-NMR (400 MHz, DMSO): 7.8 (1H, s), 7.3 (1H, m), 7.2 (1H, m), 5.00 (1H, m), 2.9 (1H, m), 2.8 (1H, m), 2.31 (1H, m), 1.8 (1H, m), 1.45 (s, 9H). LC-MS (methanol, ESI): m/z = 276 (M-H, retention time = 1.74).

Example 16: Preparation of tert-butyl N-[5-(trimethylsilylmethylcarbamoyl)indan-1-yl]carbamate:



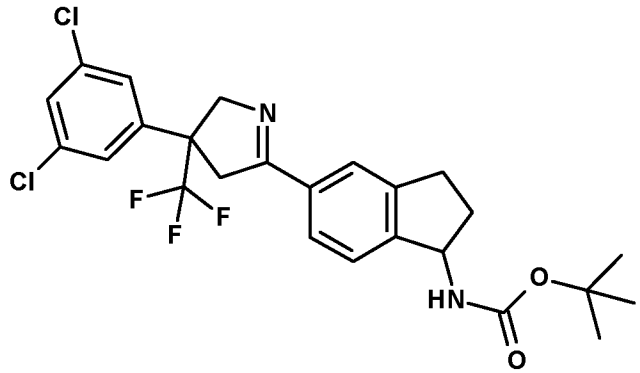
A solution of 1-(tert-butoxycarbonylamino)indane-5-carboxylic acid (2.1 g, 7.6 mmol) in dichloromethane (20 mL), was treated trimethylsilyl methylamine (0.88 g, 8.3 mmol), EDCI (1.4 g, 9.1 mmol) and a catalytic amount of DMAP (0.09 g, 0.76 mmol), and stirred for 20 hours. The reaction mixture was then treated with water (10 mL) and extracted with dichloromethane (2 x 25 mL). The combined organic layers were dried over sodium sulfate, concentrated, and purified by column chromatograph (hexane/ethylacetate as eluent) to afford tert-butyl N-[5-(trimethylsilylmethylcarbamoyl)indan-1-yl]carbamate (1.9 g). ^{1}H-NMR (400 MHz, CDCl3): 7.6 (1H, s), 7.53 (1H, d), 7.33 (1H, d), 6.00 (1H, m), 5.2 (1H, m), 4.8 (1H, m), 3.0 (1H, m), 2.9 (2H, d), 2.8 (1H, m), 2.6 (1H, m), 1.8 (1H, m), 1.45 (s, 9H), 0.2 (s, 9H). LC-MS (methanol, ESI): m/z = 363 (M+H, retention time = 2.05).

Example 17: Preparation of tert-butyl N-[5-(trimethylsilylmethylcarbamothioyl)indan-1-yl]carbamate:



A solution of tert-butyl N-[5-(trimethylsilylmethylcarbamoyl)indan-1-yl]carbamate (2.2 g, 6.1 mmol) in toluene (25 mL), was treated with lawessons reagent (2.8 g, 6.7 mmol), and heated at 120°C for 2 hours. The toluene was evaporated and the residue was treated with water (25 mL) and extracted with ethylacetate (25 mL). The combined organic layers were dried over sodium sulfate, concentrated, and purified by column chromatography (hexane/ethylacetate as eluent) to afford tert-butyl N-[5-(trimethylsilylmethylcarbamothioyl)indan-1-yl]carbamate (1.8 g). ^{1}H-NMR (400 MHz, CDCl3): 7.6 (1H, s), 7.53 (1H, brs), 7.45 (1H, d), 7.30 (1H, d), 5.2 (1H, brs), 4.7 (1H, brs), 3.5 (2H, d), 3.00 (1H, m), 2.8 (1H, m), 2.6 (1H, m), 1.8 (1H, m), 1.45 (s, 9H) 0.2 (s, 9H). LC-MS (methanol, ESI): m/z = 379 (M+H, retention time =2.27).

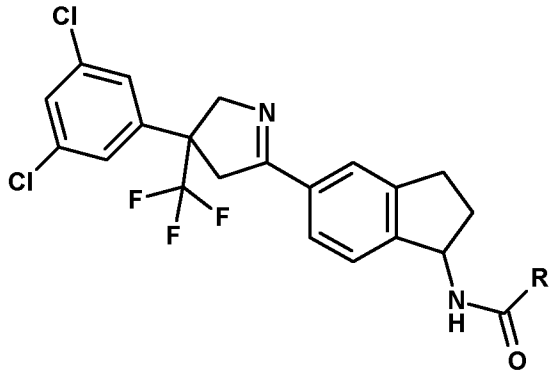
Example 18: Preparation of tert-butyl N-[5-[3-(3,5-dichlorophenyl)-3-(trifluoromethyl)-2,4-dihydropyrrol-5-yl]indan-1-yl]carbamate:



A solution of tert-butyl N-[5-(trimethylsilylmethylcarbamothioyl)indan-1-yl]carbamate (1.2 g, 3.2 mmol) in dimethyl formanide (10 mL) at 0°C, was treated with potassium carbonate (0.9 g, 6.3 mmol) and methyl iodide (4.5 g, 32 mmol) added in three portions, and stirred for 3 hours. To the reaction mixture water (10 mL) was added, followed by extraction with ethylacetate (2 x 25mL). The combined organic layers were dried over sodium sulfate, concentrated to afford crude material. The crude material was diluted with tetrahydrofuran (20 mL), cooled at 0°C, treated with 1,3-dichloro-5-[1-(trifluoromethyl)vinyl]benzene and TBAB, and stirred for 20 hours. Tetrahydrofuran was removed under reduced pressure, diluted with water (25 mL), and extracted with ethylacetate (2 x 25mL). The combined organic layers were dried over sodium sulfate, concentrated and purified by column chromatography

(hexane/ethyl acetate) gave tert-butyl N-[5-[3-(3,5-dichlorophenyl)-3-(trifluoromethyl)-2,4-dihydropyrrol-5-yl]indan-1-yl]carbamate (0.7 g). ^{1}H-NMR (400 MHz, CDCl3): 7.8 (2H, s), 7.7 (1H, m), 7.35 (2H, s), 7.25 (1H, d), 5.9 (1H, brs), 5.6 (1H, brs), 4.9 (1H, d), 4.4 (1H, d), 4.8 (1H, d), 3.40 (1H, d), 3.00 (1H, m), 2.90 (1H, m), 2.6 (1H, m), 2.00 (1H, m), 1.45 (s, 9H). LC-MS (methanol, ESI): m/z = 513 (M+H, retention time =2.50).

Example 19: General procedure for the preparation of N-[5-[3-(3,5-dichlorophenyl)-3-(trifluoromethyl)-2,4-dihydropyrrol-5-yl]indan-1-yl]amides: (a) R = Me, (b) R = Et, (c) R = cPr, (d) = CF_3



A solution of tert-butyl N-[5-[3-(3,5-dichlorophenyl)-3-(trifluoromethyl)-2,4-dihydropyrrol-5-yl]indan-1-yl]carbamate (1 mmol) in dichloromethane (5 mL), was treated with TFA (4 eq.), and stirred for 5 hours. The reaction mixture was concentrated under reduced pressure, diluted with dichloromethane (5 mL), and treated with triethylamine (5 eq.) and the appropriate carboxylic acid chloride (1.1 eq.) and stirred for 16 hours. The reaction mixture was concentrated and purified by column chromatography (hexane/ethyl acetate) to give:

(a) N-[5-[3-(3,5-dichlorophenyl)-3-(trifluoromethyl)-2,4-dihydropyrrol-5-yl]indan-1-yl]acetamide: 0.12 g, ^{1}H-NMR (400 MHz, CDCl3): 7.8 (1H, m), 7.7 (1H, m), 7.30 (1H, m), 7.20 (1H, m), 6.1 (1H, m), 5.5 (1H, m), 4.8 (1H, d), 4.4 (1H, d), 3.8 (1H, d), 3.45 (1H, d), 3.00 (1H, m), 2.90 (1H, m), 2.6 (1H, m), 2.00 (3H, s), 1.8 (1H, m). LC-MS (methanol, ESI): m/z = 455 (M+H, retention time = 2.11).

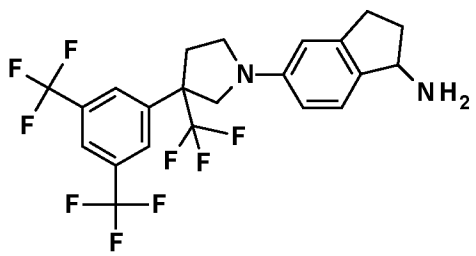
(b) N-[5-[3-(3,5-dichlorophenyl)-3-(trifluoromethyl)-2,4-dihydropyrrol-5-yl]indan-1-yl]propanamide: 0.12 g, ^{1}H-NMR (400 MHz, CDCl3): 7.9 (1H, m), 7.8 (1H, m), 7.40 (2H, m), 7.30 (2H, m), 5.70 (1H, m), 5.50 (1H, m), 4.90 (1H, d), 4.50 (1H, d), 3.90 (1H, d), 3.60 (1H, d), 3.00 (1H, m), 2.90 (1H, m), 2.6 (1H, m), 2.3 (2H, d), 1.8 (1H, m). 1.2 (3H, t) LC-MS (methanol, ESI): m/z = 469 (M+H, retention time = 2.17).

(c) N-[5-[3-(3,5-dichlorophenyl)-3-(trifluoromethyl)-2,4-dihydropyrrol-5-yl]indan-1-yl]cyclopropanecarboxamide: 70 mg, ^{1}H-NMR (400 MHz, CDCl3): 7.8 (1H, m), 7.77

(1H, m), 7.40 (2H, m), 7.30 (2H, m), 5.90 (1H, m), 5.50 (1H, m), 4.90 (1H, d), 4.45 (1H, d), 3.85 (1H, d), 3.50 (1H, d), 3.00 (1H, m), 2.90 (1H, m), 2.6 (1H, m), 1.8 (1H, m). 1.0 (2H, m), 0.8 (2H, m), LC-MS (methanol, ESI): m/z = 481 (M+H, retention time = 2.22)

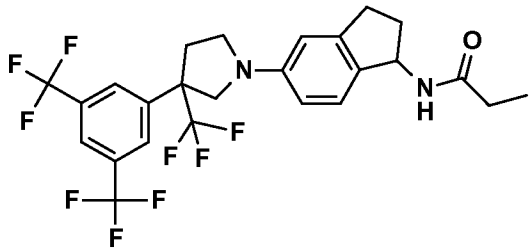
(d) N-[5-[3-(3,5-dichlorophenyl)-3-(trifluoromethyl)-2,4-dihydropyrrol-5-yl]indan-1-yl]-2,2,2-trifluoro-acetamide: 120 mg, ^{1}H-NMR (400 MHz, CDCl3): 7.9 (1H, m), 7.8 (1H, m), 7.35 (2H, m), 7.25 (2H, m), 6.60 (1H, m), 5.50 (1H, m), 4.90 (1H, d), 4.50 (1H, d), 3.80 (1H, d), 3.50 (1H, d), 3.10 (1H, m), 3.00 (1H, m), 2.70 (1H, m), 2.00 (1H, m), LC-MS (methanol, ESI): m/z = 509 (M+H, retention time = 2.37)

Example 20: Preparation of 5-[3-[3,5-bis(trifluoromethyl)phenyl]-3-(trifluoromethyl)pyrrolidin-1-yl]indan-1-amine



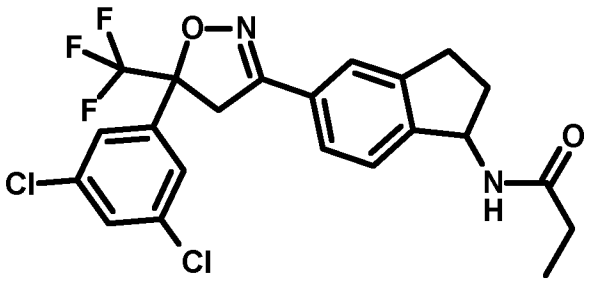
To a solution of 3-[3,5-bis(trifluoromethyl)phenyl]-3-(trifluoromethyl)pyrrolidine (0.260 g, prepared as described in WO 2008/128711) and tert-butyl N-(5-bromoindan-1-yl)carbamate (0.231 g) in toluene (5.2 mL) stirred under argon were added tris(dibenzylideneacetone)dipalladium(0) (13.6 mg), 4,5-bis(diphenylphosphino)-9,9-dimethylxanthene (22.1 mg) and sodium tert-butoxide (147 mg).
The mixture was heated in the microwave at 130°C for 15 min. The reaction was then diluted with ethylacetate and water then brine and then the mixture was extracted with ethyl acetate. The organic layers were combined and dried over magnesium sulphate, filtered then concentrated under reduced pressure to give a brown oil which was purified by chromatography on column (cyclohexane/EtOAc as solvent) to afford the desired product as a white foam (245 mg). 1H NMR (CDCl3, 400MHz): d = 7.92 (s, 1 H), 7.86 (s, 2 H), 7.27 (m, 1 H), 6.47 - 6.58 (m, 2 H), 4.35 (m, 1 H), 4.05 - 4.23 (m, 1 H), 3.85 (m, 1 H), 3.60 (m, 1 H), 3.51 (m, 1 H), 2.90 - 3.03 (m, 2 H), 2.71 - 2.86 (m, 1 H), 2.55 - 2.66 (m, 1 H), 2.50 (dt, *J*=7.2, 4.3 Hz, 1 H), 1.83 - 2.13 (m, 2 H), 1.72 ppm (dd, *J*=12.5, 8.1 Hz, 1 H)

Example 21: Preparation of N-[5-[3-[3,5-bis(trifluoromethyl)phenyl]-3-(trifluoromethyl)pyrrolidin-1-yl]indan-1-yl]propanamide



To a solution of 5-[3-[3,5-bis(trifluoromethyl)phenyl]-3-(trifluoromethyl)pyrrolidin-1-yl]indan-1-amine (100 mg), in dichloromethane (3.0 mL) and triethylamine (0.088 mL) stirred at room temperature, was added propanoyl chloride (0.027 mL) and the solution was stirred for 3 hours. The reaction was then diluted with ethylacetate and water and then the mixture was extracted with ethyl acetate. The organic layers were combined and dried over magnesium sulphate, filtered then concentrated under reduced pressure to give a yellow solid which was purified by chromatography on column (cyclohexane/EtOAc as solvent) to afford the desired product as a beige solid (87 mg). 1H NMR (CDCl3, 400MHz): d = 7.92 (s, 1 H), 7.86 (s, 2 H), 7.21 (d, *J*=8.1 Hz, 1 H), 6.45 - 6.58 (m, 2 H), 5.56 (d, *J*=8.1 Hz, 1 H), 5.37 - 5.49 (m, 1 H), 4.16 (d, *J*=9.2 Hz, 1 H), 3.85 (d, *J*=10.6 Hz, 1 H), 3.46 - 3.60 (m, 2 H), 2.91 - 3.04 (m, 2 H), 2.78 - 2.91 (m, 1 H), 2.52 - 2.70 (m, 2 H), 2.24 (q, *J*=7.7 Hz, 2 H), 1.76 - 1.87 (m, 1 H), 1.13 - 1.24 ppm (m, 3 H)

Example 22

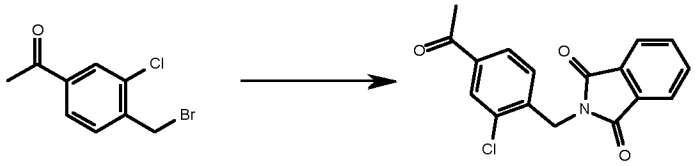


The synthesis was as described in WO2009/112275.

Melting point: 103-105 °C

LC-MS: retention time = 1.95, $(M^+H)^+$ = 471 (measured) (Method B)

Example 23

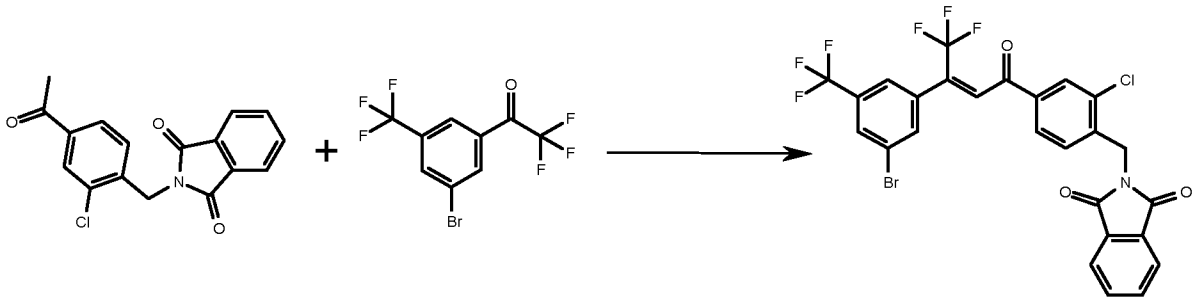


To a solution of 1-[4-(bromomethyl)-3-chloro-phenyl]ethanone (1 g, 4.04mmol) in N,N-dimethylformamide was added (1, 3-dioxoisoindolin-2-yl) potassium (823 mg, 4.44mmol). The reaction mixture was refluxed for 5-6 hours, while being monitored by Thin Layer Chromatography (TLC). The reaction mixture was then diluted with water (20 mL), extracted with ethylacetate (3 × 30 mL). The

combined organic layers were dried over sodium sulphate then concentrated under reduced pressure. The residue obtained was purified by column chromatography to afford the desired product 2-[(4-acetyl-2-chloro-phenyl)methyl]isoindoline-1,3-dione (870 mg)

ESI-MS: *m/z* = 313.9 $[M+H]^+$.

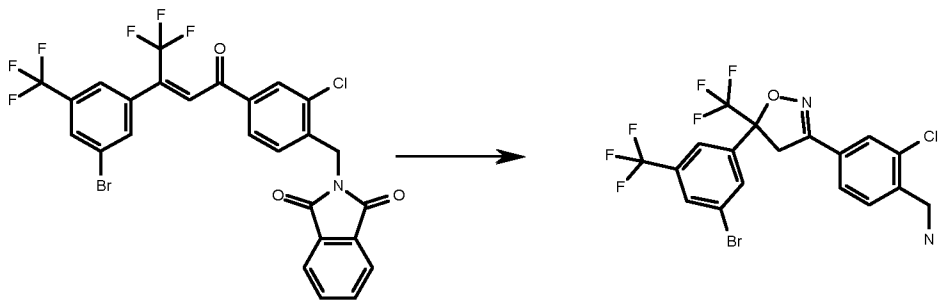
^{1}H NMR (400 MHz, $CDCl_3$): δ 7.85-7.90(m, 1H), 7.80-7.85 (m, 1H), 7.68-7.71 (m, 4H), 7.21-7.23 (m, 1H), 4.96 (s, 2H), 2.50 (s, 3H)



To a solution of 2-[(4-acetyl-2-chloro-phenyl)methyl]isoindoline-1,3-dione (670 mg, 2.13 mmol) and 1-[3-bromo-5-(trifluoromethyl)phenyl]-2,2,2-trifluoro-ethanone (685 mg, 2.13 mmol) in acetonitrile (10 mL) was added potassium carbonate (150 mg, 1.06 mmol). The reaction mixture was refluxed at 120°C overnight. It was then diluted with water (10 mL) and extracted with ethylacetate (3 × 30 mL). The combined organic layers were dried over sodium sulphate then concentrated under reduced pressure. The residue obtained was purified by column chromatography to afford the desired product 2-[[4-[(Z)-3-[3-bromo-5-(trifluoromethyl)phenyl]-4,4,4-trifluoro-but-2-enoyl]-2-chloro-phenyl]methyl]isoindoline-1,3-dione (550 mg)

ESI-MS: *m/z* = 614.76 $[M-H]^+$.

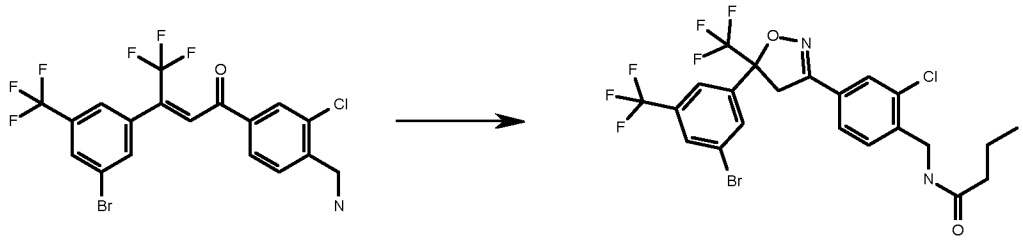
^{1}H NMR (400 MHz, $CDCl_3$): δ 7.87-7.93 (m, 3H), 7.73-7.83 (m, 4H), 7.52-7.65 (m, 2H), 7.38-7.42 (m, 1H), 7.27-7.31 (m, 1H), 5.00-5.02 (d, 2H)



To a solution of 2-[[4-[(Z)-3-[3-bromo-5-(trifluoromethyl)phenyl]-4,4,4-trifluoro-but-2-enoyl]-2-chloro-phenyl]methyl]isoindoline-1,3-dione (500 mg, 0.813 mmol) in isopropyl alcohol (5 mL) was added a solution of sodium hydroxide (98 mg, 2.44 mmol) in water (2 mL) followed by 50% hydroxylamine solution (322 mg, 4.88 mmol). The reaction mixture was refluxed for 6-7 hours, while being monitored by TLC. The reaction mixture was concentrated under reduced pressure, diluted with water (10 mL) and extracted with ethylacetate (3 × 30 mL). The combined organic layers were dried over sodium sulphate then concentrated under reduced pressure. The residue obtained was purified by column chromatography

to afford the desired product [4-[5-[3-bromo-5-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-chloro-phenyl]methanamine (170 mg)

ESI-MS: *m/z* = 500.84 $[M+H]^+$.



To a solution of [4-[5-[3-bromo-5-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-chloro-phenyl]methanamine (100 mg, 0.2 mmol) in dichloromethane (4 mL) at 0°C was added triethylamine (0.05 mL, 0.3 mmol), followed by butyryl chloride (32 mg, 0.3 mmol). The reaction mixture was stirred at room temperature for 1hour. It was then diluted with water (5 mL) and extracted with dichloromethane (3 × 20 mL). The combined organic layers were dried over sodium sulphate then concentrated under reduced pressure. The residue obtained was purified by column chromatography to afford the desired product N-[[4-[5-[3-bromo-5-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-4H-isoxazol-3-yl]-2-chloro-phenyl]methyl]butanamide (50 mg)

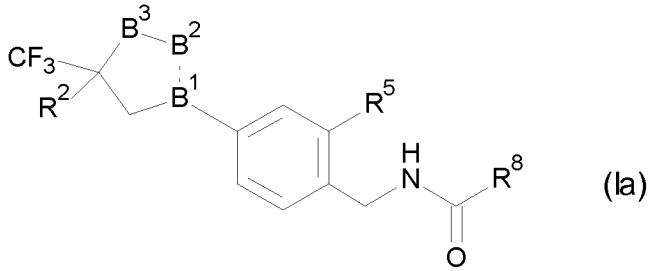
ESI-MS: *m/z* = 570.88 $[M+H]^+$.

^{1}H NMR (400 MHz, $CDCl_3$): δ 7.88 (m, 1H), 7.77 (m, 1H), 7.72 (m, 1H), 7.62-7.63 (m, 1H), 7.38-7.46 (m, 2H), 5.89 (br s, 1H), 4.46-4.48 (d, 2H), 4.01-4.05 (d, 1H), 3.60-3.64 (d, 1H), 2.12-2.15 (m, 2H), 1.57-1.65 (m, 2H), 0.85-0.89 (m, 3H)

Biological Examples

Table A

Tables A provides compounds of formula Ia wherein B^1, B^2, B^3, R^2, R^5, and R^8 are as described below



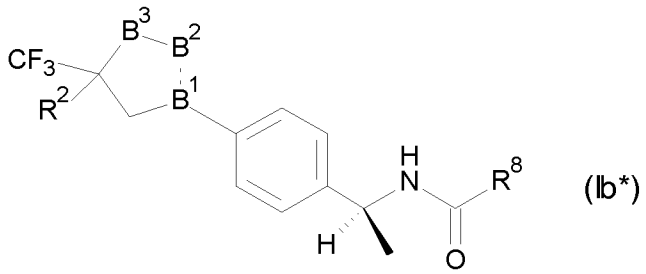
(Ia)

	B1-B2-B3	R2	R5	R8
A1	C=N-O	3,5-dichlorophenyl	chloro	methylsulfanylmethyl
A2	C=N-O	3,5-dichlorophenyl	chloro	isopropyl
A3	C=N-O	3,5-dichlorophenyl	chloro	ethyl
A4	N-CH_2-CH_2	3,5-dichlorophenyl	methyl	methyl
A5	C=N-CH_2	3,5-dichlorophenyl	bromo	methyl

A6	C=N-CH_2	3,5-dichlorophenyl	bromo	ethyl
A7	C=N-CH_2	3,5-dichlorophenyl	bromo	cyclopropyl
A8	C=N-O	3,5-dichlorophenyl	methyl	methyl
A9	C=N-O	3,5-dichlorophenyl	methyl	isopropyl
A10	C=N-O	3,5-dichlorophenyl	methyl	methylsulfanylmethyl
A11	C=N-O	3,5-dichlorophenyl	methyl	tetrahydrofuran-2-yl
A12	C=N-O	3,5-dichlorophenyl	hydrogen	isopropyl
A13	C=N-O	3,5-dichlorophenyl	hydrogen	methylsulfanylmethyl
A14	C=N-O	3,5-dichlorophenyl	chloro	1-bromopropan-1-yl
A15	C=N-O	3,5-dichlorophenyl	chloro	tetrahydrofuran-2-yl
A16	C=N-O	3,5-dichlorophenyl	hydrogen	ethyl
A17	C=N-O	3,5-dichlorophenyl	hydrogen	1-bromopropan-1-yl
A18	C=N-O	3,5-dichlorophenyl	hydrogen	tetrahydrofuran-2-yl
A19	C=N-O	3,5-dichlorophenyl	chloro	methylsulfonylmethyl
A20	C=N-O	3,5-dichlorophenyl	chloro	methylsulfinylmethyl
A21	C=N-O	3-bromo-5-trifluorophenyl	chloro	n-propyl

Table B

Tables B provides compounds of formula Ib* wherein B^1, B^2, B^3, R^2 and R^8 are as described below

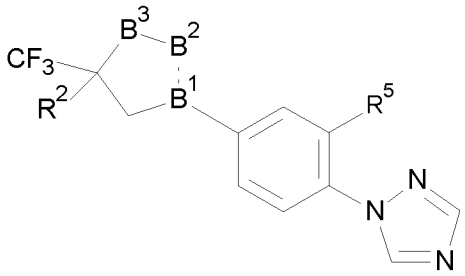


(Ib*)

	B1-B2-B3	R2	R8
B1	N-CH_2-CH_2	3,5-dichlorophenyl	cyclopropyl
B2	C=N-O	3,5-dichlorophenyl	-CH_3
B3	C=N-CH_2	3,4,5-trichlorophenyl	cyclopropyl
B4	N-CH_2-CH_2	3,5-di-trifluoromethylphenyl	cyclopropyl

Table C

Tables C provides compounds of formula Ic wherein B^1, B^2, B^3, R^2 and R^5 are as described below

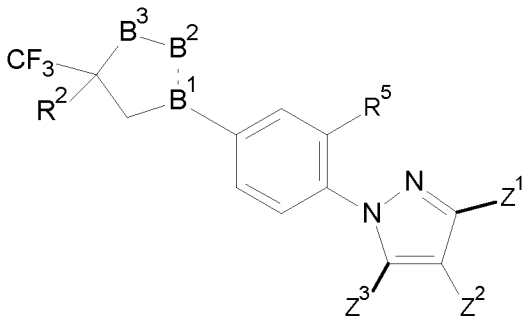


(Ic)

	B1-B2-B3	R2	R5
C1	N-CH_2-CH_2	3,5-dichlorophenyl	cyano
C2	C=N-CH_2	3,4,5-trichlorophenyl	cyano
C3	C=N-O	3,5-dichloro-4-fluorophenyl	cyano
C4	C=N-O	3,5-dichlorophenyl	cyano
C5	C=N-O	3,5-dichlorophenyl	methyl
C6	C=N-O	3,4,5-trichlorophenyl	cyano
C7	C=N-O	3,5-dichlorophenyl	cyano

Table D

Tables D provides compounds of formula Id wherein B^1, B^2, B^3, R^2, R^5, Z^1, Z^2 and Z^3 are as described below



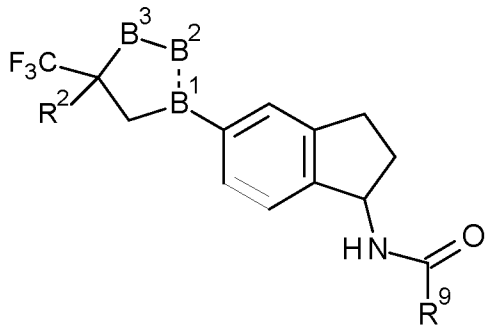
(Id)

	B1-B2-B3	R2	R5	Z1	Z2	Z3
D1	C=N-O	3,5-dichloro-4-fluorophenyl	cyano	H	cyano	H
D2	C=N-O	3,5-dichloro-4-fluorophenyl	cyano	H	F	H
D3	C=N-O	3,5-dichlorophenyl	cyano	H	H	H
D4	C=N-O	3,5-dichlorophenyl	amino	H	H	H
D5	C=N-O	3,5-dichlorophenyl	methyl	H	H	H
D6	C=N-O	3,5-dichloro-4-	cyano	H	chloro	H

		fluorophenyl				
D7	C=N-O	3,5-dichloro-4-fluorophenyl	cyano	H	bromo	H
D8	C=N-O	3,5-dichloro-4-fluorophenyl	cyano	H	iodo	H
D9	C=N-O	3,5-dichloro-4-fluorophenyl	cyano	H	nitro	H
D10	C=N-O	3,5-dichloro-4-fluorophenyl	cyano	CF3	H	CF3
D11	C=N-O	3,5-dichloro-4-fluorophenyl	cyano	CF3	H	H

Table E

Tables E provides compounds of formula Ie wherein B^1, B^2, B^3, R^2, and R^9 are as described below



(Ie)

	B^1-B^2-B^3	R^2	R^9
E1	C=N-O	3,5-dichlorophenyl	ethyl
E2	C=N-CH_2	3,5-dichlorophenyl	methyl
E3	C=N-CH_2	3,5-dichlorophenyl	ethyl
E4	C=N-CH_2	3,5-dichlorophenyl	cyclopropyl
E5	C=N-CH_2	3,5-dichlorophenyl	trifluoromethyl
E6	N-CH_2-CH_2	3,5-bis(trifluoromethyl)phenyl	ethyl
E7	C=N-O	3,5-dichlorophenyl	2,2,2-trifluoroethyl
E8	C=N-O	3,5-dichlorophenyl	1-chloropropan-1-yl

Nilaparvata lugens (Brown plant hopper)

Rice seedlings are treated with the diluted test solutions in a spray chamber. After drying, plants are infested with 20 N_3 nymphs (2 replicates). 6-12 days after the treatment samples are checked for mortality.

Compounds

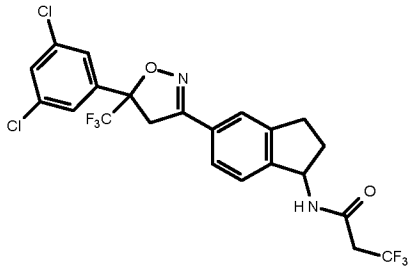
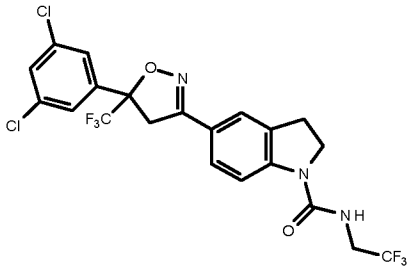
A1, A2, A3, A4, A5, A6, A7, A19, A20, B1, B2, B3, B4, C1, C2, C3, C4, D1, E1, E2, E3, E4, E4, E5, E6, E7, were tested and the following gave at least 80% control at 200 ppm or less: A1, A19*, A20*, B1*, B3*, B4*, C2*, C3*, C4*, D1*, E1*, E7*.

* = gave at least 80% control at 50ppm

Comparative Example

Compounds are tested according to the above method. The results show that the compounds of the invention are significantly more active against *Nilaparvata lugens* (Brown plant hopper) than structurally similar compounds, particularly at low rates of application.

Comparative Table 1

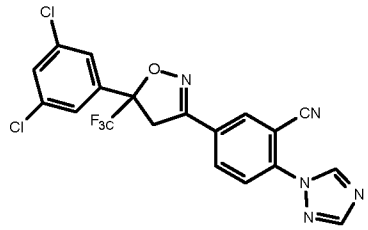
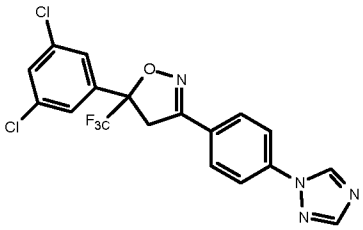
Compound of the invention	Reference compound
	

Compound	**Test**	**Application rate / ppm**	**Control / %**
Compound of the invention	*Nilaparvata lugens* (Brown plant hopper)	50	100
		25	95
		12.5	80
Reference compound	*Nilaparvata lugens* (Brown plant hopper)	50	50
		25	0
		12.5	0

The compound of the invention and reference compound are compounds 3-6 and 3-643 respectively from WO 2009/112275.

Comparative Table 2

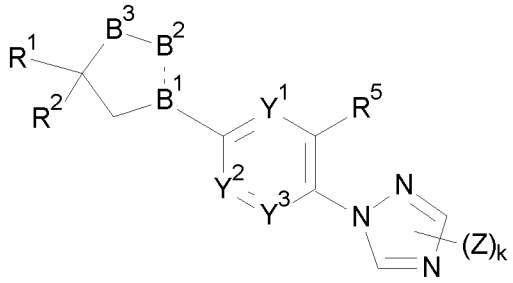
Compound of the invention	Reference compound

			
Compound	**Test**	**Application rate / ppm**	**Control / %**
Compound of the invention	*Nilaparvata lugens* (Brown plant hopper)	50	100
		25	98
		12.5	80
Reference compound	*Nilaparvata lugens* (Brown plant hopper)	50	25
		25	0
		12.5	0

The compound of the invention and reference compound are compounds 42 and 9 respectively from WO 2007/075459.

Claims

1. A method comprising applying to a crop of rice plants, the locus thereof, or propagation material thereof, a compound of formula IC

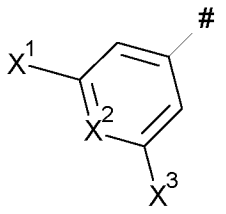


(IC)

wherein $-B^1-B^2-B^3-$ is -C=N-O-;

R^1 is trifluoromethyl, difluoromethyl or chlorodifluoromethyl;

R^2 is group X



(X)

X^2 is C-X^6 or nitrogen;

X^1, X^3 and X^6 are independently hydrogen, halogen or trihalomethyl, wherein at least one of X^1, X^3 and X^6 is not hydrogen;

Y^1 is C-R^6, CH or nitrogen;

Y^2 and Y^3 are independently CH or nitrogen;

wherein no more than two of Y^1, Y^2 and Y^3 are nitrogen and wherein Y^2 and Y^3 are not both nitrogen;

R^5 is halogen, cyano, nitro, NH_2, C_1-C_4alkyl, C_1-C_4haloalkyl, C_3-C_5cycloalkyl, C_3-C_5halocycloalkyl, C_1-C_2alkoxy, or C_1-C_2haloalkoxy;

R^6 when present together with R^5 forms a -CH=CH-CH=CH- bridge;

each Z is independently halogen, C_1-C_{12}alkyl or C_1-C_{12}alkyl substituted by one to five R^{12}, nitro, C_1-C_{12}alkoxy or C_1-C_{12}alkoxy substituted by one to five R^{12}, cyano, C_1-C_{12}alkylsulfinyl, C_1-C_{12}alkylsulfonyl, C_1-C_{12}haloalkylsulfinyl, C_1-C_{12}haloalkylsulfonyl, hydroxyl or thiol;

each R^{12} is halogen, cyano, nitro, hydroxy, C_1-C_8alkoxy-, C_1-C_8haloalkoxy-, mercapto, C_1-C_8alkylthio-, or C_1-C_8haloalkylthio; and

k is 0, 1,2 or 3.

2. A method according to claim 1, wherein

R^5 is cyano;

k is 0 or 1; and

Z is cyano or trifluoromethyl.

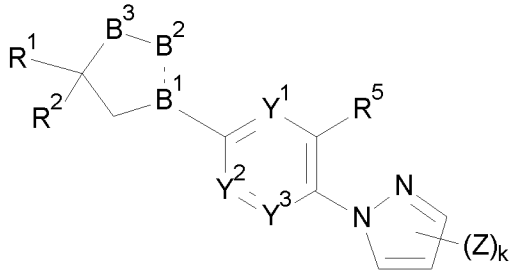
3. A method according to claim 1 or claim 2, wherein

R^1 is CF_3;

Y^1, Y^2 and Y^3 are CH; and

k is 0.

4. A method comprising applying to a crop of rice plants, the locus thereof, or propagation material thereof, a compound of formula ID

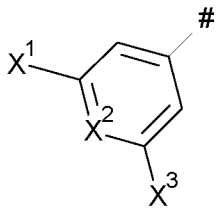


(ID)

wherein $-B^1-B^2-B^3-$ is -C=N-O-, $-C=N-CH_2-$, or $-N-CH_2-CH_2-$, preferably -C=N-O-;

R^1 is trifluoromethyl, difluoromethyl or chlorodifluoromethyl;

R^2 is group X



(X)

X^2 is C-X^6 or nitrogen;

X^1, X^3 and X^6 are independently hydrogen, halogen or trihalomethyl, wherein at least one of X^1, X^3 and X^6 is not hydrogen;

Y^1 is C-R^6, CH or nitrogen;

Y^2 and Y^3 are independently CH or nitrogen;

wherein no more than two of Y^1, Y^2 and Y^3 are nitrogen and wherein Y^2 and Y^3 are not both nitrogen;

R^5 is halogen, cyano, nitro, NH_2, C_1-C_4alkyl, C_1-C_4haloalkyl, C_3-C_5cycloalkyl, C_3-C_5halocycloalkyl, C_1-C_2alkoxy, or C_1-C_2haloalkoxy;

R^6 when present together with R^5 forms a -CH=CH-CH=CH- bridge;

each Z is independently halogen, C_1-C_{12}alkyl or C_1-C_{12}alkyl substituted by one to five R^{12}, nitro, C_1-C_{12}alkoxy or C_1-C_{12}alkoxy substituted by one to five R^{12}, cyano, C_1-C_{12}alkylsulfinyl, C_1-C_{12}alkylsulfonyl, C_1-C_{12}haloalkylsulfinyl, C_1-C_{12}haloalkylsulfonyl, hydroxyl or thiol;

each R^{12} is halogen, cyano, nitro, hydroxy, C_1-C_8alkoxy-, C_1-C_8haloalkoxy-, mercapto, C_1-C_8alkylthio-, or C_1-C_8haloalkylthio; and

k is 0, 1,2 or 3.

5. A method according to claim 4, wherein

wherein

R^5 is cyano;

k is 0 or 1; and

Z is cyano or trifluoromethyl;

and preferably when k is 1, Z is attached to the 4 position of the imidazole moiety.

6. A method according to claim 4 or claim 5, wherein

R^1 is CF_3;

$-B^1-B^2-B^3-$ is -C=N-O- or $-C=N-CH_2-$, preferably -C=N-O-;

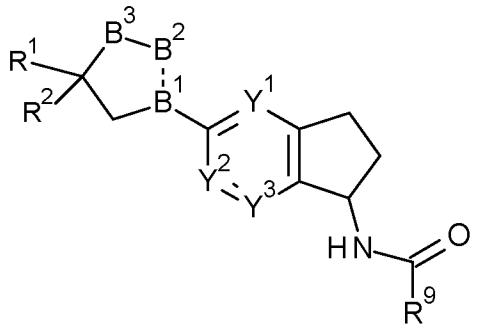
Y^1, Y^2 and Y^3 are CH;

k is 1; and

Z is cyano or trifluoromethyl;

and preferably Z is attached to the 4 position of the imidazole moiety.

7. A method comprising applying to a crop of rice plants, the locus thereof, or propagation material thereof, a compound of formula IE

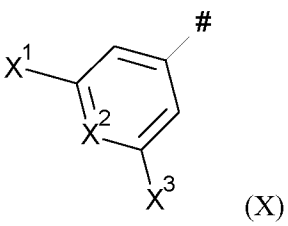


(IE)

wherein $-B^1-B^2-B^3-$ is -C=N-O-, $-C=N-CH_2-$, or $-N-CH_2-CH_2-$;

R^1 is trifluoromethyl, difluoromethyl or chlorodifluoromethyl;

R^2 is group X



(X)

X^2 is $C-X^6$ or nitrogen;

X^1, X^3 and X^6 are independently hydrogen, halogen or trihalomethyl, wherein at least one of X^1, X^3 and X^6 is not hydrogen;

Y^1 is CH or nitrogen;

Y^2 and Y^3 are independently CH or nitrogen;

wherein no more than two of Y^1, Y^2 and Y^3 are nitrogen and wherein Y^2 and Y^3 are not both nitrogen; and

R^9 is C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkyl-O-CH_2-, C_1-C_4haloalkyl-O-CH_2-,C_3-C_6cycloalkyl, C_3-C_6cycloalkyl-CH_2-, C_1-C_4alkyl-S-CH_2-, C_1-C_4alkyl-S(O)-CH_2-, or C_1-C_4alkyl-S(O_2)-CH_2.

8. A method according to claim 7, wherein R^9 is methyl, ethyl, propyl, CF_3CH_2- or cyclopropyl, preferably ethyl, or CF_3CH_2-.

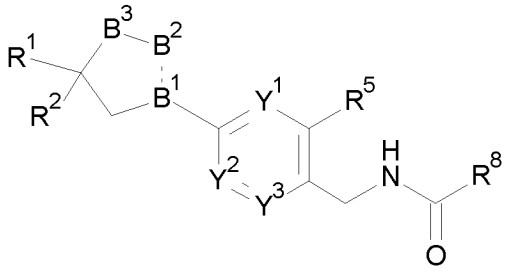
9. A method according to claim 7 or claim 8, wherein

R^1 is CF_3;

-B^1-B^2-B^3- is -C=N-O- or -C=N-CH_2-; and

Y^1, Y^2 and Y^3 are CH.

10. A method comprising applying to a crop of rice plants, the locus thereof, or propagation material thereof, a compound of formula IA

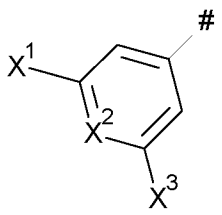


(IA)

wherein -B^1-B^2-B^3- is -C=N-CH_2-, or -N-CH_2-CH_2-;

R^1 is trifluoromethyl, difluoromethyl or chlorodifluoromethyl;

R^2 is group X



(X)

X^2 is C-X^6 or nitrogen;

X^1, X^3 and X^6 are independently hydrogen, halogen or trihalomethyl, wherein at least one of X^1, X^3 and X^6 is not hydrogen;

Y^1 is C-R^6, CH or nitrogen;

Y^2 and Y^3 are independently CH or nitrogen;

wherein no more than two of Y^1, Y^2 and Y^3 are nitrogen and wherein Y^2 and Y^3 are not both nitrogen;

R^5 is hydrogen, halogen, cyano, nitro, NH_2, C_1-C_4alkyl, C_1-C_4haloalkyl, C_3-C_5cycloalkyl, C_3-C_5halocycloalkyl, C_1-C_2alkoxy, or C_1-C_2haloalkoxy;

R^6 when present together with R^5 forms a -CH=CH-CH=CH- bridge; and

R^8 is C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy(C_1-C_4)alkyl, C_1-C_4alkylthio(C_1-C_4)alkyl, C_1-C_4alkylsulfinyl(C_1-C_4)alkyl, C_1-C_4alkylsulfonyl(C_1-C_4)alkyl, C_3-C_6cycloalkyl, C_3-C_6cycloalkyl(C_1-C_4)alkyl-, or tetrahydrofuranyl.

11. A method according to claim 10, wherein

R^5 is chloro, bromo, fluoro or methyl; and

R^8 is methyl, ethyl, n-propyl, isopropyl, CH_3-O-CH_2-, CH_3-S-CH_2-, CH_3-S(O)-CH_2-, CH_3-SO_2-CH_2-, cyclobutyl, cyclopropyl or cyclopropyl-CH_2-.

12. A method according to claim 10 or claim 11, wherein

R^1 is CF_3;

-B^1-B^2-B^3- is -C=N-O- or -C=N-CH_2-;

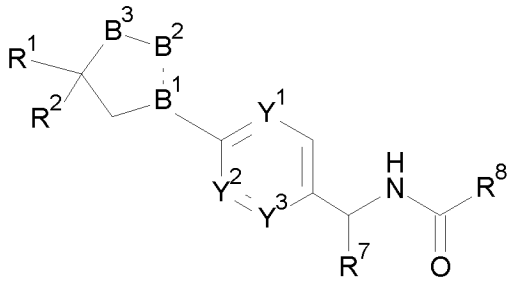
Y^1, Y^2 and Y^3 are CH; and

R^5 is chloro or methyl.

13. A method or use according to claim 10, wherein

-B^1-B^2-B^3- is -C=N-O-, R^1 is trifluoromethyl, R^2 is 3-bromo-5-trifluoromethylphenyl, Y^1, Y^2 and Y^3 are CH; R^5 is chloro, and R^8 is n-propyl.

14. A method comprising applying to a crop of rice plants, the locus thereof, or propagation material thereof, a compound of formula IB

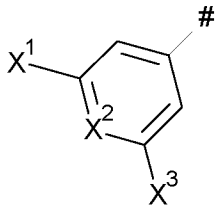


(IB)

wherein -B^1-B^2-B^3- is -C=N-O-, or -N-CH_2-CH_2-;

R^1 is trifluoromethyl, difluoromethyl or chlorodifluoromethyl;

R^2 is group X



(X)

X^2 is C-X^6 or nitrogen;

X^1, X^3 and X^6 are independently hydrogen, halogen or trihalomethyl, wherein at least one of X^1, X^3 and X^6 is not hydrogen;

Y^1 is CH or nitrogen;

Y^2 and Y^3 are independently CH or nitrogen;

wherein no more than two of Y^1, Y^2 and Y^3 are nitrogen and wherein Y^2 and Y^3 are not both nitrogen;

R^7 is C_1-C_4alkyl; and

R^8 is C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy(C_1-C_4)alkyl, C_1-C_4alkylthio(C_1-C_4)alkyl, C_1-C_4alkylsulfinyl(C_1-C_4)alkyl, C_1-C_4alkylsulfonyl(C_1-C_4)alkyl, C_3-C_6cycloalkyl, C_3-C_6cycloalkyl(C_1-C_4)alkyl-, or tetrahydrofuranyl.

15. A method according to claim 14, wherein

R^7 is methyl; and

R^8 is methyl, ethyl, n-propyl, isopropyl, CH_3-O-CH_2-, CH_3-S-CH_2-, CH_3-S(O)-CH_2-, CH_3-SO_2-CH_2-, cyclobutyl, cyclopropyl or cyclopropyl-CH_2-.

16. A method according to claim 14 or claim 15, wherein

R^1 is CF_3;

-B^1-B^2-B^3- is -C=N-O-, -C=N-CH_2- or -N-CH_2-CH_2-; and

Y^1, Y^2 and Y^3 are CH.

17. A method or use according to any one of claims 1 to 16, wherein R^2 is 3,5-dichlorophenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl- or 3,5-bis(trifluoromethyl)phenyl.

18. A method according to any one of claims 1 to 17, wherein the method is a method of controlling and/or preventing infestation of stemborer in rice comprising applying to a crop of rice plants, the locus thereof, or propagation material thereof, a compound of formula I as defined any one of claims 1 to 17.

19. A method of controlling and/or preventing infestation of stemborer in a crop of useful plants comprising applying to a crop of useful plants, the locus thereof, or propagation material thereof, a compound of formula I as defined in any one of claims 1 to 17.

20. A method according to any one of claims 1 to 17, wherein the method is a method of controlling and/or preventing infestation of leaffolder in rice comprising applying to a crop of rice plants, the locus thereof, or propagation material thereof, a compound of formula I as defined in any one of claims 1 to 17.

21. A method of controlling and/or preventing infestation of leaffolder in a crop of useful plants comprising applying to a crop of useful plants, the locus thereof, or propagation material thereof, a compound of formula I as defined in any one of claims 1 to 17.

22. A method according to any one of claims 1 to 17, wherein the method is a method of controlling and/or preventing infestation of hoppers in rice comprising applying to a crop of rice plants, the locus thereof, or propagation material thereof, a compound of formula I as defined in any one of claims 1 to 17.

23. A method of controlling and/or preventing infestation of hoppers in a crop of useful plants comprising applying to a crop of useful plants, the locus thereof, or propagation material thereof, a compound of formula I as defined in any one of claims 1 to 17.

24. A method according to any one of claims 1 to 17, wherein the method is a method of controlling and/or preventing infestation of gallmidge in rice comprising applying to a crop of rice plants, the locus thereof, or propagation material thereof, a compound of formula I as defined in any one of claims 1 to 17.

25. A method of controlling and/or preventing infestation of gallmidge in a crop of useful plants comprising applying to a crop of useful plants, the locus thereof, or propagation material thereof, a compound of formula I as defined in any one of claims 1 to 17.

26. A method according to any one of claims 1 to 17, wherein the method is a method of controlling and/or preventing infestation of whorl maggot in rice comprising applying to a crop of rice plants, the locus thereof, or propagation material thereof, a compound of formula I as defined in any one of claims 1 to 17.

27. A method of controlling and/or preventing infestation of whorl maggot in a crop of useful plants comprising applying to a crop of useful plants, the locus thereof, or propagation material thereof, a compound of formula I as defined in any one of claims 1 to 17.

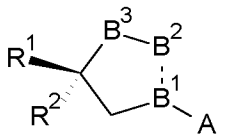
28. A method according to any one of claims 1 to 17, wherein the method is a method of controlling and/or preventing infestation of Rice bugs in rice comprising applying to a crop of rice plants, the locus thereof, or propagation material thereof, a compound of formula I as defined in any one of claims 1 to 17.

29. A method of controlling and/or preventing infestation of Rice bugs in a crop of useful plants comprising applying to a crop of useful plants, the locus thereof, or propagation material thereof, a compound of formula I as defined in any one of claims 1 to 17.

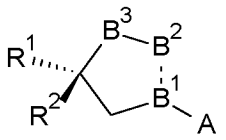
30. A method according to any one of claims 1 to 17, wherein the method is a method of controlling and/or preventing infestation of Black bugs in rice comprising applying to a crop of rice plants, the locus thereof, or propagation material thereof, a compound of formula I as defined in any one of claims 1 to 17.

31. A method of controlling and/or preventing infestation of Black bugs in a crop of useful plants comprising applying to a crop of useful plants, the locus thereof, or propagation material thereof, a compound of formula I as defined in one of claims 1 to 17.

32. A method or use of a compound of formula I according to any one of claims 1 to 31, wherein the compound of formula I is a mixture of the compound of formula I* and the compound of formula I**

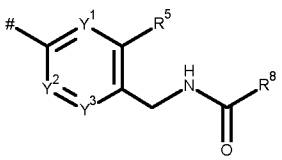


(I*)

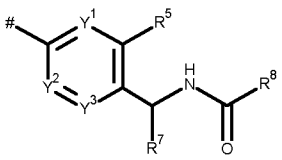


(I**)

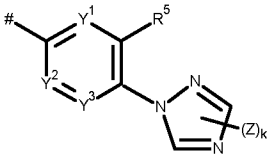
wherein A represents A1, A2, A3 A4 or A5



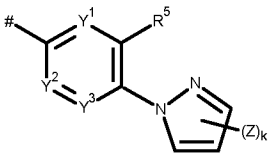
(A1)



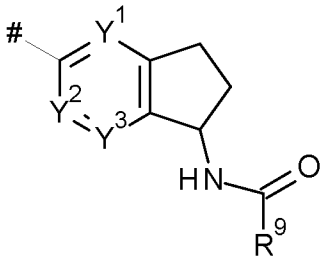
(A2)



(A3)



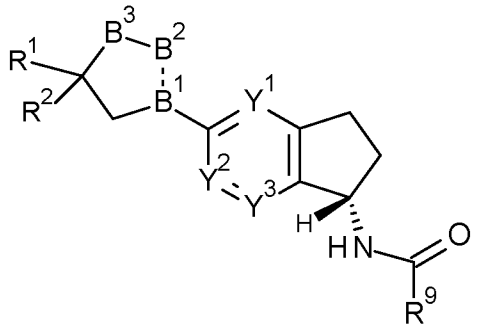
(A4)



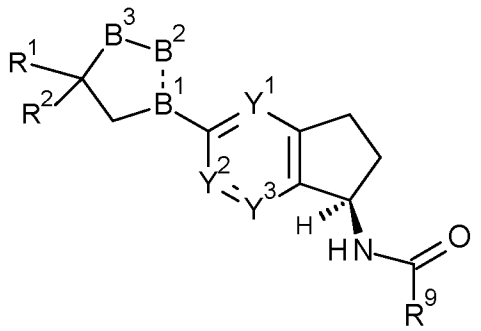
(A5)

and the remaining substituents are as defined in any one of claims 1 to 17 providing that R^5 is hydrogen when A represents A2, and wherein said mixture is enriched for the compound of formula I**.

33. A method or use according to any one of claims 7 to 9 and 17 to 32, wherein the compound of formula IE is a mixture of compounds IE-a and IE-b



(IE-a)



(IE-b)

wherein the molar proportion of compound IE-a compared to the total amount of IE-a and IE-b is greater than 50%.

34. A method for obtaining regulatory approval for the use of one or more of a compound of formula I as defined in any one of claims 1 to 33 to control insects selected from the group consisting of stemborer, leaffolder, hoppers, Gall midge, whorl maggot, Rice bugs, and Black bugs, comprising at least one step of referring to, submitting or relying on biological data showing that said active ingredient reduces insect pressure.

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2013/067183

A. CLASSIFICATION OF SUBJECT MATTER
INV. A01N43/36 A01N43/653 A01N43/80 A01L7/04
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)
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, CHEM ABS Data, 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 2009/112275 A1 (BAYER CROPSCIENCE AG [DE]; MURATA TETSUYA [JP]; YONETA YASUSHI [JP]; M) 17 September 2009 (2009-09-17) page 123-128: compound 3-3 page 132-135: compound 3-638 tables 3, 4, 5 -----	7-9, 17-33
X	WO 2007/075459 A2 (DU PONT [US]; LAHM GEORGE PHILIP [US]; PATEL KANU MAGANBHAI [US]; PAHU) 5 July 2007 (2007-07-05) cited in the application compounds 9, 42 page 6, lines 22,23 page 80, lines 21, 33, 34 page 83, lines 23,24 page 84, lines 18,20,34 table table A -----	1-3, 17-32
	-/--	

[X] Further documents are listed in the continuation of Box C.

[X] 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
9 January 2014	05/02/2014

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	Götz, Gerhard

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Form PCT/ISA/210 (second sheet) (April 2005)

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2008/150393 A1 (DU PONT [US]; LAHM GEORGE PHILIP [US]; PAHUTSKI THOMAS FRANCIS JR [US]) 11 December 2008 (2008-12-11) page 34, lines 34,35 page 31, line 27 page 32, lines 1,2 page 35, line 30 page 36, line 9	1-3, 17-32
X	WO 2008/128711 A1 (BAYER CROPSCIENCE AG [DE]; MIHARA JUN [JP]; MURATA TETSUYA [JP]; YAMAZ) 30 October 2008 (2008-10-30) table 2: compounds with G being the group G-6 table 2: compounds with G being the group G-2 table 3: compounds with I = 1 table 9: compounds with I = 1 table 10 : compounds with I = 1 page 49, line 31 page 54, line 24 page 37, lines 21, 25 page 38, line 4	1-6, 10-32
X	WO 2008/019760 A1 (BAYER CROPSCIENCE AG [DE]; MIHARA JUN [JP]; MURATA TETSUYA [JP]; YAMAZ) 21 February 2008 (2008-02-21) claim 1: compounds with G being G-6 claim 1: compounds with G being G-2 page 45, line 30	1-6, 17-32
X	WO 2009/051956 A2 (DU PONT [US]; HOLYOKE CALEB WILLIAM JR [US]; LAHM GEORGE PHILIP [US];) 23 April 2009 (2009-04-23) claim 1: R5=CN, R4=CN page 31, line 27 page 34, lines 34-35 page 32, line 2 page 35, line 30 page 36, line 9	4-6, 17-32
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X	EP 1 997 813 A1 (NISSAN CHEMICAL IND LTD [JP]) 3 December 2008 (2008-12-03) test example 9 tables 5, 6, 7, 8,	10-32

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2013/067183

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2013/067183

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-3(completely); 17-32(partially)

   Method comprising applying to a crop of rice plants, the locus thereof, or propagation material thereof, a compound of formula IC

   ---

2. claims: 4-6(completely); 17-32(partially)

   Method comprising applying to a crop of rice plants, the locus thereof, or propagation material thereof, a compound of formula ID

   ---

3. claims: 7-9, 33(completely); 17-32(partially)

   Method comprising applying to a crop of rice plants, the locus thereof, or propagation material thereof, a compound of formula IE

   ---

4. claims: 10-13(completely); 17-32(partially)

   Method comprising applying to a crop of rice plants, the locus thereof, or propagation material thereof, a compound of formula IA

   ---

5. claims: 14-16(completely); 17-32(partially)

   Method comprising applying to a crop of rice plants, the locus thereof, or propagation material thereof, a compound of formula IB
