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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
8 December 2011 (08.12.2011)

PCT

(10) International Publication Number
WO 2011/151370 A1

(51) International Patent Classification:
C07D 231/16 (2006.01) *A01N 43/56* (2006.01)

(21) International Application Number:
PCT/EP2011/059026

(22) International Filing Date:
1 June 2011 (01.06.2011)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

10356020.7	3 June 2010 (03.06.2010)	EP
61/368,003	27 July 2010 (27.07.2010)	US
10356032.2	15 November 2010 (15.11.2010)	EP

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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, 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, KM, 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, PE, PG, PH, PL, PT, RO, RS, RU, 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, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, 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, ML, MR, NE, SN, TD, TG).

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))*

WO 2011/151370 A1

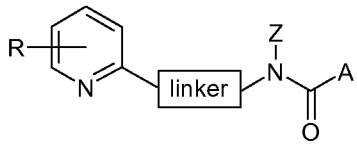
(54) Title: N-[(HET)ARYLALKYL)] PYRAZOLE (THIO)CARBOXAMIDES AND THEIR HETEROSUBSTITUTED ANALOGUES

(57) Abstract: The present invention relates to fungicidal N-[(het)arylalkyl)] pyrazolecarboxamide or thiocarboxamide and their heterosubstituted analogues, their process of preparation and intermediate compounds for their preparation, their use as fungicides, particularly in the form of fungicidal compositions and methods for the control of phytopathogenic fungi of plants using these compounds or their compositions.

N-[(HET)ARYLALKYL)] PYRAZOLE(THIO)CARBOXAMIDES AND THEIR HETEROSUBSTITUTED ANALOGUES

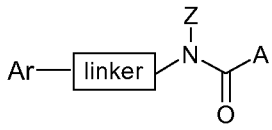
The present invention relates to fungicidal N-[(het)arylalkyl)] pyrazolecarboxamide or thiocarboxamide and their heterosubstituted analogues, their process of preparation and intermediate compounds for their preparation, their use as fungicides, particularly in the form of fungicidal compositions and methods for the control of phytopathogenic fungi of plants using these compounds or their compositions.

In international patent applications WO-2008/003746 and WO-2010/015681 certain fungicidal pyrazolecarboxamide derivatives are generically embraced in a broad disclosure of numerous compounds of the following formula :



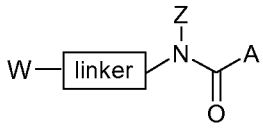
wherein A represents a substituted 5-membered heterocyclic group that can represent various rings among which a pyrazole ring, Z can represent a hydrogen atom, an alkyl group or a cycloalkyl group and the substituted or non-substituted 2-pyridyl group is linked to the pyrazolecarboxamide moeity by means of a 3- or 4-atoms linker. However, there is no explicite disclosure or suggestion to select in these documents of any such derivative wherein A represent a 1-alkyl -3-(difluoro or dichloro)methyl-5-(chloro or fluoro)-4-pyrazolyl group.

In international patent applications WO-2008/101976, WO-2009/012998, WO-2009/127718, WO-2009/127722, WO-2009/127726, WO-2010/012795, WO-2010/063700, WO-2010/106071 and WO-2011/045355 certain fungicidal pyrazole-carboxamide derivatives are generically embraced in a broad disclosure of numerous compounds of the following formula :



wherein A represents a substituted 5-membered heterocyclic group that can represent various rings among which a pyrazole ring, Z can represent a hydrogen atom, an alkyl group, an alkoxy group or a cycloalkyl group and Ar can represent a substituted or non-substituted phenyl or naphthyl group which is linked to the pyrazolecarboxamide moeity by means of a 3-, 4- or 5-atoms linker. However, there is no explicite disclosure or suggestion to select in these documents of any such derivative wherein A represent a 1-alkyl-3-(difluoro or dichloro)methyl-5-(chloro or fluoro)-4-pyrazolyl group.

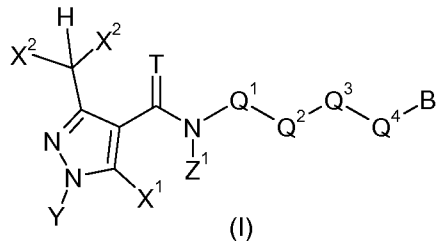
In international patent applications WO-1998/003486, WO-2006/061215, WO-2007/0039615 and WO-2008/081017 certain fungicidal pyrazolecarboxamide derivatives are generically embraced in a broad disclosure of numerous compounds of the following formula :



wherein A represents a substituted 5-membered heterocyclic group that can represent various rings among which a pyrazole ring, Z can represent a hydrogen atom, an alkyl group or a cycloalkyl group and W can represent various substituted or non-substituted groups among which an alkyl group, a cycloalkylgroup, a trialkylsilyl group or a alkynyl group which are linked to the pyrazolecarboxamide moeity by means of a 2-, 3- or 4-atoms linker. However, there is no explicite disclosure or suggestion to select in these documents of any such derivative wherein A represent a 1-alkyl -3-(difluoro or dichloro)methyl-5-(chloro or fluoro)-4-pyrazolyl group.

It is always of high-interest in the field of agrochemicals to use pesticidal compounds more active than the compounds already known by the man ordinary skilled in the art whereby reduced amounts of compound can be used whilst retaining equivalent efficacy.
Furthermore, the provision of new pesticidal compounds with a higher efficacy strongly reduces the risk of appearance of resistant strains in the fungi to be treated.
We have now found a new family of compounds which show enhanced fungicidal activity over the general known family of such compounds.

Accordingly, the present invention provides a N-[(het)arylalkyl)] pyrazolecarboxamide or thiocarboxamide derivative of formula (I)



(I)

wherein

- X^1 and X^2 which can be the same or different, represent a halogen atom ;
- Y represents a C_1-C_4-alkyl ;
- T represents O or S ;
- Q^1 represents CR^1R^2 ; $-CR^3=CR^4-$; $-CR^3=N-O-$; or $-C(=W)-$;
- Q^2, Q^3 and Q^4 , which can be the same or different, represent a direct bond ; CR^1R^2 ; $-CR^3=CR^4-$; $-C\equiv C-$; $-CR^3=N-O-$; $-O-N=CR^3-$; O ; S ; SO ; SO_2 ; NR^5 ; SiR^6R^7 ; or $-C(=U)-$;
- B represents a phenyl ring that can be susbtituted by up to 5 groups X which can be the same or different ; a naphthyl ring that can be susbtituted by up to 7 groups X which can be the same or different ; a saturated, partially saturated or unsaturated, monocyclic or fused bicyclic 4-, 5-, 6-, 7-, 8-, 9-, 10-membered ring comprising from 1 up to 4 heteroaroms selected in the list consisting of

N, O, S, that can be substituted by up to 6 groups X which can be the same or different ; a hydrogen atom ; a halogen atom ; a substituted or non-substituted C_1-C_{12}-alkyl group ; a C_1-C_{12}-halogenoalkyl group having 1 to 9 halogen atoms that can be the same or different ; a substituted or non-substituted C_3-C_8-cycloalkyl group ; a substituted or non-substituted C_3-C_8-cycloalkenyl group, a bicyclo[2.2.1]heptan-2-yl group ; a tri(C_1-C_8-alkyl)silyl group ; a substituted or non-substituted C_2-C_{12} alkenyl group ; or a substituted or non-substituted C_2-C_{12} alkynyl group ;

- X represents a halogen atom ; nitro ; cyano ; isonitrile ; hydroxy ; amino ; sulfanyl ; pentafluoro-λ^6-sulfanyl ; formyl ; formyloxy ; formylamino ; substituted or non-substituted (hydroxyimino)-C_1-C_8-alkyl ; substituted or non-substituted (C_1-C_8-alkoxyimino)-C_1-C_8-alkyl ; substituted or non-substituted (C_2-C_8-alkenyloxyimino)-C_1-C_8-alkyl ; substituted or non-substituted (C_2-C_8-alkynyloxyimino)-C_1-C_8-alkyl ; substituted or non-substituted (benzyloxyimino)-C_1-C_8-alkyl ; carboxy ; carbamoyl ; N-hydroxycarbamoyl ; carbamate ; substituted or non-substituted C_1-C_8-alkyl ; C_1-C_8-halogenoalkyl having 1 to 5 halogen atoms ; substituted or non-substituted C_2-C_8-alkenyl ; C_2-C_8-halogenoalkenyl having 1 to 5 halogen atoms ; substituted or non-substituted C_2-C_8-alkynyl ; C_2-C_8-halogenoalkynyl having 1 to 5 halogen atoms ; substituted or non-substituted C_1-C_8-alkoxy ; C_1-C_8-halogenoalkoxy having 1 to 5 halogen atoms ; substituted or non-substituted C_1-C_8-alkylsulfanyl ; C_1-C_8-halogenoalkylsulfanyl having 1 to 5 halogen atoms ; substituted or non-substituted C_1-C_8-alkylsulfinyl ; C_1-C_8-halogenoalkylsulfinyl having 1 to 5 halogen atoms ; substituted or non-substituted C_1-C_8-alkylsulfonyl ; C_1-C_8-halogenoalkylsulfonyl having 1 to 5 halogen atoms ; substituted or non-substituted C_1-C_8-alkylamino ; substituted or non-substituted di-C_1-C_8-alkylamino ; substituted or non-substituted C_2-C_8-alkenyloxy ; C_2-C_8-halogenoalkenyloxy having 1 to 5 halogen atoms ; substituted or non-substituted C_3-C_8-alkynyloxy ; C_2-C_8-halogenoalkynyloxy having 1 to 5 halogen atoms ; substituted or non-substituted C_3-C_7-cycloalkyl ; C_3-C_7-halogenocycloalkyl having 1 to 5 halogen atoms ; substituted or non-substituted (C_3-C_7-cycloalkyl)-C_1-C_8-alkyl ; substituted or non-substituted (C_3-C_7-cycloalkyl)-C_2-C_8-alkenyl ; substituted or non-substituted (C_3-C_7-cycloalkyl)-C_2-C_8-alkynyl ; substituted or non-substituted tri(C_1-C_8-alkyl)silyl ; substituted or non-substituted tri(C_1-C_8-alkyl)silyl-C_1-C_8-alkyl ; substituted or non-substituted C_1-C_8-alkylcarbonyl ; C_1-C_8-halogenoalkylcarbonyl having 1 to 5 halogen atoms ; substituted or non-substituted C_1-C_8-alkylcarbonyloxy ; C_1-C_8-halogenoalkylcarbonyloxy having 1 to 5 halogen atoms ; substituted or non-substituted C_1-C_8-alkylcarbonylamino ; C_1-C_8-halogenoalkyl- carbonylamino having 1 to 5 halogen atoms ; substituted or non-substituted C_1-C_8-alkoxycarbonyl ; C_1-C_8-halogenoalkoxycarbonyl having 1 to 5 halogen atoms ; substituted or non-substituted C_1-C_8-alkyloxycarbonyloxy ; C_1-C_8-halogenoalkoxycarbonyloxy having 1 to 5 halogen atoms ; substituted or non-substituted C_1-C_8-alkylcarbamoyl ; substituted or non-substituted di-C_1-C_8-alkylcarbamoyl ; substituted or non-substituted C_1-C_8-alkylaminocarbonyloxy ; substituted or non-substituted di-C_1-C_8-alkylaminocarbonyloxy ; substituted or non-substituted N-(C_1-C_8-alkyl)hydroxy carbamoyl ; substituted or non-substituted C_1-C_8-alkoxycarbamoyl ; substituted or non-substituted N-(C_1-C_8-alkyl)-C_1-C_8-alkoxycarbamoyl ; aryl that can be susbtituted by up to 6 groups Q which can be the same or different ; C_1-C_8-arylalkyl that can be susbtituted by up to 6 groups Q which can be the same or different ; C_2-C_8-arylalkenyl that can be susbtituted by up to 6 groups Q which can be the same or different ; C_2-C_8-arylalkynyl that can be susbtituted by up to 6 groups Q which can be the same or different ; aryloxy that can be susbtituted by up to 6 groups Q

which can be the same or different ; arylsulfanyl that can be susbtituted by up to 6 groups Q which can be the same or different ; arylamino that can be susbtituted by up to 6 groups Q which can be the same or different ; C_1-C_8-arylalkyloxy that can be susbtituted by up to 6 groups Q which can be the same or different ; C_1-C_8-arylalkylsulfanyl that can be susbtituted by up to 6 groups Q which can be the same or different ; or C_1-C_8-arylalkylamino that can be susbtituted by up to 6 groups Q which can be the same or different ; or

- two substituent X together with the consecutive carbon atoms to which they are linked can form a 5- or 6-membered, saturated carbocycle or saturated heterocycle, which can be substituted by up to four groups Q which can be the same or different ;
- Z^1 represents a hydrogen atom ; a formyl group ; a substituted or non-substituted C_1-C_8-alkyl ; a substituted or non substituted C_1-C_8-alkoxy ; a non-substituted C_3-C_7-cycloalkyl or a C_3-C_7-cycloalkyl substituted by up to 10 atoms or groups that can be the same or different and that can be selected in the list consisting of halogen atoms, cyano, C_1-C_8-alkyl, C_1-C_8-halogenoalkyl comprising up to 9 halogen atoms that can be the same or different, C_1-C_8-alkoxy, C_1-C_8-halogenoalkoxy comprising up to 9 halogen atoms that can be the same or different, C_1-C_8-alkoxycarbonyl, C_1-C_8-halogenoalkoxycarbonyl comprising up to 9 halogen atoms that can be the same or different, C_1-C_8-alkylaminocarbonyl and di-C_1-C_8-alkylaminocarbonyl ;
- R^1 and R^2 independently represent a hydrogen atom ; a halogen atom ; cyano ; substituted or non-substituted C_1-C_{12}-alkyl ; substituted or non-substituted C_2-C_{12}-alkenyl ; substituted or non-substituted C_2-C_{12}-alkynyl ; substituted or non-substituted C_3-C_7-cycloalkyl ; C_1-C_{12}-halogenoalkyl having 1 to 5 halogen atoms ; substituted or non-substituted C_1-C_8-alkoxy ; substituted or non-substituted C_1-C_8-alkylsulfanyl ; substituted or non-substituted C_1-C_8-alkylamino ; substituted or non-substituted di-(C_1-C_8-alkyl)amino ; or substituted or non-substituted C_1-C_8-alkoxycarbonyl ; or R^1 and R^2 are a C_2-C_5-alkylene group that can be substituted by up to four groups that can be the same or different and that can be selected in the list consisting of halogen atoms, C_1-C_8-alkyl or C_1-C_2-halogenoalkyl comprising up to 5 halogen atoms that can be the same or different ; or
- The R^1 substituent of the group Q^i and the R^1 substituent of the group Q^{i+1}, i being an integer between 1 and 3, together with the consecutive carbon atoms to which they are linked can form a 3-, 4-, 5-, -6 or 7-membered saturated carbocycle that can be substituted by up to four groups that can be the same or different and that can be selected in the list consisting of halogen atoms, C_1-C_8-alkyl or C_1-C_2-halogenoalkyl comprising up to 5 halogen atoms that can be the same or different ; or
- The R^1 substituent of the group Q^i and the R^1 substituent of the group Q^{i+2}, i being an integer between 1 and 2, together with the consecutive carbon atoms to which they are linked can form a 3-, 4-, 5-, 6- or 7-membered saturated carbocycle that can be substituted by up to four groups that can be the same or different and that can be selected in the list consisting of halogen atoms, C_1-C_8-alkyl or C_1-C_2-halogenoalkyl comprising up to 5 halogen atoms that can be the same or different ;
- R^3 and R^4 independently represent a hydrogen atom ; substituted or non-substituted C_1-C_8-alkyl ; substituted or non-substituted C_2-C_8-alkenyl ; substituted or non-substituted C_2-C_8-alkynyl ; substituted or non-substituted C_3-C_7-cycloalkyl ; or C_1-C_8-halogenoalkyl having 1 to 5 halogen

atoms ; R^5 represents a hydrogen atom ; a substituted or non-substituted C_1-C_8-alkyl ; a C_1-C_8-halogenoalkyl comprising up to 9 halogen atoms that can be the same or different ; a substituted or non-substituted C_2-C_8-alkenyl ; a C_2-C_8-halogenoalkenyl comprising up to 9 halogen atoms that can be the same or different ; a substituted or non-substituted C_3-C_8-alkynyl ; a C_3-C_8-halogenoalkynyl comprising up to 9 halogen atoms that can be the same or different ; a substituted or non-substituted C_3-C_7-cycloalkyl ; a C_3-C_7-halogeno-cycloalkyl comprising up to 9 halogen atoms that can be the same or different ; a substituted or non-substituted C_3-C_7-cycloalkyl-C_1-C_8-alkyl ; formyl ; a substituted or non-substituted C_1-C_8-alkylcarbonyl ; C_1-C_8-halogenoalkylcarbonyl comprising up to 9 halogen atoms that can be the same or different ; a substituted or non-substituted C_1-C_8-alkoxycarbonyl ; C_1-C_8-halogenoalkoxycarbonyl comprising up to 9 halogen atoms that can be the same or different ; a substituted or non-substituted C_1-C_8-alkylsulphonyl ; C_1-C_8-halogenoalkylsulphonyl comprising up to 9 halogen atoms that can be the same or different ; phenylmethylene that can be substituted by up to 7 groups Q which can be the same or different ; or phenylsulphonyl that can be substituted by up to 5 groups Q which can be the same or different ;

- R^6 and R^7 independently represent a substituted or non-substituted C_1-C_8-alkyl ;
- W represents O ; or S ;
- U represents O ; S ; N-OR^a ; or N-CN ;
- R^a represents a hydrogen atom ; a substituted or non-substituted C_1-C_4-alkyl ; or a C_1-C_4-halogenoalkyl comprising up to 7 halogen atoms that can be the same or different ;
- Q independently represents a halogen atom ; cyano ; nitro ; substituted or non-substituted C_1-C_8-alkyl ; C_1-C_8-halogenoalkyl having 1 to 9 halogen atoms that can be the same or different ; substituted or non-substituted C_1-C_8-alkoxy ; C_1-C_8-halogenoalkoxy having 1 to 9 halogen atoms that can be the same or different ; substituted or non-substituted C_1-C_8-alkylsulfanyl ; C_1-C_8-halogenoalkylsulfanyl having 1 to 9 halogen atoms that can be the same or different ; substituted or non-substituted tri(C_1-C_8)alkylsilyl ; substituted or non-substituted tri(C_1-C_8)alkylsilyl-C_1-C_8-alkyl ; substituted or non-substituted (C_1-C_8-alkoxyimino)-C_1-C_8-alkyl ; substituted or non-substituted (benzyloxyimino)-C_1-C_8-alkyl ;

with the provisio that -Q^1-Q^2-Q^3-Q^4- does not represent CR^1R^2 when B represents a substituted or non-substituted phenyl, naphthyl or 2-pyridyl ring ;

or that -Q^1-Q^2-Q^3-Q^4- does not represent $[CR^1R^2]_2$ or CR^1R^2-C(=W)- or a cycloalkyl-1,2-diyl group, when B represents a substituted or non-substituted phenyl, naphthyl or heterocyclic ring ;

or that Z^1 does not represent a hydrogen atom when -Q^1-Q^2- represents a unsubstituted cyclohexyl-1,2-diyl group and -Q^3-Q^4- represents a substituted or non-substituted cyclopropyl-1,2-diyl group ;

as well as its salts, N-oxydes, metallic complexes, metalloidic complexes and optically active isomers.

For the compounds according to the invention, the following generic terms are generally used with the following meanings:

- halogen means fluorine, bromine, chlorine or iodine.

carboxy means -C(=O)OH ;

carbonyl means -C(=O)- ;

carbamoyl means -C(=O)NH_2 ;

N-hydroxycarbamoyl means -C(=O)NHOH ;

SO represents a sulfoxyde group ;

SO_2 represents a sulfone group ;

- an alkyl group, an alkenyl group and an alkynyl group as well as moieties containing these terms, can be linear or branched;
- the aryl moeity contained in an aryl group, an arylalkyl group, an arylalkenyl group and an arylalkynyl group as well as moieties containing these terms, can be a phenyl group that can be substituted by up to 5 groups Q which can be the same or different, a naphthyl group that can be substituted by up to 7 groups Q which can be the same or different or a pyridyl group that can be substituted by up to 4 groups Q which can be the same or different ;
- and, heteroatom means sulphur, nitrogen or oxygen.
- in the case of an amino group or the amino moiety of any other amino-comprising group, substituted by two substituent that can be the same or different, the two substituent together with the nitrogen atom to which they are linked can form a heterocyclyl group, preferably a 5- to 7-membered heterocyclyl group, that can be substituted or that can include other hetero atoms, for example a morpholino group or piperidinyl group.
- unless indicated otherwise, a group or a substituent that is substituted according to the invention can be substituted by one or more of the following groups or atoms: a halogen atom, a nitro group, a hydroxy group, a cyano group, an amino group, a sulfanyl group, a pentafluoro-λ^6-sulfanyl group, a formyl group, a formyloxy group, a formylamino group, a carbamoyl group, a N-hydroxycarbamoyl group, a carbamate group, a (hydroxyimino)-C_1-C_6-alkyl group, a C_1-C_8-alkyl, a tri(C_1-C_8-alkyl)silyl-C_1-C_8-alkyl, C_1-C_8-cycloalkyl, tri(C_1-C_8-alkyl)silyl-C_1-C_8-cycloalkyl, a C_1-C_8-halogenoalkyl having 1 to 5 halogen atoms, a C_1-C_8-halogenocycloalkyl having 1 to 5 halogen atoms, a C_2-C_8-alkenyl, a C_2-C_8-alkynyl, a C_2-C_8-alkenyloxy, a C_2-C_8-alkynyloxy, a C_1-C_8-alkylamino, a di-C_1-C_8-alkylamino, a C_1-C_8-alkoxy, a C_1-C_8-halogenoalkoxy having 1 to 5 halogen atoms, a C_1-C_8-alkylsulfanyl, a C_1-C_8-halogenoalkylsulfanyl having 1 to 5 halogen atoms, a C_2-C_8-alkenyloxy, a C_2-C_8-halogenoalkenyloxy having 1 to 5 halogen atoms, a C_3-C_8-alkynyloxy, a C_3-C_8-halogenoalkynyloxy having 1 to 5 halogen atoms, a C_1-C_8-alkylcarbonyl, a C_1-C_8-halogenoalkylcarbonyl having 1 to 5 halogen atoms, a C_1-C_8-alkylcarbamoyl, a di-C_1-C_8-alkylcarbamoyl, a N-C_1-C_8-alkyloxycarbamoyl, a C_1-C_8-alkoxycarbamoyl, a N-C_1-C_8-alkyl-C_1-C_8-alkoxycarbamoyl, a C_1-C_8-alkoxycarbonyl, a C_1-C_8-halogenoalkoxycarbonyl having 1 to 5 halogen atoms, a C_1-C_8-alkylcarbonyloxy, a C_1-C_8-halogenoalkylcarbonyloxy having 1 to 5 halogen atoms, a C_1-C_8-alkylcarbonylamino, a C_1-C_8-halogenoalkylcarbonylamino having 1 to 5 halogen atoms, a C_1-C_8-alkylaminocarbonyloxy, a di-C_1-C_8-alkylaminocarbonyloxy, a C_1-C_8-alkyloxycarbonyloxy, a C_1-C_8-alkylsulfinyl, a C_1-C_8-halogenoalkylsulfinyl having 1 to 5 halogen atoms, a C_1-C_8-alkylsulfonyl, a C_1-C_8-halogenoalkylsulfonyl having 1 to 5 halogen atoms, a C_1-C_8-alkylaminosulfamoyl, a di-C_1-C_8-alkylaminosulfamoyl, a (C_1-C_6-alkoxyimino)-C_1-C_6-alkyl, a (C_1-C_6-alkenyloxyimino)-C_1-C_6-alkyl, a (C_1-C_6-alkynyloxyimino)-C_1-C_6-alkyl, a 2-oxopyrrolidin-1-yl,

(benzyloxyimino)-C_1-C_6-alkyl, C_1-C_8-alkoxyalkyl, C_1-C_8-halogenoalkoxyalkyl having 1 to 5 halogen atoms, benzyloxy, benzylsulfanyl, benzylamino, phenoxy, phenylsulfanyl, or phenylamino.

Any of the compounds of the present invention can exist in one or more optical or chiral isomer forms depending on the number of asymmetric centres in the compound. The invention thus relates equally to all the optical isomers and to their racemic or scalemic mixtures (the term "scalemic" denotes a mixture of enantiomers in different proportions) and to the mixtures of all the possible stereoisomers, in all proportions. The diastereoisomers and/or the optical isomers can be separated according to the methods which are known *per se* by the man ordinary skilled in the art.

Any of the compounds of the present invention can also exist in one or more geometric isomer forms depending on the number of double bonds in the compound. The invention thus relates equally to all geometric isomers and to all possible mixtures, in all proportions. The geometric isomers can be separated according to general methods, which are known *per se* by the man ordinary skilled in the art.

Any of the compounds of the present invention can also exist in one or more geometric isomer forms depending on the relative position (syn/anti or cis/trans) of the substituents of ring B. The invention thus relates equally to all syn/anti (or cis/trans) isomers and to all possible syn/anti (or cis/trans) mixtures, in all proportions. The syn/anti (or cis/trans) isomers can be separated according to general methods, which are known *per se* by the man ordinary skilled in the art.

Any of the compounds of formula (I) wherein X represents a hydroxy, a sulfanyl group or an amino group may be found in its tautomeric form resulting from the shift of the proton of said hydroxy, sulfanyl or amino group. Such tautomeric forms of such compounds are also part of the present invention. More generally speaking, all tautomeric forms of compounds of formula (I) wherein X represents a hydroxy, a sulfanyl group or an amino group, as well as the tautomeric forms of the compounds which can optionally be used as intermediates in the preparation processes and which will be defined in the description of these processes, are also part of the present invention.

Preferred compounds according to the invention are compounds of formula (I) wherein X^1 and X^2 independently represent a chlorine or a fluorine atom. More preferred compounds according to the invention are compounds of formula (I) wherein X^1 and X^2 represent a fluorine atom ;

Other preferred compounds according to the invention are compounds of formula (I) wherein Y represents methyl ;

Other preferred compounds according to the invention are compounds of formula (I) wherein T represents O ;

Other preferred compounds according to the invention are compounds of formula (I) wherein B represents a substituted or non-substituted phenyl ring ; a substituted or non-substituted naphthyl ring ; a substituted or non-substituted pyridyl ring ; a substituted or non-substituted thienyl ring ; or a substituted or non-substituted benzothienyl ring ; more preferred compounds according to the invention are compounds of formula (I) wherein B represents a substituted or non-substituted phenyl ring ; other more

preferred compounds according to the invention are compounds of formula (I) wherein B represents a substituted or non-substituted 2-pyridyl ring ;

Other preferred compounds according to the invention are compounds of formula (I) wherein X independently represents a halogen atom ; substituted or non-substituted C_1-C_8-alkyl ; C_1-C_8-halogenoalkyl comprising up to 9 halogen atoms that can be the same or different ; substituted or non-substituted tri(C_1-C_8-alkyl)silyl ; substituted or non-substituted C_1-C_8-alkoxy or C_1-C_8-halogenoalkoxy comprising up to 9 halogen atoms that can be the same or different ; substituted or non-substituted C_1-C_8-alkylsulfanyl or C_1-C_8-halogenoalkylsulfanyl comprising up to 9 halogen atoms that can be the same or different ; or wherein two consecutive substituents X together with the phenyl ring form a substituted or non-substituted cyclopentyl or cyclohexyl ring ;

Even more preferred compounds according to the invention are compounds of formula (I) wherein X independently represents fluorine, chlorine, bromine, iodine, methyl, ethyl, propyl, isopropyl, butyl, isobutyl, secbutyl, terbutyl, cyclopropyl, cyclopentyl, cyclohexyl, trimethylsilyl, methoxy, ethoxy, methylsulfanyl, ethylsulfanyl, trifluoromethyl, trichloromethyl, difluoromethoxy, trifluoromethoxy, difluorochloromethoxy, trifluoroethoxy, difluoromethysulfanyl, trifluoromethylsulfanyl and difluorochloromethylsulfanyl ;
Other preferred compounds according to the invention are compounds of formula (I) wherein Z^1 represents a hydrogen atom ; a non-substituted C_3-C_7 cycloalkyl ; or a C_3-C_7 cycloalkyl substituted by up to 10 groups or atoms that can be the same or different and that can be selected in the list consisting of halogen atoms, C_1-C_8-alkyl, C_1-C_8-halogenoalkyl comprising up to 9 halogen atoms that can be the same or different, C_1-C_8-alkoxy and C_1-C_8-halogenoalkoxy comprising up to 9 halogen atoms that can be the same or different ; more preferably Z^1 represents a non-substituted C_3-C_7-cycloalkyl. ; even more preferably Z^1 represents cyclopropyl ;

Other preferred compounds according to the invention are compounds of formula (I) wherein Q^1 represents CR^1R^2 ;

Other preferred compounds according to the invention are compounds of formula (I) wherein Q^2, Q^3 and Q^4, which can be the same or different, represents a direct bond ; CR^1R^2 ; or O ;
More preferred compounds according to the invention are compounds of formula (I) wherein Q^2 represents CR^1R^2 and Q^3 and Q^4 represent a direct bond ;
Other more preferred compounds according to the invention are compounds of formula (I) wherein Q^2 represents CR^1R^2 and Q^3 represents O and Q^4 represent a direct bond ;

Other preferred compounds according to the invention are compounds of formula (I) wherein R^1 and R^2 independently represent a hydrogen atom, a fluorine atom, a substituted or non-substituted C_1-C_8-alkyl or a substituted or non-substituted C_1-C_8-alkoxy ;

Other preferred compounds according to the invention are compounds of formula (I) wherein the R^1 substituent of the group Q^i and the R^1 substituent of the group Q^{i+1}, i being an integer between 1 and 3,

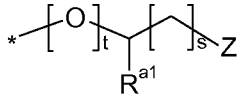
together with the consecutive carbon atoms to which they are linked can form an optionally mono or polysubstituted 3-, 4-, 5-, 6- or 7-membered saturated carbocycle ; more preferably an optionally mono or polysubstituted cyclopropyl, cyclopentyl, cyclohexyl or a cycloheptyl ring ; even more preferably a cyclopropyl, a cyclopentyl or a cyclohexyl ring ;

Other more preferred compounds according to the invention are compounds of formula (I) wherein the R^1 substituent of the group Q^i and the R^1 substituent of the group Q^{i+1}, i being an integer between 1 and 3, together with the consecutive carbon atoms to which they are linked can form an cyclopentyl group that can be substituted by up to three groups that can be the same or different and that can be selected in the list consisting of fluorine, chlorine, methyl, ethyl, propyl, isopropyl, isobutyl, secbutyl, terbutyl, trifluoromethyl or difluoromethyl ;

Other more preferred compounds according to the invention are compounds of formula (I) wherein the R^1 substituent of the group Q^i and the R^1 substituent of the group Q^{i+1}, i being an integer between 1 and 3, together with the consecutive carbon atoms to which they are linked can form an cyclohexyl group that can be substituted by up to four groups that can be the same or different and that can be selected in the list consisting of fluorine, chlorine, methyl, ethyl, propyl, isopropyl, isobutyl, secbutyl, terbutyl, trifluoromethyl or difluoromethyl ;

Other more preferred compounds according to the invention are compounds of formula (I) wherein the R^1 substituent of the group Q^i and the R^1 substituent of the group Q^{i+1}, i being an integer between 1 and 3, together with the consecutive carbon atoms to which they are linked can form an cycloheptyl group that can be substituted by up to four groups that can be the same or different and that can be selected in the list consisting of fluorine, chlorine, methyl, ethyl, propyl, isopropyl, isobutyl, secbutyl, terbutyl, trifluoromethyl or difluoromethyl ;

Even more prefered compounds according to the invention are compounds of formula (I) wherein $-Q^1-Q^2-$ represents an optionally mono or polysubstituted cyclopentyl-1,2-diyl, cyclohexyl-1,2-diyl or cycloheptyl-1,2-diyl group and $-Q_3-Q_4-B$ represents a bicyclo[2.2.1]heptan-2-yl group, A^1, A^2, A^3 or A^4 wherein

A^1 represents  , wherein

R^{a1} represents hydrogen, C_1-C_4-alkyl or C_1-C_4-haloalkyl ;

Z represents $-CR^{a2}R^{a3}R^{a4}$ or $-Si\ R^{a2}R^{a3}R^{a4}$;

s represents 0, 1, 2 or 3 ;

t represents 0 or 1 ;

R^{a2}, R^{a3}, R^{a4} independently of one another represent hydrogen, halogen C_1-C_4-alkyl or C_1-C_4-haloalkyl ;

R^{a3} and R^{a4} furthermore together with the carbon atom to which they are attached, can form an optionally substituted saturated or insaturated 3- to 6-membered carbocyclic ring ;

Particulary preferably,

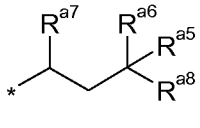
R^{a1} represents hydrogen or methyl ;

s represents 0 or 1 ;

R^{a2} represents chlorine, methyl, ethyl, isopropyl or trifluoromethyl;

R^{a3} represents chlorine, methyl, ethyl, isopropyl or trifluoromethyl;

R^{a4} represents hydrogen, chlorine, methyl, ethyl, isopropyl or trifluoromethyl;

A^2 represents  , wherein

R^{a6} represent hydrogen, halogen, C_1-C_8-alkyl or C_1-C_8-haloalkyl ;

R^{a5}, R^{a7}, R^{a8} independently of one another represent hydrogen, methyl or ethyl ;

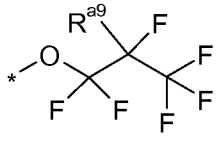
Particulary preferably,

R^{a5} represents hydrogen or methyl ;

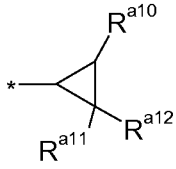
R^{a6} represents hydrogen ;

R^{a7} represents hydrogen or methyl ;

R^{a8} represents fluorine, chlorine, methyl, ethyl or trifluoromethyl ;

A^3 represents  , wherein

R^{a9} represent hydrogen or fluorine ;

A^4 represents  , wherein

R^{a10} represent optionally substituted C_2-C_{12}-alkyl, optionally substituted C_2-C_{12}-alkenyl, optionally substituted C_2-C_{12}-alkynyl, optionally substituted C_3-C_8-cycloalkyl, optionally substituted phenyl or heterocyclyl ;

R^{a11} represent hydrogen or halogen ;

R^{a12} represent hydrogen or halogen ;

Particulary preferably,

R^{a10} represents ethyl, propyl, isopropyl, butyl, secbutyl, terbutyl, cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, α-methylcyclopropyl, 4-fluorophenyl, 4-bromophenyl, 2-thienyl, 3-thienyl or 2-fury;

R^{a11} represents hydrogen ;

R^{a12} represents hydrogen ;

Other preferred compounds according to the invention are compounds of formula (I) wherein the R^1 substituent of the group Q^j and the R^1 substituent of the group Q^{j+2}, i being an integer between 1 and 2, together with the consecutive carbon atoms to which they are linked can form an optionally mono or

polysusbtituted 4-, 5-, 6- or 7-membered saturated carbocycle ; more preferably an optionally mono or polysusbtituted cyclopentyl, cyclohexyl or a cycloheptyl ring ; even more preferably a cyclohexyl ring ;

Other more preferred compounds according to the invention are compounds of formula (I) wherein the R^1 substituent of the group Q^i and the R^1 substituent of the group Q^{i+2}, i being an integer between 1 and 2, together with the consecutive carbon atoms to which they are linked can form an cyclohexyl group that can be substituted by up to four groups that can be the same or different and that can be selected in the list consisting of fluorine, chlorine, methyl, ethyl, propyl, isopropyl, isobutyl, secbutyl, terbutyl, trifluoromethyl or difluoromethyl ;

Even more prefered compounds according to the invention are compounds of formula (I) wherein $-Q^1-Q^2-Q^3-$ represents an optionally mono or polysubstituted cyclohexyl-1,3-diyl and $-Q_4-B$ represents a bicyclo[2.2.1]heptan-2-yl group, or a A^1, A^2, A^3 or A^4 group as defined above.

Other preferred compounds according to the invention are compounds of formula (I) wherein R^3 and R^4 independently represent a hydrogen atom, or a substituted or non-substituted C_1-C_8-alkyl;

Other preferred compounds according to the invention are compounds of formula (I) wherein R^5 represents a substituted or non-substituted C_1-C_8-alkyl ;

Other preferred compounds according to the invention are compounds of formula (I) wherein R^6 and R^7 independently represent a non-substituted C_1-C_8-alkyl ;
More preferably, R^6 and R^7 independently represent a non-substituted C_1-C_3-alkyl ;
Even more preferably, R^6 and R^7 represent methyl

Other preferred compounds according to the invention are compounds of formula (I) wherein U represents O.
Other preferred compounds according to the invention are compounds of formula (I) wherein U represents N-O-(C_1-C_4-alkyl).

The above mentioned preferences with regard to the substituents of the compounds according to the invention can be combined in various manners. These combinations of preferred features thus provide sub-classes of compounds according to the invention. Examples of such sub-classes of preferred compounds according to the invention can be combined:

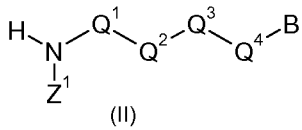
- preferred features of X^1 with preferred features of X^2, Y, T, B, Z^1, Q^1, Q^2, Q^3, Q^4, R^1, R^2, R^3, R^4, R^5, R^6, R^7, X and U;
- preferred features of X^2 with preferred features of X^1, Y, T, B, Z^1, Q^1, Q^2, Q^3, Q^4, R^1, R^2, R^3, R^4, R^5, R^6, R^7, X and U;
- preferred features of Y with preferred features of X^1, X^2, T, B, Z^1, Q^1, Q^2, Q^3, Q^4, R^1, R^2, R^3, R^4, R^5, R^6, R^7, X and U;
- preferred features of T with preferred features of X^1, X^2, Y, B, Z^1, Q^1, Q^2, Q^3, Q^4, R^1, R^2, R^3, R^4, R^5, R^6, R^7, X and U;

- preferred features of B with preferred features of X^1, X^2, Y, T, Z^1, Q^1, Q^2, Q^3, Q^4, R^1, R^2, R^3, R^4, R^5, R^6, R^7, X and U;
- preferred features of Z^1 with preferred features of X^1, X^2, Y, T, B, Q^1, Q^2, Q^3, Q^4, R^1, R^2, R^3, R^4, R^5, R^6, R^7, X and U;
- preferred features of Q^1 with preferred features of X^1, X^2, Y, T, B, Z^1, Q^2, Q^3, Q^4, R^1, R^2, R^3, R^4, R^5, R^6, R^7, X and U;
- preferred features of Q^2 with preferred features of X^1, X^2, Y, T, B, Z^1, Q^1, Q^3, Q^4, R^1, R^2, R^3, R^4, R^5, R^6, R^7, X and U;
- preferred features of Q^3 with preferred features of X^1, X^2, Y, T, B, Z^1, Q^1, Q^2, Q^4, R^1, R^2, R^3, R^4, R^5, R^6, R^7, X and U;
- preferred features of Q^4 with preferred features of X^1, X^2, Y, T, B, Z^1, Q^1, Q^2, Q^3, R^1, R^2, R^3, R^4, R^5, R^6, R^7, X and U;
- preferred features of R^1 with preferred features of X^1, X^2, Y, T, B, Z^1, Q^1, Q^2, Q^3, Q^4, R^2, R^3, R^4, R^5, R^6, R^7, X and U;
- preferred features of R^2 with preferred features of X^1, X^2, Y, T, B, Z^1, Q^1, Q^2, Q^3, Q^4, R^1, R^3, R^4, R^5, R^6, R^7, X and U;
- preferred features of R^3 with preferred features of X^1, X^2, Y, T, B, Z^1, Q^1, Q^2, Q^3, Q^4, R^1, R^2, R^4, R^5, R^6, R^7, X and U;
- preferred features of R^4 with preferred features of X^1, X^2, Y, T, B, Z^1, Q^1, Q^2, Q^3, Q^4, R^1, R^2, R^3, R^5, R^6, R^7, X and U;
- preferred features of R^5 with preferred features of X^1, X^2, Y, T, B, Z^1, Q^1, Q^2, Q^3, Q^4, R^1, R^2, R^3, R^4, R^6, R^7, X and U;
- preferred features of R^6 with preferred features of X^1, X^2, Y, T, B, Z^1, Q^1, Q^2, Q^3, Q^4, R^1, R^2, R^3, R^4, R^5, R^7, X and U;
- preferred features of R^7 with preferred features of X^1, X^2, Y, T, B, Z^1, Q^1, Q^2, Q^3, Q^4, R^1, R^2, R^3, R^4, R^5, R^6, X and U;
- preferred features of X with preferred features of X^1, X^2, Y, T, B, Z^1, Q^1, Q^2, Q^3, Q^4, R^1, R^2, R^3, R^4, R^5, R^6, R^7 and U;
- preferred features of U with preferred features of X^1, X^2, Y, T, B, Z^1, Q^1, Q^2, Q^3, Q^4, R^1, R^2, R^3, R^4, R^5, R^6, R^7, and X;

In these combinations of preferred features of the substituents of the compounds according to the invention, the said preferred features can also be selected among the more preferred features of each of X^1, X^2, Y, T, B, Z^1, Q^1, Q^2, Q^3, Q^4, R^1, R^2, R^3, R^4, R^5, R^6, R^7, X and U, so as to form most preferred subclasses of compounds according to the invention.

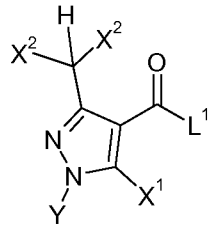
The present invention also relates to a process for the preparation of the compound of formula (I).

Thus, according to a further aspect of the present invention there is provided a process P1 for the preparation of a compound of formula (I) as herein-defined and wherein T represents O and that comprises reacting a N-susbtituted amine derivative of formula (II) or one of its salts:



(II)

wherein Z^1, Q^1, Q^2, Q^3, Q^4 and B are as herein-defined; with a carboxylic acid derivative of formula (III):



(III)

wherein X^1, X^2 and Y are as herein-defined and L^1 represents a leaving group selected in the list consisting of a halogen atom, a hydroxyl group, $-OR^b$, $-OC(=O)R^b$, R^b being a substituted or non-substituted C_1-C_6-alkyl, a substituted or non-substituted C_1-C_6-haloalkyl, a benzyl, a 4-methoxybenzyl or a pentafluorophenyl group ; in the presence of a catalyst and in the presence of a condensing agent in case L^1 represents a hydroxyl group, and in the presence of an acid binder in case L^1 represents a halogen atom.

N-substituted amine derivatives of formula (II) are known or can be prepared by known processes such as reductive amination of aldehyde or ketone (Bioorganics and Medicinal Chemistry Letters (2006), 2014), or reduction of imines (Tetrahedron (2005), 11689), or nucleophilic substitution of halogen, mesylate or tosylate (Journal of Medicinal Chemistry (2002), 3887).

Moreover, some amines of formula (II) are specificaly known such as :

- 2-butylcyclohexanamine can be prepared according to Tetrahedron (1976), *23*, 2421,
- 2-(4-methylpentan-2-yl)cyclohexanamine can be prepared according to WO-2006/061215,
- 2-(4,4-dimethylpentan-2-yl)cyclohexanamine can be prepared according to WO-2006/061215,
- 2-(3-methylbutyl)cyclohexanamine can be prepared according to WO-2006/061215,
- 2-(3,3-dimethylbutyl)cyclohexanamine can be prepared according to WO-2006/061215,
- 2-[3-(trimethysilyl)propyl]cyclohexanamine can be prepared according to WO-2006/061215,
- 2-isobutylcyclohexanamine can be prepared according to Tetrahedron (1997), *53*, 4935,
- 2-propylcyclohexanamine can be prepared according to Journal of Combinatorial Chemistry (2005), *7*, 109.

Carboxylic acid derivatives of formula (III) can be prepared according to process P2.

In case L^1 represents a hydroxy group, the process according to the present invention is conducted in the presence of condensing agent. Suitable condensing agent may be selected in the non limited list consisting of acid halide former, such as phosgene, phosphorous tribromide, phosphorous trichloride, phosphorous pentachloride, phosphorous trichloride oxide or thionyl chloride; anhydride former, such as ethyl chloroformate, methyl chloroformate, isopropyl chloroformate, isobutyl chloroformate or methanesulfonyl chloride; carbodiimides, such as N,N'-dicyclohexylcarbodiimide (DCC) or other customary condensing agents, such as phosphorous pentoxide, polyphosphoric acid, N,N'-carbonyl-

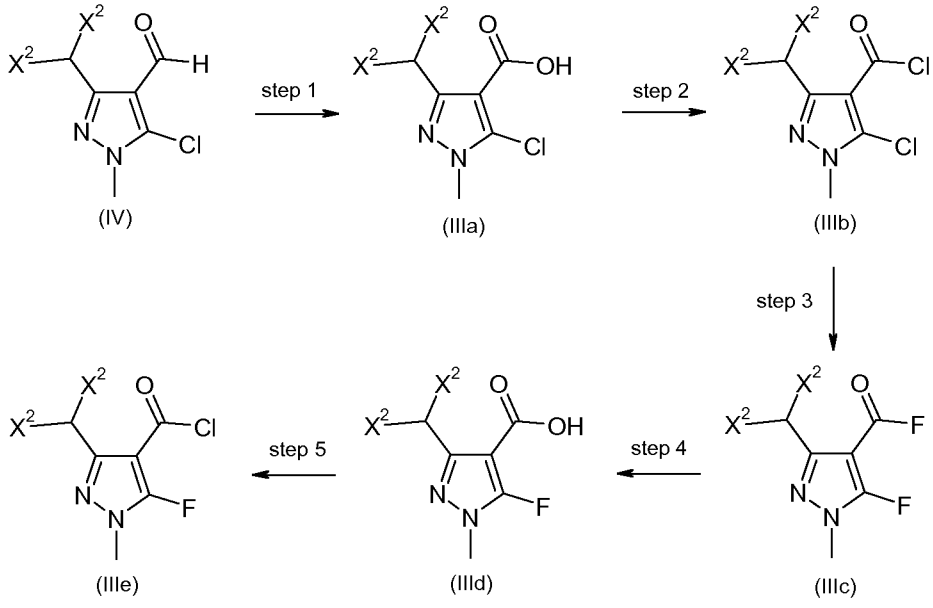
diimidazole, 2-ethoxy-N-ethoxycarbonyl-1,2-dihydroquinoline (EEDQ), triphenylphosphine/tetrachloromethane, 4-(4,6-dimethoxy[1.3.5]-triazin-2-yl)-4-methylmorpholinium chloride hydrate or bromotripyrrolidino-phosphonium-hexafluorophosphate.

The process according to the present invention is conducted in the presence of a catalyst. Suitable catalyst may be selected in the list consisting of 4-dimethyl-aminopyridine, 1-hydroxy-benzotriazole or dimethylformamide.

In case L^1 represents a halogen atom, the process according to the present invention is conducted in the presence of an acid binder. Suitable acid binders for carrying out process P1 according to the invention are in each case all inorganic and organic bases that are customary for such reactions. Preference is given to using alkaline earth metal, alkali metal hydride, alkali metal hydroxides or alkali metal alkoxides, such as sodium hydroxide, sodium hydride, calcium hydroxide, potassium hydroxide, potassium tert-butoxide or other ammonium hydroxide, alkali metal carbonates, such as cesium carbonate, sodium carbonate, potassium carbonate, potassium bicarbonate, sodium bicarbonate, alkali metal or alkaline earth metal acetates, such as sodium acetate, potassium acetate, calcium acetateand also tertiary amines, such as trimethylamine, triethylamine, diisopropylethylamine, tributylamine, N,N-dimethylaniline, pyridine, N-methylpiperidine, N,N-dimethylaminopyridine, diazabicyclooctane (DABCO), diazabicyclononene (DBN) or diazabicycloundecene (DBU).

It is also possible to work in the absence of an additional condensing agent or to employ an excess of the amine component, so that it simultaneously acts as acid binder agent.

According to a further aspect according to the invention, there is provided a process P2 for the preparation of carboxylic acid derivatives of formula (III) wherein T represents O and illustrated according to the following reaction scheme :



Process P2

wherein X^2 is as herein-defined ;

5-chloro-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carbaldehyde is known from WO-2004/014138 (reference example 35).

Step 1 of process P2 is performed in the presence of an oxidant, and if appropriate in the presence of a solvent.

Steps 2 and 5 of process P2 are performed in the presence of acid halide, and if appropriate in the presence of a solvent.

Step 3 of process P2 is performed in the presence of a fluorinating agent, and if appropriate in the presence of a solvent.

Step 4 of process P2 is performed in the presence of an acid or a base and if appropriate in the presence of a solvent

Suitable oxidants for carrying out step 1 of process P2 according to the invention are in each case all inorganic and organic oxidant which are customary for such reactions. Preference is given to using benzyltriethylammonium permanganate, bromine, chlorine, m-chloroperbenzoic acid, chromic acid, chromium (VI) oxide, hydrogen peroxide, hydrogen peroxide-boron trifluoride, hydrogen peroxide-urea, 2-hydroxyperoxyhexafluoro-2-propanol; Iodine, oxygen-platinum catalyst, perbenzoic acid, peroxyacetyl nitrate, potassium permanganate, potassium ruthenate, pyridinium dichromate, ruthenium (VIII) oxide, silver (I) oxide, silver (II) oxide, silver nitrite, sodium chlorite, sodium hypochlorite, or 2,2,6,6-tetramethylpiperidin-1-oxyl.

Suitable acid halides for carrying out steps 2 and 5 of process P2 according to the invention are in each case all organic or inorganic acid halides which are customary for such reactions. Preference is given to using notably phosgene, phosphorous trichloride, phosphorous pentachloride, phosphorous trichloride oxide, thionyl chloride, or carbon tetrachloride-triphenylphosphine.

Suitable fluorinating agent for carrying out step 3 of process P2 according to the invention is in each case all fluorinating agents which are customary for such reactions. Preference is given to using cesium fluoride, potassium fluoride, potassium fluoride-calcium difluoride, or tetrabutylammonium fluoride.

When carrying out steps 1 to 5 of process P2 according to the invention, the reaction temperatures can independently be varied within a relatively wide range. Generally, processes according to the invention are carried out at temperatures between 0°C and 160°C, preferably between 10°C and 120°C. A way to control the temperature for the processes according to the invention is to use the micro-waves technology.

Steps 1 to 5 of process P2 according to the invention are generally independently carried out under atmospheric pressure. However, in each case, it is also possible to operate under elevated or reduced pressure.

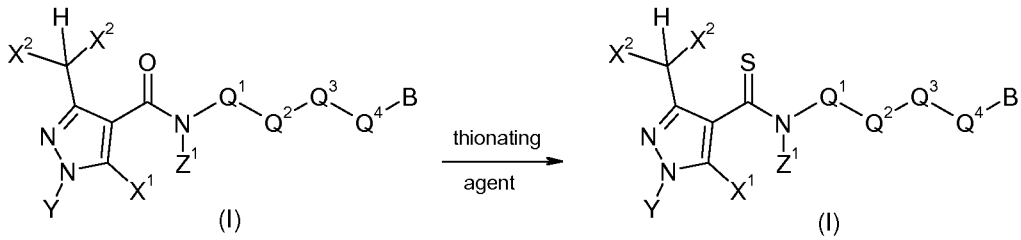
When carrying out step 1 of process P2 according to the invention, generally one mole or other an excess of the oxidant is employed per mole of aldehyde of formula (IV). It is also possible to employ the reaction components in other ratios.

When carrying out carrying out steps 2 and 5 of process P2 to the invention, generally one mole or other an excess of the acid halides is employed per mole of acid of formula (IIIa) or (IIId). It is also possible to employ the reaction components in other ratios.

When carrying out steps 3 of process P2 according to the invention generally one mole or other an excess of fluorinating agent is employed per mole of acid chloride (IIIb). It is also possible to employ the reaction components in other ratios.

When carrying out steps 4 of process P2 according to the invention generally one mole or other an excess of acid or base is employed per mole of acid fluoride (IIIc). It is also possible to employ the reaction components in other ratios.

According to a further aspect according to the invention, there is provided a process P3 for the preparation of a compound of formula (I) wherein T represents S, starting from a compound of formula (I) wherein T represents O and illustrated according to the following reaction scheme :



(I) (I)

Process P3

wherein X^1, X^2, Y, Z^1, Q^1, Q^2, Q^3, Q^4 and B are as herein-defined, in the optional presence of a catalytic or stoechiometric or more, quantity of a base such as an inorganic and organic base. Preference is given to using alkali metal carbonates, such as sodium carbonate, potassium carbonate, potassium bicarbonate, sodium bicarbonate ; heterocyclic aromatic bases, such as pyridine, picoline, lutidine, collidine ; and also tertiary amines, such as trimethylamine, triethylamine, tributylamine, N,N-dimethylaniline, N,N-dimethyl-aminopyridine or N-methyl-piperidine.

Process P3 according to the invention is performed in the presence of a thionating agent.

Starting amide derivatives of formula (I) can be prepared according to processes P1.

Suitable thionating agents for carrying out process P3 according to the invention can be sulphur (S), sulfhydric acid (H_2S), sodium sulfide (Na_2S), sodium hydrosulfide (NaHS), boron trisulfide (B_2S_3), bis(diethylaluminium) sulfide ($(AlEt_2)_2S$), ammonium sulfide ($(NH_4)_2S$), phosphorous pentasulfide (P_2S_5), Lawesson's reagent (2,4-bis(4-methoxyphenyl)-1,2,3,4-dithiadiphosphetane 2,4-disulfide) or a polymer-supported thionating reagent such as described in Journal of the Chemical Society, Perkin 1 (2001), 358.

The compound according to the present invention can be prepared according to the general processes of preparation described above. It will nevertheless be understood that, on the basis of his general knowledge and of available publications, the skilled worker will be able to adapt this method according to the specifics of each of the compounds, which it is desired to synthesize.

In a further aspect, the present invention also relates to a fungicide composition comprising an effective and non-phytotoxic amount of an active compound of formula (I).
The expression "effective and non-phytotoxic amount" means an amount of composition according to the invention that is sufficient to control or destroy the fungi present or liable to appear on the cropsand that does not entail any appreciable symptom of phytotoxicity for the said crops. Such an amount can vary within a wide range depending on the fungus to be controlled, the type of crop, the climatic conditions and the compounds included in the fungicide composition according to the invention. This amount can be determined by systematic field trials that are within the capabilities of a person skilled in the art.

Thus, according to the invention, there is provided a fungicide composition comprising, as an active ingredient, an effective amount of a compound of formula (I) as herein defined and an agriculturally acceptable support, carrier or filler.

According to the invention, the term "support" denotes a natural or synthetic, organic or inorganic compound with that the active compound of formula (I) is combined or associated to make it easier to apply, notably to the parts of the plant. This support is thus generally inert and should be agriculturally acceptable. The support can be a solid or a liquid. Examples of suitable supports include clays, natural or synthetic silicates, silica, resins, waxes, solid fertilisers, water, alcohols, in particular butanol, organic solvents, mineral and plant oils and derivatives thereof. Mixtures of such supports can also be used.

The composition according to the invention can also comprise additional components. In particular, the composition can further comprise a surfactant. The surfactant can be an emulsifier, a dispersing agent or a wetting agent of ionic or non-ionic type or a mixture of such surfactants. Mention can be made, for example, of polyacrylic acid salts, lignosulphonic acid salts, phenolsulphonic or naphthalenesulphonic acid salts, polycondensates of ethylene oxide with fatty alcohols or with fatty acids or with fatty amines, substituted phenols (in particular alkylphenols or arylphenols), salts of sulphosuccinic acid esters, taurine derivatives (in particular alkyl taurates), phosphoric esters of polyoxyethylated alcohols or phenols, fatty acid esters of polyolsand derivatives of the above compounds containing sulphate, sulphonate and phosphate functions. The presence of at least one surfactant is generally essential when the active compound and/or the inert support are water-insoluble and when the vector agent for the application is water. Preferably, surfactant content can be comprised from 5% to 40% by weight of the composition.

Optionally, additional components can also be included, e.g. protective colloids, adhesives, thickeners, thixotropic agents, penetration agents, stabilisers, sequestering agents. More generally, the active compounds can be combined with any solid or liquid additive, that complies with the usual formulation techniques.

In general, the composition according to the invention can contain from 0.05 to 99% by weight of active compound, preferably 10 to 70% by weight.

Compositions according to the invention can be used in various forms such as aerosol dispenser, capsule suspension, cold fogging concentrate, dustable powder, emulsifiable concentrate, emulsion oil in water, emulsion water in oil, encapsulated granule, fine granule, flowable concentrate for seed treatment, gas (under pressure),gas generating product, granule, hot fogging concentrate, macrogranule, microgranule, oil dispersible powder, oil miscible flowable concentrate, oil miscible liquid, paste, plant rodlet, powder for dry seed treatment, seed coated with a pesticide, soluble concentrate, soluble powder, solution for seed treatment, suspension concentrate (flowable concentrate), ultra low volume (ULV) liquid, ultra low volume (ULV) suspension, water dispersible granules or tablets, water dispersible powder for slurry treatment, water soluble granules or tablets, water soluble powder for seed treatment and wettable powder. These compositions include not only compositions that are ready to be applied to the plant or seed to be treated by means of a suitable device, such as a spraying or dusting device, but also concentrated commercial compositions that must be diluted before application to the crop.

The compounds according to the invention can also be mixed with one or more insecticide, fungicide, bactericide, attractant, acaricide or pheromone active substance or other compounds with biological activity. The mixtures thus obtained have normally a broadened spectrum of activity. The mixtures with other fungicide compounds are particularly advantageous.

Examples of suitable fungicide mixing partners can be selected in the following lists:
(1) Inhibitors of the ergosterol biosynthesis, for example (1.1) aldimorph (1704-28-5), (1.2) azaconazole (60207-31-0), (1.3) bitertanol (55179-31-2), (1.4) bromuconazole (116255-48-2), (1.5) cyproconazole (113096-99-4), (1.6) diclobutrazole (75736-33-3), (1.7) difenoconazole (119446-68-3), (1.8) diniconazole (83657-24-3), (1.9) diniconazole-M (83657-18-5), (1.10) dodemorph (1593-77-7), (1.11) dodemorph acetate (31717-87-0), (1.12) epoxiconazole (106325-08-0), (1.13) etaconazole (60207-93-4), (1.14) fenarimol (60168-88-9), (1.15) fenbuconazole (114369-43-6), (1.16) fenhexamid (126833-17-8), (1.17) fenpropidin (67306-00-7), (1.18) fenpropimorph (67306-03-0), (1.19) fluquinconazole (136426-54-5), (1.20) flurprimidol (56425-91-3), (1.21) flusilazole (85509-19-9), (1.22) flutriafol (76674-21-0), (1.23) furconazole (112839-33-5), (1.24) furconazole-cis (112839-32-4), (1.25) hexaconazole (79983-71-4), (1.26) imazalil (60534-80-7), (1.27) imazalil sulfate (58594-72-2), (1.28) imibenconazole (86598-92-7), (1.29) ipconazole (125225-28-7), (1.30) metconazole (125116-23-6), (1.31) myclobutanil (88671-89-0), (1.32) naftifine (65472-88-0), (1.33) nuarimol (63284-71-9), (1.34) oxpoconazole (174212-12-5), (1.35) paclobutrazol (76738-62-0), (1.36) pefurazoate (101903-30-4), (1.37) penconazole (66246-88-6), (1.38) piperalin (3478-94-2), (1.39) prochloraz (67747-09-5), (1.40) propiconazole (60207-90-1), (1.41) prothioconazole (178928-70-6), (1.42) pyributicarb (88678-67-5), (1.43) pyrifenox (88283-41-4), (1.44) quinconazole (103970-75-8), (1.45) simeconazole (149508-90-7), (1.46) spiroxamine (118134-30-8), (1.47) tebuconazole (107534-96-3), (1.48) terbinafine (91161-71-6), (1.49) tetraconazole (112281-77-3), (1.50) triadimefon (43121-43-3), (1.51) triadimenol (89482-17-7), (1.52) tridemorph (81412-43-3), (1.53) triflumizole (68694-11-1), (1.54) triforine (26644-46-2), (1.55) triticonazole (131983-72-7), (1.56) uniconazole (83657-22-1), (1.57) uniconazole-p (83657-17-4), (1.58) viniconazole (77174-66-4), (1.59)

voriconazole (137234-62-9), (1.60) 1-(4-chlorophenyl)-2-(1H-1,2,4-triazol-1-yl)cycloheptanol (129586-32-9), (1.61) methyl 1-(2,2-dimethyl-2,3-dihydro-1H-inden-1-yl)-1H-imidazole-5-carboxylate (110323-95-0), (1.62) N'-{5-(difluoromethyl)-2-methyl-4-[3-(trimethylsilyl)propoxy]phenyl}-N-ethyl-N-methylimidoformamide, (1.63) N-ethyl-N-methyl-N'-{2-methyl-5-(trifluoromethyl)-4-[3-(trimethylsilyl)propoxy]phenyl}imidoformamide and (1.64) O-[1-(4-methoxyphenoxy)-3,3-dimethylbutan-2-yl] 1H-imidazole-1-carbothioate (111226-71-2).

(2) inhibitors of the respiratory chain at complex I or II, for example (2.1) bixafen (581809-46-3), (2.2) boscalid (188425-85-6), (2.3) carboxin (5234-68-4), (2.4) diflumetorim (130339-07-0), (2.5) fenfuram (24691-80-3), (2.6) fluopyram (658066-35-4), (2.7) flutolanil (66332-96-5), (2.8) fluxapyroxad (907204-31-3), (2.9) furametpyr (123572-88-3), (2.10) furmecyclox (60568-05-0), (2.11) isopyrazam (mixture of syn-epimeric racemate 1RS,4SR,9RS and anti-epimeric racemate 1RS,4SR,9SR) (881685-58-1), (2.12) isopyrazam (anti-epimeric racemate 1RS,4SR,9SR), (2.13) isopyrazam (anti-epimeric enantiomer 1R,4S,9S), (2.14) isopyrazam (anti-epimeric enantiomer 1S,4R,9R), (2.15) isopyrazam (syn epimeric racemate 1RS,4SR,9RS), (2.16) isopyrazam (syn-epimeric enantiomer 1R,4S,9R), (2.17) isopyrazam (syn-epimeric enantiomer 1S,4R,9S), (2.18) mepronil (55814-41-0), (2.19) oxycarboxin (5259-88-1), (2.20) penflufen (494793-67-8), (2.21) penthiopyrad (183675-82-3), (2.22) sedaxane (874967-67-6), (2.23) thifluzamide (130000-40-7), (2.24) 1-methyl-N-[2-(1,1,2,2-tetrafluoroethoxy)phenyl]-3-(trifluoromethyl)-1H-pyrazole-4-carboxamide, (2.25) 3-(difluoromethyl)-1-methyl-N-[2-(1,1,2,2-tetrafluoroethoxy)phenyl]-1H-pyrazole-4-carboxamide, (2.26) 3-(difluoromethyl)-N-[4-fluoro-2-(1,1,2,3,3,3-hexafluoropropoxy)phenyl]-1-methyl-1H-pyrazole-4-carboxamide, (2.27) N-[1-(2,4-dichlorophenyl)-1-methoxypropan-2-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide (1092400-95-7) (WO 2008148570), (2.28) 5,8-difluoro-N-[2-(2-fluoro-4-{[4-(trifluoromethyl)pyridin-2-yl]oxy}phenyl)ethyl]quinazolin-4-amine (1210070-84-0) (WO2010025451) and (2.29) N-[9-(dichloromethylene)-1,2,3,4-tetrahydro-1,4-methanonaphthalen-5-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide.

(3) inhibitors of the respiratory chain at complex III, for example (3.1) ametoctradin (865318-97-4), (3.2) amisulbrom (348635-87-0), (3.3) azoxystrobin (131860-33-8), (3.4) cyazofamid (120116-88-3), (3.5) coumethoxystrobin (850881-30-0), (3.6) coumoxystrobin (850881-70-8), (3.7) dimoxystrobin (141600-52-4), (3.8) enestroburin (238410-11-2) (WO 2004/058723), (3.9) famoxadone (131807-57-3) (WO 2004/058723), (3.10) fenamidone (161326-34-7) (WO 2004/058723), (3.11) fenoxystrobin (918162-02-4), (3.12) fluoxastrobin (361377-29-9) (WO 2004/058723), (3.13) kresoxim-methyl (143390-89-0) (WO 2004/058723), (3.14) metominostrobin (133408-50-1) (WO 2004/058723), (3.15) orysastrobin (189892-69-1) (WO 2004/058723), (3.16) picoxystrobin (117428-22-5) (WO 2004/058723), (3.17) pyraclostrobin (175013-18-0) (WO 2004/058723), (3.18) pyrametostrobin (915410-70-7) (WO 2004/058723), (3.19) pyraoxystrobin (862588-11-2) (WO 2004/058723), (3.20) pyribencarb (799247-52-2) (WO 2004/058723), (3.21) triclopyricarb (902760-40-1), (3.22) trifloxystrobin (141517-21-7) (WO 2004/058723), (3.23) (2E)-2-(2-{[6-(3-chloro-2-methylphenoxy)-5-fluoropyrimidin-4-yl]oxy}phenyl)-2-(methoxyimino)-N-methylethanamide (WO 2004/058723), (3.24) (2E)-2-(methoxyimino)-N-methyl-2-(2-{[({(1E)-1-[3-(trifluoromethyl)phenyl]ethylidene}amino)oxy]methyl}phenyl)ethanamide (WO 2004/058723), (3.25) (2E)-2-(methoxyimino)-N-methyl-2-{2-[(E)-({1-[3-

(trifluoromethyl)phenyl]ethoxy}imino)methyl]phenyl}ethanamide (158169-73-4), (3.26) (2E)-2-{2-[({[(1E)-1-(3-{[(E)-1-fluoro-2-phenylethenyl]oxy}phenyl)ethylidene]amino}oxy)methyl]phenyl}-2-(methoxyimino)-N-methylethanamide (326896-28-0), (3.27) (2E)-2-{2-[({[(2E,3E)-4-(2,6-dichlorophenyl)but-3-en-2-ylidene]amino}oxy)methyl]phenyl}-2-(methoxyimino)-N-methylethanamide, (3.28) 2-chloro-N-(1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl)pyridine-3-carboxamide (119899-14-8), (3.29) 5-methoxy-2-methyl-4-(2-{[({(1E)-1-[3-(trifluoromethyl)phenyl]ethylidene}amino)oxy]methyl}phenyl)-2,4-dihydro-3H-1,2,4-triazol-3-one, (3.30) methyl (2E)-2-{2-[({cyclopropyl[(4-methoxyphenyl)imino]methyl}sulfanyl)methyl]phenyl}-3-methoxyprop-2-enoate (149601-03-6), (3.31) N-(3-ethyl-3,5,5-trimethylcyclohexyl)-3-(formylamino)-2-hydroxybenzamide (226551-21-9), (3.32) 2-{2-[(2,5-dimethylphenoxy)methyl]phenyl}-2-methoxy-N-methylacetamide (173662-97-0) and (3.33) (2R)-2-{2-[(2,5-dimethylphenoxy)methyl]phenyl}-2-methoxy-N-methylacetamide (394657-24-0).

(4) Inhibitors of the mitosis and cell division, for example (4.1) benomyl (17804-35-2), (4.2) carbendazim (10605-21-7), (4.3) chlorfenazole (3574-96-7), (4.4) diethofencarb (87130-20-9), (4.5) ethaboxam (162650-77-3), (4.6) fluopicolide (239110-15-7), (4.7) fuberidazole (3878-19-1), (4.8) pencycuron (66063-05-6), (4.9) thiabendazole (148-79-8), (4.10) thiophanate-methyl (23564-05-8), (4.11) thiophanate (23564-06-9), (4.12) zoxamide (156052-68-5), (4.13) 5-chloro-7-(4-methylpiperidin-1-yl)-6-(2,4,6-trifluorophenyl)[1,2,4]triazolo[1,5-a]pyrimidine (214706-53-3) and (4.14) 3-chloro-5-(6-chloropyridin-3-yl)-6-methyl-4-(2,4,6-trifluorophenyl)pyridazine (1002756-87-7).

(5) Compounds capable to have a multisite action, like for example (5.1) bordeaux mixture (8011-63-0), (5.2) captafol (2425-06-1), (5.3) captan (133-06-2) (WO 02/12172), (5.4) chlorothalonil (1897-45-6), (5.5) copper hydroxide (20427-59-2), (5.6) copper naphthenate (1338-02-9), (5.7) copper oxide (1317-39-1), (5.8) copper oxychloride (1332-40-7), (5.9) copper(2+) sulfate (7758-98-7), (5.10) dichlofluanid (1085-98-9), (5.11) dithianon (3347-22-6), (5.12) dodine (2439-10-3), (5.13) dodine free base, (5.14) ferbam (14484-64-1), (5.15) fluorofolpet (719-96-0), (5.16) folpet (133-07-3), (5.17) guazatine (108173-90-6), (5.18) guazatine acetate, (5.19) iminoctadine (13516-27-3), (5.20) iminoctadine albesilate (169202-06-6), (5.21) iminoctadine triacetate (57520-17-9), (5.22) mancopper (53988-93-5), (5.23) mancozeb (8018-01-7), (5.24) maneb (12427-38-2), (5.25) metiram (9006-42-2), (5.26) metiram zinc (9006-42-2), (5.27) oxine-copper (10380-28-6), (5.28) propamidine (104-32-5), (5.29) propineb (12071-83-9), (5.30) sulphur and sulphur preparations including calcium polysulphide (7704-34-9), (5.31) thiram (137-26-8), (5.32) tolylfluanid (731-27-1), (5.33) zineb (12122-67-7) and (5.34) ziram (137-30-4).

(6) Compounds capable to induce a host defence, like for example (6.1) acibenzolar-S-methyl (135158-54-2), (6.2) isotianil (224049-04-1), (6.3) probenazole (27605-76-1) and (6.4) tiadinil (223580-51-6).

(7) Inhibitors of the amino acid and/or protein biosynthesis, for example (7.1) andoprim (23951-85-1), (7.2) blasticidin-S (2079-00-7), (7.3) cyprodinil (121552-61-2), (7.4) kasugamycin (6980-18-3), (7.5) kasugamycin hydrochloride hydrate (19408-46-9), (7.6) mepanipyrim (110235-47-7), (7.7) pyrimethanil (53112-28-0) and (7.8) 3-(5-fluoro-3,3,4,4-tetramethyl-3,4-dihydroisoquinolin-1-yl)quinoline (861647-32-7) (WO2005070917).

(8) Inhibitors of the ATP production, for example (8.1) fentin acetate (900-95-8), (8.2) fentin chloride (639-58-7), (8.3) fentin hydroxide (76-87-9) and (8.4) silthiofam (175217-20-6).

(9) Inhibitors of the cell wall synthesis, for example (9.1) benthiavalicarb (177406-68-7), (9.2) dimethomorph (110488-70-5), (9.3) flumorph (211867-47-9), (9.4) iprovalicarb (140923-17-7), (9.5) mandipropamid (374726-62-2), (9.6) polyoxins (11113-80-7), (9.7) polyoxorim (22976-86-9), (9.8) validamycin A (37248-47-8) and (9.9) valifenalate (283159-94-4; 283159-90-0).

(10) Inhibitors of the lipid and membrane synthesis, for example (10.1) biphenyl (92-52-4), (10.2) chloroneb (2675-77-6), (10.3) dicloran (99-30-9), (10.4) edifenphos (17109-49-8), (10.5) etridiazole (2593-15-9), (10.6) iodocarb (55406-53-6), (10.7) iprobenfos (26087-47-8), (10.8) isoprothiolane (50512-35-1), (10.9) propamocarb (25606-41-1), (10.10) propamocarb hydrochloride (25606-41-1), (10.11) prothiocarb (19622-08-3), (10.12) pyrazophos (13457-18-6), (10.13) quintozene (82-68-8), (10.14) tecnazene (117-18-0) and (10.15) tolclofos-methyl (57018-04-9).

(11) Inhibitors of the melanine biosynthesis, for example (11.1) carpropamid (104030-54-8), (11.2) diclocymet (139920-32-4), (11.3) fenoxanil (115852-48-7), (11.4) phthalide (27355-22-2), (11.5) pyroquilon (57369-32-1), (11.6) tricyclazole (41814-78-2) and (11.7) 2,2,2-trifluoroethyl {3-methyl-1-[(4-methylbenzoyl)amino]butan-2-yl}carbamate (851524-22-6) (WO2005042474).

(12) Inhibitors of the nucleic acid synthesis, for example (12.1) benalaxyl (71626-11-4), (12.2) benalaxyl-M (kiralaxyl) (98243-83-5), (12.3) bupirimate (41483-43-6), (12.4) clozylacon (67932-85-8), (12.5) dimethirimol (5221-53-4), (12.6) ethirimol (23947-60-6), (12.7) furalaxyl (57646-30-7), (12.8) hymexazol (10004-44-1), (12.9) metalaxyl (57837-19-1), (12.10) metalaxyl-M (mefenoxam) (70630-17-0), (12.11) ofurace (58810-48-3), (12.12) oxadixyl (77732-09-3) and (12.13) oxolinic acid (14698-29-4).

(13) Inhibitors of the signal transduction, for example (13.1) chlozolinate (84332-86-5), (13.2) fenpiclonil (74738-17-3), (13.3) fludioxonil (131341-86-1), (13.4) iprodione (36734-19-7), (13.5) procymidone (32809-16-8), (13.6) quinoxyfen (124495-18-7) and (13.7) vinclozolin (50471-44-8).

(14) Compounds capable to act as an uncoupler, like for example (14.1) binapacryl (485-31-4), (14.2) dinocap (131-72-6), (14.3) ferimzone (89269-64-7), (14.4) fluazinam (79622-59-6) and (14.5) meptyldinocap (131-72-6).

(15) Further compounds, like for example (15.1) benthiazole (21564-17-0), (15.2) bethoxazin (163269-30-5), (15.3) capsimycin (70694-08-5), (15.4) carvone (99-49-0), (15.5) chinomethionat (2439-01-2), (15.6) pyriofenone (chlazafenone) (688046-61-9), (15.7) cufraneb (11096-18-7), (15.8) cyflufenamid (180409-60-3), (15.9) cymoxanil (57966-95-7), (15.10) cyprosulfamide (221667-31-8), (15.11) dazomet (533-74-4), (15.12) debacarb (62732-91-6), (15.13) dichlorophen (97-23-4), (15.14) diclomezine (62865-36-5), (15.15) difenzoquat (49866-87-7), (15.16) difenzoquat methylsulphate (43222-48-6), (15.17) diphenylamine (122-39-4), (15.18) ecomate, (15.19) fenpyrazamine (473798-59-3), (15.20) flumetover (154025-04-4), (15.21) fluoroimide (41205-21-4), (15.22) flusulfamide (106917-52-6), (15.23) flutianil

(304900-25-2), (15.24) fosetyl-aluminium (39148-24-8), (15.25) fosetyl-calcium, (15.26) fosetyl-sodium (39148-16-8), (15.27) hexachlorobenzene (118-74-1), (15.28) irumamycin (81604-73-1), (15.29) methasulfocarb (66952-49-6), (15.30) methyl isothiocyanate (556-61-6), (15.31) metrafenone (220899-03-6), (15.32) mildiomycin (67527-71-3), (15.33) natamycin (7681-93-8), (15.34) nickel dimethyldithiocarbamate (15521-65-0), (15.35) nitrothal-isopropyl (10552-74-6), (15.36) octhilinone (26530-20-1), (15.37) oxamocarb (917242-12-7), (15.38) oxyfenthiin (34407-87-9), (15.39) pentachlorophenol and salts (87-86-5), (15.40) phenothrin, (15.41) phosphorous acid and its salts (13598-36-2), (15.42) propamocarb-fosetylate, (15.43) propanosine-sodium (88498-02-6), (15.44) proquinazid (189278-12-4), (15.45) pyrimorph (868390-90-3), (15.46) pyrrolnitrine (1018-71-9) (EP-A 1 559 320), (15.47) tebufloquin (376645-78-2), (15.48) tecloftalam (76280-91-6), (15.49) tolnifanide (304911-98-6), (15.50) triazoxide (72459-58-6), (15.51) trichlamide (70193-21-4), (15.52) zarilamid (84527-51-5), (15.53) (3S,6S,7R,8R)-8-benzyl-3-[({3-[(isobutyryloxy)methoxy]-4-methoxypyridin-2-yl}carbonyl)amino]-6-methyl-4,9-dioxo-1,5-dioxonan-7-yl 2-methylpropanoate (517875-34-2) (WO2003035617), (15.54) 1-(4-{4-[(5R)-5-(2,6-difluorophenyl)-4,5-dihydro-1,2-oxazol-3-yl]-1,3-thiazol-2-yl}piperidin-1-yl)-2-[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]ethanone (1003319-79-6) (WO 2008013622), (15.55) 1-(4-{4-[(5S)-5-(2,6-difluorophenyl)-4,5-dihydro-1,2-oxazol-3-yl]-1,3-thiazol-2-yl}piperidin-1-yl)-2-[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]ethanone (1003319-80-9) (WO 2008013622), (15.56) 1-(4-{4-[5-(2,6-difluorophenyl)-4,5-dihydro-1,2-oxazol-3-yl]-1,3-thiazol-2-yl}piperidin-1-yl)-2-[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]ethanone (1003318-67-9) (WO 2008013622), (15.57) 1-(4-methoxyphenoxy)-3,3-dimethylbutan-2-yl 1H-imidazole-1-carboxylate (111227-17-9), (15.58) 2,3,5,6-tetrachloro-4-(methylsulfonyl)pyridine (13108-52-6), (15.59) 2,3-dibutyl-6-chlorothieno[2,3-d]pyrimidin-4(3H)-one (221451-58-7), (15.60) 2,6-dimethyl-1H,5H-[1,4]dithiino[2,3-c:5,6-c']dipyrrole-1,3,5,7(2H,6H)-tetrone, (15.61) 2-[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]-1-(4-{4-[(5R)-5-phenyl-4,5-dihydro-1,2-oxazol-3-yl]-1,3-thiazol-2-yl}piperidin-1-yl)ethanone (1003316-53-7) (WO 2008013622), (15.62) 2-[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]-1-(4-{4-[(5S)-5-phenyl-4,5-dihydro-1,2-oxazol-3-yl]-1,3-thiazol-2-yl}piperidin-1-yl)ethanone (1003316-54-8) (WO 2008013622), (15.63) 2-[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]-1-{4-[4-(5-phenyl-4,5-dihydro-1,2-oxazol-3-yl)-1,3-thiazol-2-yl]piperidin-1-yl}ethanone (1003316-51-5) (WO 2008013622), (15.64) 2-butoxy-6-iodo-3-propyl-4H-chromen-4-one, (15.65) 2-chloro-5-[2-chloro-1-(2,6-difluoro-4-methoxyphenyl)-4-methyl-1H-imidazol-5-yl]pyridine, (15.66) 2-phenylphenol and salts (90-43-7), (15.67) 3-(4,4,5-trifluoro-3,3-dimethyl-3,4-dihydroisoquinolin-1-yl)quinoline (861647-85-0) (WO2005070917), (15.68) 3,4,5-trichloropyridine-2,6-dicarbonitrile (17824-85-0), (15.69) 3-[5-(4-chlorophenyl)-2,3-dimethyl-1,2-oxazolidin-3-yl]pyridine, (15.70) 3-chloro-5-(4-chlorophenyl)-4-(2,6-difluorophenyl)-6-methylpyridazine, (15.71) 4-(4-chlorophenyl)-5-(2,6-difluorophenyl)-3,6-dimethylpyridazine, (15.72) 5-amino-1,3,4-thiadiazole-2-thiol, (15.73) 5-chloro-N'-phenyl-N'-(prop-2-yn-1-yl)thiophene-2-sulfonohydrazide (134-31-6), (15.74) 5-fluoro-2-[(4-fluorobenzyl)oxy]pyrimidin-4-amine (1174376-11-4) (WO2009094442), (15.75) 5-fluoro-2-[(4-methylbenzyl)oxy]pyrimidin-4-amine (1174376-25-0) (WO2009094442), (15.76) 5-methyl-6-octyl[1,2,4]triazolo[1,5-a]pyrimidin-7-amine, (15.77) ethyl (2Z)-3-amino-2-cyano-3-phenylprop-2-enoate, (15.78) N'-(4-{[3-(4-chlorobenzyl)-1,2,4-thiadiazol-5-yl]oxy}-2,5-dimethylphenyl)-N-ethyl-N-methylimidoformamide, (15.79) N-(4-chlorobenzyl)-3-[3-methoxy-4-(prop-2-yn-1-yloxy)phenyl]propanamide, (15.80) N-[(4-chlorophenyl)(cyano)methyl]-3-[3-methoxy-4-(prop-2-yn-1-yloxy)phenyl]propanamide, (15.81) N-[(5-bromo-3-chloropyridin-2-yl)methyl]-2,4-dichloropyridine-3-

carboxamide, (15.82) N-[1-(5-bromo-3-chloropyridin-2-yl)ethyl]-2,4-dichloropyridine-3-carboxamide, (15.83) N-[1-(5-bromo-3-chloropyridin-2-yl)ethyl]-2-fluoro-4-iodopyridine-3-carboxamide, (15.84) N-{(E)-[(cyclopropylmethoxy)imino][6-(difluoromethoxy)-2,3-difluorophenyl]methyl}-2-phenylacetamide (221201-92-9), (15.85) N-{(Z)-[(cyclopropylmethoxy)imino][6-(difluoromethoxy)-2,3-difluorophenyl]methyl}-2-phenylacetamide (221201-92-9), (15.86) N'-{4-[(3-tert-butyl-4-cyano-1,2-thiazol-5-yl)oxy]-2-chloro-5-methylphenyl}-N-ethyl-N-methylimidoformamide, (15.87) N-methyl-2-(1-{[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-N-(1,2,3,4-tetrahydronaphthalen-1-yl)-1,3-thiazole-4-carboxamide (922514-49-6) (WO 2007014290), (15.88) N-methyl-2-(1-{[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-N-[(1R)-1,2,3,4-tetrahydronaphthalen-1-yl]-1,3-thiazole-4-carboxamide (922514-07-6) (WO 2007014290), (15.89) N-methyl-2-(1-{[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-N-[(1S)-1,2,3,4-tetrahydronaphthalen-1-yl]-1,3-thiazole-4-carboxamide (922514-48-5) (WO 2007014290), (15.90) pentyl {6-[({[(1-methyl-1H-tetrazol-5-yl)(phenyl)methylidene]amino}oxy)methyl]pyridin-2-yl}carbamate, (15.91) phenazine-1-carboxylic acid, (15.92) quinolin-8-ol (134-31-6), (15.93) quinolin-8-ol sulfate (2:1) (134-31-6) and (15.94) tert-butyl {6-[({[(1-methyl-1H-tetrazol-5-yl)(phenyl)methylene]amino}oxy)methyl]pyridin-2-yl}carbamate.

(16) Further compounds, like for example (16.1) 1-methyl-3-(trifluoromethyl)-N-[2'-(trifluoromethyl)biphenyl-2-yl]-1H-pyrazole-4-carboxamide, (16.2) N-(4'-chlorobiphenyl-2-yl)-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide, (16.3) N-(2',4'-dichlorobiphenyl-2-yl)-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide, (16.4) 3-(difluoromethyl)-1-methyl-N-[4'-(trifluoromethyl)biphenyl-2-yl]-1H-pyrazole-4-carboxamide, (16.5) N-(2',5'-difluorobiphenyl-2-yl)-1-methyl-3-(trifluoromethyl)-1H-pyrazole-4-carboxamide, (16.6) 3-(difluoromethyl)-1-methyl-N-[4'-(prop-1-yn-1-yl)biphenyl-2-yl]-1H-pyrazole-4-carboxamide (known from WO 2004/058723), (16.7) 5-fluoro-1,3-dimethyl-N-[4'-(prop-1-yn-1-yl)biphenyl-2-yl]-1H-pyrazole-4-carboxamide (known from WO 2004/058723), (16.8) 2-chloro-N-[4'-(prop-1-yn-1-yl)biphenyl-2-yl]pyridine-3-carboxamide (known from WO 2004/058723), (16.9) 3-(difluoromethyl)-N-[4'-(3,3-dimethylbut-1-yn-1-yl)biphenyl-2-yl]-1-methyl-1H-pyrazole-4-carboxamide (known from WO 2004/058723), (16.10) N-[4'-(3,3-dimethylbut-1-yn-1-yl)biphenyl-2-yl]-5-fluoro-1,3-dimethyl-1H-pyrazole-4-carboxamide (known from WO 2004/058723), (16.11) 3-(difluoromethyl)-N-(4'-ethynylbiphenyl-2-yl)-1-methyl-1H-pyrazole-4-carboxamide (known from WO 2004/058723), (16.12) N-(4'-ethynylbiphenyl-2-yl)-5-fluoro-1,3-dimethyl-1H-pyrazole-4-carboxamide (known from WO 2004/058723), (16.13) 2-chloro-N-(4'-ethynylbiphenyl-2-yl)pyridine-3-carboxamide (known from WO 2004/058723), (16.14) 2-chloro-N-[4'-(3,3-dimethylbut-1-yn-1-yl)biphenyl-2-yl]pyridine-3-carboxamide (known from WO 2004/058723), (16.15) 4-(difluoromethyl)-2-methyl-N-[4'-(trifluoromethyl)biphenyl-2-yl]-1,3-thiazole-5-carboxamide (known from WO 2004/058723), (16.16) 5-fluoro-N-[4'-(3-hydroxy-3-methylbut-1-yn-1-yl)biphenyl-2-yl]-1,3-dimethyl-1H-pyrazole-4-carboxamide (known from WO 2004/058723), (16.17) 2-chloro-N-[4'-(3-hydroxy-3-methylbut-1-yn-1-yl)biphenyl-2-yl]pyridine-3-carboxamide (known from WO 2004/058723), (16.18) 3-(difluoromethyl)-N-[4'-(3-methoxy-3-methylbut-1-yn-1-yl)biphenyl-2-yl]-1-methyl-1H-pyrazole-4-carboxamide (known from WO 2004/058723), (16.19) 5-fluoro-N-[4'-(3-methoxy-3-methylbut-1-yn-1-yl)biphenyl-2-yl]-1,3-dimethyl-1H-pyrazole-4-carboxamide (known from WO 2004/058723), (16.20) 2-chloro-N-[4'-(3-methoxy-3-methylbut-1-yn-1-yl)biphenyl-2-yl]pyridine-3-carboxamide (known from WO 2004/058723), (16.21) (5-bromo-2-methoxy-4-methylpyridin-3-yl)(2,3,4-trimethoxy-6-methylphenyl)methanone (known from EP-A 1 559 320) and

(16.22) N-[2-(4-{[3-(4-chlorophenyl)prop-2-yn-1-yl]oxy}-3-methoxyphenyl)ethyl]-N2-(methylsulfonyl)valinamide (220706-93-4).

All named mixing partners of the classes (1) to (16) can, if their functional groups enable this, optionally form salts with suitable bases or acids.

The composition according to the invention comprising a mixture of a compound of formula (I) with a bactericide compound can also be particularly advantageous. Examples of suitable bactericide mixing partners can be selected in the following list: bronopol, dichlorophen, nitrapyrin, nickel dimethyldithiocarbamate, kasugamycin, octhilinone, furancarboxylic acid, oxytetracycline, probenazole, streptomycin, tecloftalam, copper sulphate and other copper preparations.

The compounds of formula (I) and the fungicide composition according to the invention can be used to curatively or preventively control the phytopathogenic fungi of plants or crops.

Thus, according to a further aspect of the invention, there is provided a method for curatively or preventively controlling the phytopathogenic fungi of plants or crops characterised in that a compound of formula (I) or a fungicide composition according to the invention is applied to the seed, the plant or to the fruit of the plant or to the soil wherein the plant is growing or wherein it is desired to grow.

The method of treatment according to the invention can also be useful to treat propagation material such as tubers or rhizomes, but also seeds, seedlings or seedlings pricking out and plants or plants pricking out. This method of treatment can also be useful to treat roots. The method of treatment according to the invention can also be useful to treat the overground parts of the plant such as trunks, stems or stalks, leaves, flowers and fruit of the concerned plant.

According to the invention all plants and plant parts can be treated. By plants is meant all plants and plant populations such as desirable and undesirable wild plants, cultivars and plant varieties (whether or not protectable by plant variety or plant breeder's rights). Cultivars and plant varieties can be plants obtained by conventional propagation and breeding methods which can be assisted or supplemented by one or more biotechnological methods such as by use of double haploids, protoplast fusion, random and directed mutagenesis, molecular or genetic markers or by bioengineering and genetic engineering methods. By plant parts is meant all above ground and below ground parts and organs of plants such as shoot, leaf, blossom and root, whereby for example leaves, needles, stems, branches, blossoms, fruiting bodies, fruits and seed as well as roots, corms and rhizomes are listed. Crops and vegetative and generative propagating material, for example cuttings, corms, rhizomes, runners and seeds also belong to plant parts.

Among the plants that can be protected by the method according to the invention, mention may be made of major field crops like corn, soybean, cotton, *Brassica* oilseeds such as *Brassica napus* (e.g. canola), *Brassica rapa*, *B. juncea* (e.g. mustard) and *Brassica carinata*, rice, wheat, sugarbeet, sugarcane, oats, rye, barley, millet, triticale, flax, vine and various fruits and vegetables of various botanical taxa such as *Rosaceae sp.* (for instance pip fruit such as apples and pears, but also stone fruit such as apricots, cherries, almonds and peaches, berry fruits such as strawberries), *Ribesioidae sp.*, *Juglandaceae sp.*, *Betulaceae sp.*, *Anacardiaceae sp.*, *Fagaceae sp.*, *Moraceae sp.*, *Oleaceae sp.*, *Actinidaceae sp.*, *Lauraceae sp.*, *Musaceae sp.* (for instance banana trees and plantings), *Rubiaceae sp.* (for instance coffee), *Theaceae sp.*, *Sterculiceae*

sp., *Rutaceae sp.* (for instance lemons, oranges and grapefruit) ; *Solanaceae sp.* (for instance tomatoes, potatoes, peppers, eggplant), *Liliaceae sp.*, Compositiae *sp.* (for instance lettuce, artichoke and chicory - including root chicory, endive or common chicory), *Umbelliferae sp.* (for instance carrot, parsley, celery and celeriac), *Cucurbitaceae sp.* (for instance cucumber – including pickling cucumber, squash, watermelon, gourds and melons), *Alliaceae* sp. (for instance onions and leek), Cruciferae *sp.* (for instance white cabbage, red cabbage, broccoli, cauliflower, brussel sprouts, pak choi, kohlrabi, radish, horseradish, cress, Chinese cabbage), Leguminosae *sp.* (for instance peanuts, peas and beans beans - such as climbing beans and broad beans), *Chenopodiaceae sp.* (for instance mangold, spinach beet, spinach, beetroots), *Malvaceae* (for instance okra), *Asparagaceae* (for instance asparagus); horticultural and forest crops; ornamental plants; as well as genetically modified homologues of these crops.

The method of treatment according to the invention can be used in the treatment of genetically modified organisms (GMOs), e.g. plants or seeds. Genetically modified plants (or transgenic plants) are plants of which a heterologous gene has been stably integrated into genome. The expression “heterologous gene” essentially means a gene which is provided or assembled outside the plant and when introduced in the nuclear, chloroplastic or mitochondrial genome gives the transformed plant new or improved agronomic or other properties by expressing a protein or polypeptide of interest or by downregulating or silencing other gene(s) which are present in the plant (using for example, antisense technology, cosuppression technology or RNA interference – RNAi - technology). A heterologous gene that is located in the genome is also called a transgene. A transgene that is defined by its particular location in the plant genome is called a transformation or transgenic event.

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 active compounds 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, bigger fruits, larger plant height, greener leaf color, earlier flowering, higher quality and/or a higher nutritional value of the harvested products, higher sugar concentration within the fruits, better storage stability and/or processability of the harvested products are possible, which exceed the effects which were actually to be expected.

At certain application rates, the active compound combinations according to the invention may also have a strengthening effect in plants. Accordingly, they are also suitable for mobilizing the defense system of the plant against attack by unwanted microorganisms. This may, if appropriate, be one of the reasons of the enhanced activity of the combinations according to the invention, for example against fungi. Plant-strengthening (resistance-inducing) substances are to be understood as meaning, in the present context, those substances or combinations of substances which are capable of stimulating the defense system of plants in such a way that, when subsequently inoculated with unwanted microorganisms, the treated plants display a substantial degree of resistance to these microorganisms. In the present case, unwanted microorganisms are to be understood as meaning phytopathogenic fungi, bacteria and viruses. Thus, the

substances according to the invention can be employed for protecting plants against attack by the abovementioned pathogens within a certain period of time after the treatment. The period of time within which protection is effected generally extends from 1 to 10 days, preferably 1 to 7 days, after the treatment of the plants with the active compounds.

Plants and plant cultivars which are preferably to be treated according to the invention include all plants which have genetic material which impart particularly advantageous, useful traits to these plants (whether obtained by breeding and/or biotechnological means).
Plants and plant cultivars which are also preferably to be treated according to the invention are resistant against one or more biotic stresses, i.e. said plants show a better defense against animal and microbial pests, such as against nematodes, insects, mites, phytopathogenic fungi, bacteria, viruses and/or viroids.

Examples of nematode resistant plants are described in e.g. US Patent Application Nos 11/765,491, 11/765,494, 10/926,819, 10/782,020, 12/032,479, 10/783,417, 10/782,096, 11/657,964, 12/192,904, 11/396,808, 12/166,253, 12/166,239, 12/166,124, 12/166,209, 11/762,886, 12/364,335, 11/763,947, 12/252,453, 12/209,354, 12/491,396 or 12/497,221.
Plants and plant cultivars which may also be treated according to the invention are those plants which are resistant to one or more abiotic stresses. Abiotic stress conditions may include, for example, drought, cold temperature exposure, heat exposure, osmotic stress, flooding, increased soil salinity, increased mineral exposure, ozone exposure, high light exposure, limited availability of nitrogen nutrients, limited availability of phosphorus nutrients, shade avoidance.
Plants and plant cultivars which may also be treated according to the invention, are those plants characterized by enhanced yield characteristics. Increased yield in said plants can be the result of, for example, improved plant physiology, growth and development, such as water use efficiency, water retention efficiency, improved nitrogen use, enhanced carbon assimilation, improved photosynthesis, increased germination efficiency and accelerated maturation. Yield can furthermore be affected by improved plant architecture (under stress and non-stress conditions), including but not limited to, early flowering, flowering control for hybrid seed production, seedling vigor, plant size, internode number and distance, root growth, seed size, fruit size, pod size, pod or ear number, seed number per pod or ear, seed mass, enhanced seed filling, reduced seed dispersal, reduced pod dehiscence and lodging resistance. Further yield traits include seed composition, such as carbohydrate content, protein content, oil content and composition, nutritional value, reduction in anti-nutritional compounds, improved processability and better storage stability.
Examples of plants with the above-mentioned traits are non-exhaustively listed in Table A.

Plants that may be treated according to the invention are hybrid plants that already express the characteristic of heterosis or hybrid vigor which results in generally higher yield, vigor, health and resistance towards biotic and abiotic stresses). Such plants are typically made by crossing an inbred male-sterile parent line (the female parent) with another inbred male-fertile parent line (the male parent). Hybrid seed is typically harvested from the male sterile plants and sold to growers. Male sterile plants can sometimes (e.g. in corn) be produced by detasseling, i.e. the mechanical removal of the male reproductive organs (or males flowers) but, more typically, male sterility is the result of genetic

determinants in the plant genome. In that case, and especially when seed is the desired product to be harvested from the hybrid plants it is typically useful to ensure that male fertility in the hybrid plants is fully restored. This can be accomplished by ensuring that the male parents have appropriate fertility restorer genes which are capable of restoring the male fertility in hybrid plants that contain the genetic determinants responsible for male-sterility. Genetic determinants for male sterility may be located in the cytoplasm. Examples of cytoplasmic male sterility (CMS) were for instance described in Brassica species (W0 92/05251, WO 95/09910, WO 98/27806, WO 05/002324, WO 06/021972 and US 6,229,072). However, genetic determinants for male sterility can also be located in the nuclear genome. Male sterile plants can also be obtained by plant biotechnology methods such as genetic engineering. A particularly useful means of obtaining male-sterile plants is described in WO 89/10396 in which, for example, a ribonuclease such as barnase is selectively expressed in the tapetum cells in the stamens. Fertility can then be restored by expression in the tapetum cells of a ribonuclease inhibitor such as barstar (e.g. WO 91/02069).

Plants or plant cultivars (obtained by plant biotechnology methods such as genetic engineering) which may be treated according to the invention are herbicide-tolerant plants, i.e. plants made tolerant to one or more given herbicides. Such plants can be obtained either by genetic transformation, or by selection of plants containing a mutation imparting such herbicide tolerance.

Herbicide-resistant plants are for example glyphosate-tolerant plants, i.e. plants made tolerant to the herbicide glyphosate or salts thereof. Plants can be made tolerant to glyphosate through different means. For example, glyphosate-tolerant plants can be obtained by transforming the plant with a gene encoding the enzyme 5-enolpyruvylshikimate-3-phosphate synthase (EPSPS). Examples of such EPSPS genes are the AroA gene (mutant CT7) of the bacterium S*almonella typhimurium* (Comai et al., 1983, Science 221, 370-371), the CP4 gene of the bacterium *Agrobacterium sp.* (Barry et al., 1992, Curr. Topics Plant Physiol. 7, 139-145), the genes encoding a Petunia EPSPS (Shah et al., 1986, Science 233, 478-481), a Tomato EPSPS (Gasser et al., 1988, J. Biol. Chem. 263, 4280-4289), or an Eleusine EPSPS (WO 01/66704). It can also be a mutated EPSPS as described in for example EP 0837944, WO 00/66746, WO 00/66747 or WO02/26995. Glyphosate-tolerant plants can also be obtained by expressing a gene that encodes a glyphosate oxido-reductase enzyme as described in U.S. Patent Nos. 5,776,760 and 5,463,175. Glyphosate-tolerant plants can also be obtained by expressing a gene that encodes a glyphosate acetyl transferase enzyme as described in for example WO 02/36782, WO 03/092360, WO 05/012515 and WO 07/024782. Glyphosate-tolerant plants can also be obtained by selecting plants containing naturally-occurring mutations of the above-mentioned genes, as described in for example WO 01/024615 or WO 03/013226. Plants expressing EPSPS genes that confer glyphosate tolerance are described in e.g. US Patent Application Nos 11/517,991, 10/739,610, 12/139,408, 12/352,532, 11/312,866, 11/315,678, 12/421,292, 11/400,598, 11/651,752, 11/681,285, 11/605,824, 12/468,205, 11/760,570, 11/762,526, 11/769,327, 11/769,255, 11/943801 or 12/362,774. Plants comprising other genes that confer glyphosate tolerance, such as decarboxylase genes, are described in e.g. US patent applications 11/588,811, 11/185,342, 12/364,724, 11/185,560 or 12/423,926.

Other herbicide resistant plants are for example plants that are made tolerant to herbicides inhibiting the enzyme glutamine synthase, such as bialaphos, phosphinothricin or glufosinate. Such plants can be

obtained by expressing an enzyme detoxifying the herbicide or a mutant glutamine synthase enzyme that is resistant to inhibition, e.g. described in US Patent Application No 11/760,602. One such efficient detoxifying enzyme is an enzyme encoding a phosphinothricin acetyltransferase (such as the bar or pat protein from Streptomyces species). Plants expressing an exogenous phosphinothricin acetyltransferase are for example described in U.S. Patent Nos. 5,561,236; 5,648,477; 5,646,024; 5,273,894; 5,637,489; 5,276,268; 5,739,082; 5,908,810 and 7,112,665.

Further herbicide-tolerant plants are also plants that are made tolerant to the herbicides inhibiting the enzyme hydroxyphenylpyruvatedioxygenase (HPPD). Hydroxyphenylpyruvatedioxygenases are enzymes that catalyze the reaction in which para-hydroxyphenylpyruvate (HPP) is transformed into homogentisate. Plants tolerant to HPPD-inhibitors can be transformed with a gene encoding a naturally-occurring resistant HPPD enzyme, or a gene encoding a mutated or chimeric HPPD enzyme as described in WO 96/38567, WO 99/24585, WO 99/24586, WO 2009/144079, WO 2002/046387, or US 6,768,044.. Tolerance to HPPD-inhibitors can also be obtained by transforming plants with genes encoding certain enzymes enabling the formation of homogentisate despite the inhibition of the native HPPD enzyme by the HPPD-inhibitor. Such plants and genes are described in WO 99/34008 and WO 02/36787. Tolerance of plants to HPPD inhibitors can also be improved by transforming plants with a gene encoding an enzyme having prephenate deshydrogenase (PDH) activity in addition to a gene encoding an HPPD-tolerant enzyme, as described in WO 2004/024928. Further, plants can be made more tolerant to HPPD-inhibitor herbicides by adding into their genome a gene encoding an enzyme capable of metabolizing or degrading HPPD inhibitors, such as the CYP450 enzymes shown in WO 2007/103567 and WO 2008/150473.

Still further herbicide resistant plants are plants that are made tolerant to acetolactate synthase (ALS) inhibitors. Known ALS-inhibitors include, for example, sulfonylurea, imidazolinone, triazolopyrimidines, pryimidinyoxy(thio)benzoates, and/or sulfonylaminocarbonyltriazolinone herbicides. Different mutations in the ALS enzyme (also known as acetohydroxyacid synthase, AHAS) are known to confer tolerance to different herbicides and groups of herbicides, as described for example in Tranel and Wright (2002, Weed Science 50:700-712), but also, in U.S. Patent No. 5,605,011, 5,378,824, 5,141,870, and 5,013,659. The production of sulfonylurea-tolerant plants and imidazolinone-tolerant plants is described in U.S. Patent Nos. 5,605,011; 5,013,659; 5,141,870; 5,767,361; 5,731,180; 5,304,732; 4,761,373; 5,331,107; 5,928,937; and 5,378,824; and international publication WO 96/33270. Other imidazolinone-tolerant plants are also described in for example WO 2004/040012, WO 2004/106529, WO 2005/020673, WO 2005/093093, WO 2006/007373, WO 2006/015376, WO 2006/024351, and WO 2006/060634. Further sulfonylurea- and imidazolinone-tolerant plants are also described in for example WO 07/024782 and US Patent Application No 61/288958.

Other plants tolerant to imidazolinone and/or sulfonylurea can be obtained by induced mutagenesis, selection in cell cultures in the presence of the herbicide or mutation breeding as described for example for soybeans in U.S. Patent 5,084,082, for rice in WO 97/41218, for sugar beet in U.S. Patent 5,773,702 and WO 99/057965, for lettuce in U.S. Patent 5,198,599, or for sunflower in WO 01/065922.

Plants or plant cultivars (obtained by plant biotechnology methods such as genetic engineering) which may also be treated according to the invention are insect-resistant transgenic plants, i.e. plants made

resistant to attack by certain target insects. Such plants can be obtained by genetic transformation, or by selection of plants containing a mutation imparting such insect resistance.

An “insect-resistant transgenic plant”, as used herein, includes any plant containing at least one transgene comprising a coding sequence encoding:

1) an insecticidal crystal protein from *Bacillus thuringiensis* or an insecticidal portion thereof, such as the insecticidal crystal proteins listed by Crickmore et al. (1998, Microbiology and Molecular Biology Reviews, 62: 807-813), updated by Crickmore et al. (2005) at the *Bacillus thuringiensis* toxin nomenclature, online at: http://www.lifesci.sussex.ac.uk/Home/Neil_Crickmore/Bt/), or insecticidal portions thereof, e.g., proteins of the Cry protein classes Cry1Ab, Cry1Ac, Cry1B, Cry1C, Cry1D, Cry1F, Cry2Ab, Cry3Aa, or Cry3Bb or insecticidal portions thereof (e.g. EP 1999141 and WO 2007/107302), or such proteins encoded by synthetic genes as e.g. described in and US Patent Application No 12/249,016 ; or

2) a crystal protein from *Bacillus thuringiensis* or a portion thereof which is insecticidal in the presence of a second other crystal protein from *Bacillus thuringiensis* or a portion thereof, such as the binary toxin made up of the Cry34 and Cry35 crystal proteins (Moellenbeck et al. 2001, Nat. Biotechnol. 19: 668-72; Schnepf et al. 2006, Applied Environm. Microbiol. 71, 1765-1774) or the binary toxin made up of the Cry1A or Cry1F proteins and the Cry2Aa or Cry2Ab or Cry2Ae proteins (US Patent Appl. No. 12/214,022 and EP 08010791.5); or

3) a hybrid insecticidal protein comprising parts of different insecticidal crystal proteins from *Bacillus thuringiensis,* such as a hybrid of the proteins of 1) above or a hybrid of the proteins of 2) above, e.g., the Cry1A.105 protein produced by corn event MON89034 (WO 2007/027777); or

4) a protein of any one of 1) to 3) above wherein some, particularly 1 to 10, amino acids have been replaced by another amino acid to obtain a higher insecticidal activity to a target insect species, and/or to expand the range of target insect species affected, and/or because of changes introduced into the encoding DNA during cloning or transformation, such as the Cry3Bb1 protein in corn events MON863 or MON88017, or the Cry3A protein in corn event MIR604; or

5) an insecticidal secreted protein from *Bacillus thuringiensis* or *Bacillus cereus*, or an insecticidal portion thereof, such as the vegetative insecticidal (VIP) proteins listed at: http://www.lifesci.sussex.ac.uk/home/Neil_Crickmore/Bt/vip.html, e.g., proteins from the VIP3Aa protein class; or

6) a secreted protein from *Bacillus thuringiensis* or *Bacillus cereus* which is insecticidal in the presence of a second secreted protein from *Bacillus thuringiensis* or *B. cereus*, such as the binary toxin made up of the VIP1A and VIP2A proteins (WO 94/21795); or

7) a hybrid insecticidal protein comprising parts from different secreted proteins from *Bacillus thuringiensis* or *Bacillus cereus,* such as a hybrid of the proteins in 1) above or a hybrid of the proteins in 2) above; or

8) a protein of any one of 5) to 7) above wherein some, particularly 1 to 10, amino acids have been replaced by another amino acid to obtain a higher insecticidal activity to a target insect species, and/or to expand the range of target insect species affected, and/or because of changes introduced into the encoding DNA during cloning or transformation (while still encoding an insecticidal protein), such as the VIP3Aa protein in cotton event COT102; or

9) a secreted protein from *Bacillus thuringiensis* or *Bacillus cereus* which is insecticidal in the presence of a crystal protein from *Bacillus thuringiensis*, such as the binary toxin made up of VIP3 and Cry1A or Cry1F (US Patent Appl. No. 61/126083 and 61/195019), or the binary toxin made up of the VIP3 protein and the Cry2Aa or Cry2Ab or Cry2Ae proteins (US Patent Appl. No. 12/214,022 and EP 08010791.5).

10) a protein of 9) above wherein some, particularly 1 to 10, amino acids have been replaced by another amino acid to obtain a higher insecticidal activity to a target insect species, and/or to expand the range of target insect species affected, and/or because of changes introduced into the encoding DNA during cloning or transformation (while still encoding an insecticidal protein)

Of course, an insect-resistant transgenic plant, as used herein, also includes any plant comprising a combination of genes encoding the proteins of any one of the above classes 1 to 10. In one embodiment, an insect-resistant plant contains more than one transgene encoding a protein of any one of the above classes 1 to 10, to expand the range of target insect species affected when using different proteins directed at different target insect species, or to delay insect resistance development to the plants by using different proteins insecticidal to the same target insect species but having a different mode of action, such as binding to different receptor binding sites in the insect.

An “insect-resistant transgenic plant”, as used herein, further includes any plant containing at least one transgene comprising a sequence producing upon expression a double-stranded RNA which upon ingestion by a plant insect pest inhibits the growth of this insect pest, as described e.g. in WO 2007/080126, WO 2006/129204, WO 2007/074405, WO 2007/080127 and WO 2007/035650.

Plants or plant cultivars (obtained by plant biotechnology methods such as genetic engineering) which may also be treated according to the invention are tolerant to abiotic stresses. Such plants can be obtained by genetic transformation, or by selection of plants containing a mutation imparting such stress resistance. Particularly useful stress tolerance plants include:

1) plants which contain a transgene capable of reducing the expression and/or the activity of poly(ADP-ribose) polymerase (PARP) gene in the plant cells or plants as described in WO 00/04173, WO/2006/045633, EP 04077984.5, or EP 06009836.5.

2) plants which contain a stress tolerance enhancing transgene capable of reducing the expression and/or the activity of the PARG encoding genes of the plants or plants cells, as described e.g. in WO 2004/090140.

3) plants which contain a stress tolerance enhancing transgene coding for a plant-functional enzyme of the nicotineamide adenine dinucleotide salvage synthesis pathway including nicotinamidase, nicotinate phosphoribosyltransferase, nicotinic acid mononucleotide adenyl transferase, nicotinamide adenine dinucleotide synthetase or nicotine amide phosphorybosyltransferase as described e.g. in EP 04077624.7, WO 2006/133827, PCT/EP07/002433, EP 1999263, or WO 2007/107326.

Plants or plant cultivars (obtained by plant biotechnology methods such as genetic engineering) which may also be treated according to the invention show altered quantity, quality and/or storage-stability of

the harvested product and/or altered properties of specific ingredients of the harvested product such as :

1) transgenic plants which synthesize a modified starch, which in its physical-chemical characteristics, in particular the amylose content or the amylose/amylopectin ratio, the degree of branching, the average chain length, the side chain distribution, the viscosity behaviour, the gelling strength, the starch grain size and/or the starch grain morphology, is changed in comparison with the synthesised starch in wild type plant cells or plants, so that this is better suited for special applications. Said transgenic plants synthesizing a modified starch are disclosed, for example, in EP 0571427, WO 95/04826, EP 0719338, WO 96/15248, WO 96/19581, WO 96/27674, WO 97/11188, WO 97/26362, WO 97/32985, WO 97/42328, WO 97/44472, WO 97/45545, WO 98/27212, WO 98/40503, WO99/58688, WO 99/58690, WO 99/58654, WO 00/08184, WO 00/08185, WO 00/08175, WO 00/28052, WO 00/77229, WO 01/12782, WO 01/12826, WO 02/101059, WO 03/071860, WO 2004/056999, WO 2005/030942, WO 2005/030941, WO 2005/095632, WO 2005/095617, WO 2005/095619, WO 2005/095618, WO 2005/123927, WO 2006/018319, WO 2006/103107, WO 2006/108702, WO 2007/009823, WO 00/22140, WO 2006/063862, WO 2006/072603, WO 02/034923, EP 06090134.5, EP 06090228.5, EP 06090227.7, EP 07090007.1, EP 07090009.7, WO 01/14569, WO 02/79410, WO 03/33540, WO 2004/078983, WO 01/19975, WO 95/26407, WO 96/34968, WO 98/20145, WO 99/12950, WO 99/66050, WO 99/53072, US 6,734,341, WO 00/11192, WO 98/22604, WO 98/32326, WO 01/98509, WO 01/98509, WO 2005/002359, US 5,824,790, US 6,013,861, WO 94/04693, WO 94/09144, WO 94/11520, WO 95/35026, WO 97/20936

2) transgenic plants which synthesize non starch carbohydrate polymers or which synthesize non starch carbohydrate polymers with altered properties in comparison to wild type plants without genetic modification. Examples are plants producing polyfructose, especially of the inulin and levan-type, as disclosed in EP 0663956, WO 96/01904, WO 96/21023, WO 98/39460, and WO 99/24593, plants producing alpha-1,4-glucans as disclosed in WO 95/31553, US 2002031826, US 6,284,479, US 5,712,107, WO 97/47806, WO 97/47807, WO 97/47808 and WO 00/14249, plants producing alpha-1,6 branched alpha-1,4-glucans, as disclosed in WO 00/73422, plants producing alternan, as disclosed in e.g. WO 00/47727, WO 00/73422, EP 06077301.7, US 5,908,975 and EP 0728213,

3) transgenic plants which produce hyaluronan, as for example disclosed in WO 2006/032538, WO 2007/039314, WO 2007/039315, WO 2007/039316, JP 2006304779, and WO 2005/012529.

4) transgenic plants or hybrid plants, such as onions with characteristics such as 'high soluble solids content', 'low pungency' (LP) and/or 'long storage' (LS), as described in US Patent Appl. No. 12/020,360 and 61/054,026.

Plants or plant cultivars (that can be obtained by plant biotechnology methods such as genetic engineering) which may also be treated according to the invention are plants, such as cotton plants, with altered fiber characteristics. Such plants can be obtained by genetic transformation, or by selection of plants contain a mutation imparting such altered fiber characteristics and include:

a) Plants, such as cotton plants, containing an altered form of cellulose synthase genes as described in WO 98/00549

b) Plants, such as cotton plants, containing an altered form of rsw2 or rsw3 homologous nucleic

acids as described in WO 2004/053219

c) Plants, such as cotton plants, with increased expression of sucrose phosphate synthase as described in WO 01/17333

d) Plants, such as cotton plants, with increased expression of sucrose synthase as described in WO 02/45485

e) Plants, such as cotton plants, wherein the timing of the plasmodesmatal gating at the basis of the fiber cell is altered, e.g. through downregulation of fiber-selective β-1,3-glucanase as described in WO 2005/017157, or as described in EP 08075514.3 or US Patent Appl. No. 61/128,938

f) Plants, such as cotton plants, having fibers with altered reactivity, e.g. through the expression of N-acetylglucosaminetransferase gene including nodC and chitin synthase genes as described in WO 2006/136351

Plants or plant cultivars (that can be obtained by plant biotechnology methods such as genetic engineering) which may also be treated according to the invention are plants, such as oilseed rape or related Brassica plants, with altered oil profile characteristics. Such plants can be obtained by genetic transformation, or by selection of plants contain a mutation imparting such altered oil profile characteristics and include:

a) Plants, such as oilseed rape plants, producing oil having a high oleic acid content as described e.g. in US 5,969,169, US 5,840,946 or US 6,323,392 or US 6,063,947

b) Plants such as oilseed rape plants, producing oil having a low linolenic acid content as described in US 6,270,828, US 6,169,190, or US 5,965,755

c) Plant such as oilseed rape plants, producing oil having a low level of saturated fatty acids as described e.g. in US Patent No. 5,434,283 or US Patent Application No 12/668303

Plants or plant cultivars (that can be obtained by plant biotechnology methods such as genetic engineering) which may also be treated according to the invention are plants, such as oilseed rape or related Brassica plants, with altered seed shattering characteristics. Such plants can be obtained by genetic transformation, or by selection of plants contain a mutation imparting such altered seed shattering characteristics and include plants such as oilseed rape plants with delayed or reduced seed shattering as described in US Patent Appl. No. 61/135,230 WO09/068313 and WO10/006732.

Particularly useful transgenic plants which may be treated according to the invention are plants containing transformation events, or combination of transformation events, that are the subject of petitions for non-regulated status, in the United States of America, to the Animal and Plant Health Inspection Service (APHIS) of the United States Department of Agriculture (USDA) whether such petitions are granted or are still pending. At any time this information is readily available from APHIS (4700 River Road Riverdale, MD 20737, USA), for instance on its internet site (URL http://www.aphis.usda.gov/brs/not_reg.html). On the filing date of this application the petitions for nonregulated status that were pending with APHIS or granted by APHIS were those listed in table B which contains the following information:

- Petition : the identification number of the petition. Technical descriptions of the transformation events can be found in the individual petition documents which are obtainable from APHIS,

for example on the APHIS website, by reference to this petition number. These descriptions are herein incorporated by reference.

- Extension of Petition : reference to a previous petition for which an extension is requested.
- Institution : the name of the entity submitting the petition.
- Regulated article : the plant species concerned.
- Transgenic phenotype : the trait conferred to the plants by the transformation event.
- Transformation event or line : the name of the event or events (sometimes also designated as lines or lines) for which nonregulated status is requested.
- APHIS documents : various documents published by APHIS in relation to the Petition and which can be requested with APHIS.

Additional particularly useful plants containing single transformation events or combinations of transformation events are listed for example in the databases from various national or regional regulatory agencies (see for example http://gmoinfo.jrc.it/gmp_browse.aspx and http://www.agbios.com/dbase.php).

Further particularly transgenic plants include plants containing a transgene in an agronomically neutral or beneficial position as described in any of the patent publications listed in Table C.

Table A

Trait	Reference	
Water use efficiency	WO 2000/073475	
Nitrogen use efficiency	WO 1995/009911	WO 2007/076115
	WO 1997/030163	WO 2005/103270
	WO 2007/092704	WO 2002/002776
Improved photosynthesis	WO 2008/056915	WO 2004/101751
Nematode resistance	WO 1995/020669	WO 2003/033651
	WO 2001/051627	WO 1999/060141
	WO 2008/139334	WO 1998/012335
	WO 2008/095972	WO 1996/030517
	WO 2006/085966	WO 1993/018170
Reduced pod dehiscence	WO 2006/009649	WO 1997/013865
	WO 2004/113542	WO 1996/030529
	WO 1999/015680	WO 1994/023043
	WO 1999/000502	
Aphid resistance	WO 2006/125065	WO 2008/067043
	WO 1997/046080	WO 2004/072109
Sclerotinia resistance	WO 2006/135717	WO 2005/000007
	WO 2006/055851	WO 2002/099385
	WO 2005/090578	WO 2002/061043
Botrytis resistance	WO 2006/046861	WO 2002/085105
Bremia resistance	US 20070022496	WO 2004/049786
	WO 2000/063432	
Erwinia resistance	WO 2004/049786	
Closterovirus resistance	WO 2007/073167	WO 2002/022836
	WO 2007/053015	
Stress tolerance (including drought tolerance)	WO 2010/019838	WO2008/002480
	WO 2009/049110	WO2005/033318
Tobamovirus resistance	WO 2006/038794	

Table B

Petitions of Nonregulated Status Granted or Pending by APHIS as of March 31, 2010

NOTE: To obtain the most up-to-date list of Crops No Longer Regulated, please look at the Current Status of Petitions. This list is automatically updated and reflects all petitions received to date by APHIS, including petitions pending, withdrawn, or approved.

Abbreviations:
CMV-cucumber mosaic virus; CPB-colorado potato beetle; PLRV- potato leafroll virus; PRSV-papaya ringspot virus; PVY-potato virus Y; WMV2- watermelon mosaic virus 2 ZYMV-zucchini yellow mosaic virus

Petitions for Nonregulated Status Pending					
Applicant Documents					
Petition	Extension of Petition Number ***	Institution	Regulated Article	Transgenic Phenotype	Transformation Event or Line
10-070-01p		Virginia Tech	Peanut	Sclerotinia blight resistant	N70, P39, and W171
09-349-01p		Dow AgroSciences	Soybean	Herbicide Tolerant	DAS-68416-4
09-328-01p		Bayer Crop Science	Soybean	Herbicide Tolerant	FG72
09-233-01p		Dow	Corn	Herbicide Tolerant	DAS-40278-9
09-201-01p		Monsanto	Soybean		MON-877Ø5-6
09-183-01p		Monsanto	Soybean		MON-87769
09-082-01p		Monsanto	Soybean	Lepidopteran resistant	MON 87701
09-063-01p		Stine Seed	Corn	Glyphosate tolerant	HCEM485
09-055-01p		Monsanto	Corn	Drought Tolerant	MON 87460
09-015-01p		BASF Plant Science, LLC	Soybean	Herbicide Tolerant	BPS-CV127-9 Soybean
08-366-01p		ArborGen	Eucalyptus	Freeze Tolerant, Fertility Altered	ARB-FTE1-08
08-340-01p		Bayer	Cotton	Glufosinate Tolerant, Insect Resistant	T304-40XGHB119
08-338-01p		Pioneer	Corn	Male Sterile, Fertility Restored, Visual Marker	DP-32138-1
08-315-01p		Florigene	Rose	Altered Flower Color	IFD-524Ø1-4 and IFD-529Ø1-9
07-253-01p		Syngenta	Corn	Lepidopteran resistant	MIR-162 Maize
07-108-01p		Syngenta	Cotton	Lepidopteran Resistant	COT67B
06-354-01p		Pioneer	Soybean	High Oleic Acid	DP-3Ø5423-1
05-280-		Syngenta	Corn	Thermostable alpha-	3272

01p				amylase	
04-110-01p		Monsanto & Forage Genetics	Alfalfa	Glyphosate Tolerant	J101, J163
03-104-01p		Monsanto & Scotts	Creeping bentgrass	Glyphosate Tolerant	ASR368

Petitions for Nonregulated Status Granted					
Applicant Documents					
Petition	**Extension of Petition Number *****	**Institution**	**Regulated Article**	**Transgenic Phenotype**	**Transformation Event or Line**
07-152-01p		Pioneer	Corn	glyphosate & Imidazolinone tolerant	DP-098140-6
04-337-01p		University of Florida	Papaya	Papaya Ringspot Virus Resistant	X17-2
06-332-01p		Bayer CropScience	Cotton	Glyphosate tolerant	GHB614
06-298-01p		Monsanto	Corn	European Corn Borer resistant	MON 89034
06-271-01p		Pioneer	Soybean	Glyphosate & acetolactate synthase tolerant	356043 (DP-356Ø43-5)
06-234-01p	98-329-01p	Bayer CropScience	Rice	Phosphinothricin tolerant	LLRICE601
06-178-01p		Monsanto	Soybean	Glyphosate tolerant	MON 89788
04-362-01p		Syngenta	Corn	Corn Rootworm Protected	MIR604
04-264-01p		ARS	Plum	Plum Pox Virus Resistant	C5
04-229-01p		Monsanto	Corn	High Lysine	LY038
04-125-01p		Monsanto	Corn	Corn Rootworm Resistant	88017
04-086-01p		Monsanto	Cotton	Glyphosate Tolerant	MON 88913
03-353-01p		Dow	Corn	Corn Rootworm Resistant	59122
03-323-01p		Monsanto	Sugar Beet	Glyphosate Tolerant	H7-1
03-181-01p	00-136-01p	Dow	Corn	Lepidopteran Resistant & Phosphinothricin tolerant	TC-6275
03-155-01p		Syngenta	Cotton	Lepidopteran Resistant	COT 102
03-036-01p		Mycogen/Dow	Cotton	Lepidopteran Resistant	281-24-236
03-036-02p		Mycogen/Dow	Cotton	Lepidopteran Resistant	3006-210-23
02-042-01p		Aventis	Cotton	Phosphinothericin tolerant	LLCotton25
01-324-01p	98-216-01p	Monsanto	Rapeseed	Glyphosate tolerant	RT200
01-206-	98-278-01p	Aventis	Rapesee	Phosphinothricin	MS1 & RF1/RF2

01p			d	tolerant & pollination control	
01-206-02p	97-205-01p	Aventis	Rapeseed	Phosphinothricin tolerant	Topas 19/2
01-137-01p		Monsanto	Corn	Corn Rootworm Resistant	MON 863
01-121-01p		Vector	Tobacco	Reduced nicotine	Vector 21-41
00-342-01p		Monsanto	Cotton	Lepidopteran resistant	Cotton Event 15985
00-136-01p		Mycogen c/o Dow & Pioneer	Corn	Lepidopteran resistant phosphinothricin tolerant	Line 1507
00-011-01p	97-099-01p	Monsanto	Corn	Glyphosate tolerant	NK603
99-173-01p	97-204-01p	Monsanto	Potato	PLRV & CPB resistant	RBMT22-82
98-349-01p	95-228-01p	AgrEvo	Corn	Phosphinothricin tolerant and Male sterile	MS6
98-335-01p		U. of Saskatchewan	Flax	Tolerant to soil residues of sulfonyl urea herbicide	CDC Triffid
98-329-01p		AgrEvo	Rice	Phosphinothricin tolerant	LLRICE06, LLRICE62
98-278-01p		AgrEvo	Rapeseed	Phosphinothricin tolerant & Pollination control	MS8 & RF3
98-238-01p		AgrEvo	Soybean	Phosphinothricin tolerant	GU262
98-216-01p		Monsanto	Rapeseed	Glyphosate tolerant	RT73
98-173-01p		Novartis Seeds & Monsanto	Beet	Glyphosate tolerant	GTSB77
98-014-01p	96-068-01p	AgrEvo	Soybean	Phosphinothricin tolerant	A5547-127
97-342-01p		Pioneer	Corn	Male sterile & Phosphinothricin tolerant	676, 678, 680
97-339-01p		Monsanto	Potato	CPB & PVY resistant	RBMT15-101, SEMT15-02, SEMT15-15
97-336-01p		AgrEvo	Beet	Phosphinothricin tolerant	T-120-7
97-287-01p		Monsanto	Tomato	Lepidopteran resistant	5345
97-265-01p		AgrEvo	Corn	Phosphinothricin tolerant & Lep. resistant	CBH-351
97-205-01p		AgrEvo	Rapeseed	Phosphinothricin tolerant	T45
97-204-01p		Monsanto	Potato	CPB & PLRV resistant	RBMT21-129 & RBMT21-350
97-148-01p		Bejo	Cichorium intybus	Male sterile	RM3-3, RM3-4, RM3-6

97-099-01p		Monsanto	Corn	Glyphosate tolerant	GA21
97-013-01p		Calgene	Cotton	Bromoxynil tolerant & Lepidopteran resistant	Events 31807 & 31808
97-008-01p		Du Pont	Soybean	Oil profile altered	G94-1, G94-19, G-168
96-317-01p		Monsanto	Corn	Glyphosate tolerant & ECB resistant	MON802
96-291-01p		DeKalb	Corn	European Corn Borer resistant	DBT418
96-248-01p	92-196-01p	Calgene	Tomato	Fruit ripening altered	1 additional FLAVRSAVR line
96-068-01p		AgrEvo	Soybean	Phosphinothricin tolerant	W62, W98, A2704-12, A2704-21, A5547-35
96-051-01p		Cornell U	Papaya	PRSV resistant	55-1, 63-1
96-017-01p	95-093-01p	Monsanto	Corn	European Corn Borer resistant	MON809 & MON810
95-352-01p		Asgrow	Squash	CMV, ZYMV, WMV2 resistant	CZW-3
95-338-01p		Monsanto	Potato	CPB resistant	SBT02-5 & -7, ATBT04-6 &-27, -30, -31, -36
95-324-01p		Agritope	Tomato	Fruit ripening altered	35 1 N
95-256-01p		Du Pont	Cotton	Sulfonylurea tolerant	19-51a
95-228-01p		Plant Genetic Systems	Corn	Male sterile	MS3
95-195-01p		Northrup King	Corn	European Corn Borer resistant	Bt11
95-179-01p	92-196-01p	Calgene	Tomato	Fruit ripening altered	2 additional FLAVRSAVR lines
95-145-01p		DeKalb	Corn	Phosphinothricin tolerant	B16
95-093-01p		Monsanto	Corn	Lepidopteran resistant	MON 80100
95-053-01p		Monsanto	Tomato	Fruit ripening altered	8338
95-045-01p		Monsanto	Cotton	Glyphosate tolerant	1445, 1698
95-030-01p	92-196-01p	Calgene	Tomato	Fruit ripening altered	20 additional FLAVRSAVR lines
94-357-01p		AgrEvo	Corn	Phosphinothricin tolerant	T14, T25
94-319-01p		Ciba Seeds	Corn	Lepidopteran resistant	Event 176
94-308-01p		Monsanto	Cotton	Lepidopteran resistant	531, 757, 1076
94-290-01p		Zeneca & Petoseed	Tomato	Fruit polygalacturonase level decreased	B, Da, F
94-257-01p		Monsanto	Potato	Coleopteran resistant	BT6, BT10, BT12, BT16, BT17, BT18, BT23
94-230-	92-196-01p	Calgene	Tomato	Fruit ripening altered	9 additional

01p					FLAVRSAVR lines
94-228-01p		DNA Plant Tech	Tomato	Fruit ripening altered	1345-4
94-227-01p	92-196-01p	Calgene	Tomato	Fruit ripening altered	Line N73 1436-111
94-090-01p		Calgene	Rapeseed	Oil profile altered	pCGN3828-212/86- 18 & 23
93-258-01p		Monsanto	Soybean	Glyphosate tolerant	40-3-2
93-196-01p		Calgene	Cotton	Bromoxynil tolerant	BXN
92-204-01p		Upjohn	Squash	WMV2 & ZYMV resistant	ZW-20
92-196-01p		Calgene	Tomato	Fruit ripening altered	FLAVR SAVR

***** Extension of Petition Number: Under 7CFR 340.6(e) a person may request that APHIS extend a determination of non-regulated status to other organisms based on their similarity of the previously deregulated article. This column lists the previously granted petition of that degregulated article.**
****** Preliminary EA: The Environmental Assessment initially available for Public comment prior to finalization.**

Table C

Plant species	Event	Trait	Patent reference
Corn	PV-ZMGT32 (NK603)	Glyphosate tolerance	US 2007-056056
Corn	MIR604	Insect resistance (Cry3a055)	EP 1 737 290
Corn	LY038	High lysine content	US 7,157,281
Corn	3272	Self processing corn (alpha-amylase)	US 2006-230473
Corn	PV-ZMIR13 (MON863)	Insect resistance (Cry3Bb)	US 2006-095986
Corn	DAS-59122-7	Insect resistance (Cry34Ab1/Cry35Ab1)	US 2006-070139
Corn	TC1507	Insect resistance (Cry1F)	US 7,435,807
Corn	MON810	Insect resistance (Cry1Ab)	US 2004-180373
Corn	VIP1034	Insect resistance	WO 03/052073
Corn	B16	Glufosinate resistance	US 2003-126634
Corn	GA21	Glyphosate resistance	US 6,040,497
Corn	GG25	Glyphosate resistance	US 6,040,497
Corn	GJ11	Glyphosate resistance	US 6,040,497
Corn	FI117	Glyphosate resistance	US 6,040,497
Corn	GAT-ZM1	Glufosinate tolerance	WO 01/51654
Corn	MON87460	Drought tolerance	WO 2009/111263
Corn	DP-098140-6	Glyphosate tolerance / ALS inhibitor tolerance	WO 2008/112019
Wheat	Event 1	Fusarium resistance (trichothecene 3-O-	CA 2561992

		acetyltransferase)	
Sugar beet	T227-1	Glyphosate tolerance	US 2004-117870
Sugar beet	H7-1	Glyphosate tolerance	WO 2004-074492
Soybean	MON89788	Glyphosate tolerance	US 2006-282915
Soybean	A2704-12	Glufosinate tolerance	WO 2006/108674
Soybean	A5547-35	Glufosinate tolerance	WO 2006/108675
Soybean	DP-305423-1	High oleic acid / ALS inhibitor tolerance	WO 2008/054747
Rice	GAT-OS2	Glufosinate tolerance	WO 01/83818
Rice	GAT-OS3	Glufosinate tolerance	US 2008-289060
Rice	PE-7	Insect resistance (Cry1Ac)	WO 2008/114282
Oilseed rape	MS-B2	Male sterility	WO 01/31042
Oilseed rape	MS-BN1/RF-BN1	Male sterility/restoration	WO 01/41558
Oilseed rape	RT73	Glyphosate resistance	WO 02/36831
Cotton	CE43-67B	Insect resistance (Cry1Ab)	WO 2006/128573
Cotton	CE46-02A	Insect resistance (Cry1Ab)	WO 2006/128572
Cotton	CE44-69D	Insect resistance (Cry1Ab)	WO 2006/128571
Cotton	1143-14A	Insect resistance (Cry1Ab)	WO 2006/128569
Cotton	1143-51B	Insect resistance (Cry1Ab)	WO 2006/128570
Cotton	T342-142	Insect resistance (Cry1Ab)	WO 2006/128568
Cotton	event3006-210-23	Insect resistance (Cry1Ac)	WO 2005/103266
Cotton	PV-GHGT07 (1445)	Glyphosate tolerance	US 2004-148666
Cotton	MON88913	Glyphosate tolerance	WO 2004/072235
Cotton	EE-GH3	Glyphosate tolerance	WO 2007/017186
Cotton	T304-40	Insect-resistance (Cry1Ab)	WO2008/122406
Cotton	Cot202	Insect resistance (VIP3)	US 2007-067868
Cotton	LLcotton25	Glufosinate resistance	WO 2007/017186
Cotton	EE-GH5	Insect resistance (Cry1Ab)	WO 2008/122406
Cotton	event 281-24-236	Insect resistance (Cry1F)	WO 2005/103266
Cotton	Cot102	Insect resistance (Vip3A)	US 2006-130175
Cotton	MON 15985	Insect resistance (Cry1A/Cry2Ab)	US 2004-250317
Bent Grass	Asr-368	Glyphosate tolerance	US 2006-162007
Brinjal	EE-1	Insect resistance (Cry1Ac)	WO 2007/091277

Among the diseases of plants or crops that can be controlled by the method according to the invention, mention can be made of :

Powdery mildew diseases such as :

Blumeria diseases, caused for example by *Blumeria graminis* ;

Podosphaera diseases, caused for example by *Podosphaera leucotricha* ;

Sphaerotheca diseases, caused for example by *Sphaerotheca fuliginea* ;

Uncinula diseases, caused for example by *Uncinula necator* ;

Rust diseases such as :

Gymnosporangium diseases, caused for example by *Gymnosporangium sabinae* ;

Hemileia diseases, caused for example by *Hemileia vastatrix* ;

Phakopsora diseases, caused for example by *Phakopsora pachyrhizi* or *Phakopsora meibomiae* ;

Puccinia diseases, caused for example by *Puccinia recondite*, *Puccinia graminis or Puccinia striiformis*;

Uromyces diseases, caused for example by *Uromyces appendiculatus* ;

Oomycete diseases such as :

Albugo diseases caused for example by *Albugo candida*;

Bremia diseases, caused for example by *Bremia lactucae* ;

Peronospora diseases, caused for example by *Peronospora pisi* or *P. brassicae* ;

Phytophthora diseases, caused for example by *Phytophthora infestans* ;

Plasmopara diseases, caused for example by Pla*smopara viticola* ;

Pseudoperonospora diseases, caused for example by *Pseudoperonospora humuli* or *Pseudoperonospora cubensis* ;

Pythium diseases, caused for example by *Pythium ultimum* ;

Leafspot, leaf blotch and leaf blight diseases such as :

Alternaria diseases, caused for example by *Alternaria solani* ;

Cercospora diseases, caused for example by *Cercospora beticola* ;

Cladiosporum diseases, caused for example by *Cladiosporium cucumerinum* ;

Cochliobolus diseases, caused for example by *Cochliobolus sativus* (Conidiaform: Drechslera, Syn: Helminthosporium) or *Cochliobolus miyabeanus* ;

Colletotrichum diseases, caused for example by *Colletotrichum lindemuthanium* ;

Cycloconium diseases, caused for example by *Cycloconium oleaginum* ;

Diaporthe diseases, caused for example by *Diaporthe citri* ;

Elsinoe diseases, caused for example by *Elsinoe fawcettii* ;

Gloeosporium diseases, caused for example by *Gloeosporium laeticolor* ;

Glomerella diseases, caused for example by *Glomerella cingulata* ;

Guignardia diseases, caused for example by *Guignardia bidwelli* ;

Leptosphaeria diseases, caused for example by *Leptosphaeria maculans* ; *Leptosphaeria nodorum* ;

Magnaporthe diseases, caused for example by *Magnaporthe grisea* ;

Mycosphaerella diseases, caused for example by *Mycosphaerella graminicola* ; Mycosphaerella arachidicola ; *Mycosphaerella fijiensis* ;

Phaeosphaeria diseases, caused for example by *Phaeosphaeria nodorum* ;

Pyrenophora diseases, caused for example by *Pyrenophora teres*, or *Pyrenophora tritici repentis*;

Ramularia diseases, caused for example by *Ramularia collo-cygni* , or *Ramularia areola*;

Rhynchosporium diseases, caused for example by *Rhynchosporium secalis* ;

Septoria diseases, caused for example by *Septoria apii* or *Septoria lycopercisi* ;

Typhula diseases, caused for example by *Typhula incarnata* ;

Venturia diseases, caused for example by *Venturia inaequalis* ;

Root, Sheath and stem diseases such as :

Corticium diseases, caused for example by *Corticium graminearum* ;

Fusarium diseases, caused for example by *Fusarium oxysporum* ;

Gaeumannomyces diseases, caused for example by *Gaeumannomyces graminis* ;

Rhizoctonia diseases, caused for example by *Rhizoctonia solani* ;

Sarocladium diseases caused for example by *Sarocladium oryzae*;

Sclerotium diseases caused for example by *Sclerotium oryzae*;

Tapesia diseases, caused for example by *Tapesia acuformis* ;

Thielaviopsis diseases, caused for example by *Thielaviopsis basicola* ;

Ear and panicle diseases such as :

Alternaria diseases, caused for example by *Alternaria spp.* ;

Aspergillus diseases, caused for example by *Aspergillus flavus* ;

Cladosporium diseases, caused for example by *Cladosporium spp.* ;

Claviceps diseases, caused for example by *Claviceps purpurea* ;

Fusarium diseases, caused for example by *Fusarium culmorum* ;

Gibberella diseases, caused for example by *Gibberella zeae* ;

Monographella diseases, caused for example by *Monographella nivalis* ;

Smut and bunt diseases such as :

Sphacelotheca diseases, caused for example by *Sphacelotheca reiliana* ;

Tilletia diseases, caused for example by *Tilletia caries* ;

Urocystis diseases, caused for example by *Urocystis occulta* ;

Ustilago diseases, caused for example by *Ustilago nuda* ;

Fruit rot and mould diseases such as :

Aspergillus diseases, caused for example by *Aspergillus flavus* ;

Botrytis diseases, caused for example by *Botrytis cinerea* ;

Penicillium diseases, caused for example by *Penicillium expansum* ;

Rhizopus diseases caused by example by *Rhizopus stolonifer*

Sclerotinia diseases, caused for example by *Sclerotinia sclerotiorum* ;

Verticilium diseases, caused for example by *Verticilium alboatrum* ;

Seed and soilborne decay, mould, wilt, rot and damping-off diseases :

Alternaria diseases, caused for example by *Alternaria brassicicola*

Aphanomyces diseases, caused for example by *Aphanomyces euteiches*

Ascochyta diseases, caused for example by *Ascochyta lentis*

Aspergillus diseases, caused for example by *Aspergillus flavus*

Cladosporium diseases, caused for example by *Cladosporium herbarum*

Cochliobolus diseases, caused for example by *Cochliobolus sativus*

(Conidiaform: *Drechslera, Bipolaris Syn: Helminthosporium*);

Colletotrichum diseases, caused for example by *Colletotrichum coccodes*;

Fusarium diseases, caused for example by *Fusarium culmorum*;

Gibberella diseases, caused for example by *Gibberella zeae*;

Macrophomina diseases, caused for example by *Macrophomina* phaseolina

Monographella diseases, caused for example by *Monographella nivalis*;

Penicillium diseases, caused for example by *Penicillium expansum*
Phoma diseases, caused for example by *Phoma lingam*
Phomopsis diseases, caused for example by *Phomopsis sojae*;
Phytophthora diseases, caused for example by Phytophthora cactorum;
Pyrenophora diseases, caused for example by *Pyrenophora graminea*
Pyricularia diseases, caused for example by *Pyricularia oryzae*;
Pythium diseases, caused for example by *Pythium ultimum*;
Rhizoctonia diseases, caused for example by *Rhizoctonia solani*;
Rhizopus diseases, caused for example by *Rhizopus oryzae*
Sclerotium diseases, caused for example by *Sclerotium rolfsii*;
Septoria diseases, caused for example by *Septoria nodorum*;
Typhula diseases, caused for example by *Typhula incarnata*;
Verticillium diseases, caused for example by *Verticillium dahliae* ;

Canker, broom and dieback diseases such as :

Nectria diseases, caused for example by *Nectria galligena* ;

Blight diseases such as :

Monilinia diseases, caused for example by *Monilinia laxa* ;

Leaf blister or leaf curl diseases such as :

Exobasidium diseases caused for example by *Exobasidium vexans*
Taphrina diseases, caused for example by *Taphrina deformans* ;

Decline diseases of wooden plants such as :

Esca diseases, caused for example by *Phaemoniella clamydospora* ;
Eutypa dyeback, caused for example by *Eutypa lata* ;
Ganoderma diseases caused for example by *Ganoderma boninense*;
Rigidoporus diseases caused for example by *Rigidoporus lignosus*

Diseases of Flowers and Seeds such as

Botrytis diseases caused for example by *Botrytis cinerea*;

Diseases of Tubers such as

Rhizoctonia diseases caused for example by *Rhizoctonia solani*;
Helminthosporium diseases caused for example by *Helminthosporium solani*;

Club root diseases such as

Plasmodiophora diseases, cause for example by *Plamodiophora brassicae*.

Diseases caused by Bacterial Organisms such as

Xanthomonas species for example *Xanthomonas campestris* pv. oryzae;
Pseudomonas species for example *Pseudomonas syringae* pv. lachrymans;
Erwinia species for example *Erwinia amylovora*.

The composition according to the invention may also be used against fungal diseases liable to grow on or inside timber. The term “timber” means all types of species of wood, and all types of working of this wood intended for construction, for example solid wood, high-density wood, laminated wood, and plywood. The method for treating timber according to the invention mainly consists in contacting one or more

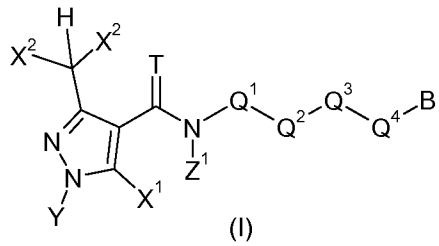
compounds according to the invention or a composition according to the invention; this includes for example direct application, spraying, dipping, injection or any other suitable means.

The dose of active compound usually applied in the method of treatment according to the invention is generally and advantageously from 10 to 800 g/ha, preferably from 50 to 300 g/ha for applications in foliar treatment. The dose of active substance applied is generally and advantageously from 2 to 200 g per 100 kg of seed, preferably from 3 to 150 g per 100 kg of seed in the case of seed treatment.
It is clearly understood that the doses indicated herein are given as illustrative examples of the method according to the invention. A person skilled in the art will know how to adapt the application doses, notably according to the nature of the plant or crop to be treated.

The compounds or mixtures according to the invention can also be used for the preparation of composition useful to curatively or preventively treat human or animal fungal diseases such as, for example, mycoses, dermatoses, trichophyton diseases and candidiases or diseases caused by *Aspergillus spp.*, for example *Aspergillus fumigatus*.

The various aspects of the invention will now be illustrated with reference to the following table of compound examples and the following preparation or efficacy examples.

Table 1 illustrates in a non-limiting manner examples of compounds of formula (I) according to the invention :

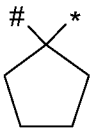
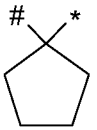


(I)

In table 1, unless otherwise specified, M+H (Apcl+) means the molecular ion peak plus 1 a.m.u. (atomic mass unit) as observed in mass spectroscopy via positive atmospheric pressure chemical ionisation.

In table 1, the logP values were determined in accordance with EEC Directive 79/831 Annex V.A8 by HPLC (High Performance Liquid Chromatography) on a reversed-phase column (C 18), using the method described below :
Temperature: 40°C ; Mobile phases : 0.1% aqueous formic acid and acetonitrile ; linear gradient from 10% acetonitrile to 90% acetonitrile.
Calibration was carried out using unbranched alkan-2-ones (comprising 3 to 16 carbon atoms) with known logP values (determination of the logP values by the retention times using linear interpolation between two successive alkanones). lambda-max-values were determined using UV-spectra from 200 nm to 400 nm and the peak values of the chromatographic signals.

Table 1:

Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
1	F	F	Me	O	isopropyl	CH2	C=O	NH	-	phenyl	2.25	369
2	Cl	F	Me	O	isopropyl	CH2	C=O	NH	-	phenyl	2.43	385
3	F	F	Me	O	H		C=O	NH	-	phenyl	2.46	381
4	Cl	F	Me	O	H		C=O	NH	-	phenyl	2.62	397
5	Cl	F	Me	O	methyl	CH2	CH2	CH2	-	phenyl	2.82	342
6	F	F	Me	O	methyl	CH2	CH2	CH2	-	phenyl	2.73	326
7	Cl	F	Me	O	propyl	CH2	CH2	O	-	phenyl	3.21	372
8	F	F	Me	O	propyl	CH2	CH2	O	-	phenyl	3.06	356
9	F	F	Me	O	cyclopropyl	CH(Me)	C(Me)2	CH2	-	phenyl	4.06	394
10	Cl	F	Me	O	cyclopropyl	CH(Me)	C(Me)2	CH2	-	phenyl	4.27	410

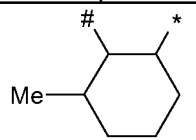
Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
11	Cl	F	Me	O	H	CH(Me)	CH2	CH2	-	phenyl	3.04	342
12	F	F	Me	O	H	CH(Me)	CH2	CH2	-	phenyl	2.88	326
13	F	F	Me	O	H	CH(Me)	CH2	O	-	phenyl	2.66	328
14	Cl	F	Me	O	H	CH(Me)	CH2	O	-	phenyl	2.84	344
15	Cl	F	Me	O	methyl	CH(Me)	CH2	O	-	phenyl	2.78	358
16	F	F	Me	O	methyl	CH(Me)	CH2	O	-	phenyl	2.62	342
17	F	F	Me	O	H	CH(c-Pr)	CH2	NMe	-	phenyl	3.02	367
18	Cl	F	Me	O	H	CH(c-Pr)	CH2	NMe	-	phenyl	3.31	383
19	F	F	Me	O	H	CH(c-Pr)	CH2	O	-	phenyl	3.06	354
20	Cl	F	Me	O	H	CH(c-Pr)	CH2	O	-	phenyl	3.25	370
21	F	F	Me	O	methyl	CH(c-Pr)	CH2	O	-	phenyl	3.08	368
22	F	F	Me	O	H	CH(c-Pr)	CH2	S	-	phenyl	3.25	370
23	Cl	F	Me	O	H	CH(c-Pr)	CH2	S	-	phenyl	3.44	386

Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
24	F	F	Me	O	H	C(Me)2	C=O	NH	-	phenyl	2.10	355
25	Cl	F	Me	O	H	C(Me)2	C=O	NH	-	phenyl	2.27	371
26	Cl	F	Me	O	H	CH2	CH2	O	-	biphenyl-4-yl	3.60	406
27	F	F	Me	O	H	CH2	CH2	O	-	biphenyl-4-yl	3.44	390
28	Cl	F	Me	O	cyclopropyl	CH2	CH2	O	-	biphenyl-4-yl	4.03	446
29	F	F	Me	O	cyclopropyl	CH2	CH2	O	-	biphenyl-4-yl	3.90	430
30	F	F	Me	O	propyl	CH(Me)	CH2	O	-	biphenyl-2-yl	4.32	446
31	Cl	F	Me	O	propyl	CH(Me)	CH2	O	-	biphenyl-2-yl	4.51	462
32	Cl	F	Me	O	H	CH2	CH(CF3)	NMe	-	4-phenoxyphenyl	4.27	503
33	F	F	Me	O	H	CH2	CH(CF3)	NMe	-	4-phenoxyphenyl	4.16	487
34	F	F	Me	O	H	CH2	CH2	O	-	4-phenoxyphenyl	3.42	406
35	Cl	F	Me	O	H	CH2	CH2	O	-	4-phenoxyphenyl	3.55	422
36	F	F	Me	O	H	CH(Me)	CH2	CH2	-	4-methylpyridin-2-yl	1.96	343

Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
37	Cl	F	Me	O	H	CH(Me)	CH2	O	-	4-methylpyridin-2-yl	2.13	359
38	F	F	Me	O	ethyl	CH(Me)	CH2	O	-	4-methylphenyl	3.27	370
39	Cl	F	Me	O	ethyl	CH(Me)	CH2	O	-	4-methylphenyl	3.48	386
40	F	F	Me	O	methyl	CH(c-Pr)	CH2	S	-	4-methylphenyl	3.64	398
41	Cl	F	Me	O	methyl	CH(c-Pr)	CH2	S	-	4-methylphenyl	3.85	414
42	F	F	Me	O	H	CH(Et)	CH2	CH2	-	4-methoxypyridin-2-yl	1.70	373
43	Cl	F	Me	O	H	CH(Et)	CH2	O	-	4-methoxypyridin-2-yl	1.86	389
44	F	F	Me	O	H		CH2	O	-	4-chlorophenyl	3.00	374
45	Cl	F	Me	O	H		CH2	O	-	4-chlorophenyl	3.19	390
46	F	F	Me	O	H	CH2	CH(CF3)	S	-	4-chlorophenyl	3.73	432
47	Cl	F	Me	O	H	CH2	CH(CF3)	S	-	4-chlorophenyl	3.89	448
48	F	F	Me	O	H	CH2	CH2	O	-	4-chlorophenyl	2.78	348

Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
49	Cl	F	Me	O	H	CH2	CH2	O	-	4-chlorophenyl	2.96	364
50	F	F	Me	O	cyclobutyl	CH2	CH2	O	-	4-chlorophenyl	3.78	402
51	Cl	F	Me	O	cyclopentyl	CH2	CH2	O	-	4-chlorophenyl	4.32	432
52	Cl	F	Me	O	cyclobutyl	CH2	CH2	O	-	4-chlorophenyl	3.99	418
53	Cl	F	Me	O	isopropyl	CH2	CH2	O	-	4-chlorophenyl	3.78	406
54	Cl	F	Me	O	propyl	CH2	CH2	O	-	4-chlorophenyl	3.67	406
55	F	F	Me	O	cyclopentyl	CH2	CH2	O	-	4-chlorophenyl	4.13	416
56	F	F	Me	O	isopropyl	CH2	CH2	O	-	4-chlorophenyl	3.62	390
57	F	F	Me	O	propyl	CH2	CH2	O	-	4-chlorophenyl	3.53	390
58	F	F	Me	O	H	CH2	CH2	SO2	-	4-chlorophenyl	2.10	396
59	Cl	F	Me	O	H	CH2	CH2	SO2	-	4-chlorophenyl	2.30	412
60	F	F	Me	O	H	CH(t-Bu)	CH2	CH2	-	4-chlorophenyl	4.24	402
61	Cl	F	Me	O	H	CH(tBu)	CH2	CH2	-	4-chlorophenyl	4.41	418

Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
62	Cl	F	Me	O	H	CH(iPr)	CH2	CH2	-	4-chlorophenyl	4.11	404
63	F	F	Me	O	H	CH(iPr)	CH2	CH2	-	4-chlorophenyl	3.94	388
64	Cl	F	Me	O	H	CH(Me)	CH2	CH2	-	4,6-dimethylpyridin-2-yl	1.81	373
65	F	F	Me	O	H	CH(Me)	CH2	CH2	-	4,6-dimethylpyridin-2-yl	1.60	357
66	F	F	Me	O	H	CH(Et)	CH2	CH2	-	4,6-dimethylpyridin-2-yl	1.93	371
67	Cl	F	Me	O	H	CH(Et)	CH2	O	-	4,6-dimethylpyridin-2-yl	2.14	387
68	F	F	Me	O	H	CH2	CH2	O	-	4-(trifluoromethyl)-phenyl	3.04	382
69	Cl	F	Me	O	H	CH2	CH2	O	-	4-(trifluoromethyl)-phenyl	3.17	398
70	Cl	F	Me	O	H	CH(Me)	CH2	CH2	-	4-(trifluoromethyl)-phenyl	3.63	410
71	F	F	Me	O	H	CH(Me)	CH2	CH2	-	4-(trifluoromethyl)-phenyl	3.46	394
72	Cl	F	Me	O	propyl	CH2	CH2	O	-	4-(ethoxycarbonyl)-phenyl	3.44	444
73	F	F	Me	O	propyl	CH2	CH2	O	-	4-(ethoxycarbonyl)-phenyl	3.31	428
74	F	F	Me	O	H	CH2	CH2	O	-	3-phenoxyphenyl	3.41	406

Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
75	Cl	F	Me	O	H	CH2	CH2	O	-	3-phenoxyphenyl	3.60	422
76	Cl	F	Me	O	H	CH(Me)	CH2	CH2	-	3-methylthiophen-2-yl	3.17	362
77	F	F	Me	O	H	CH(Me)	CH2	CH2	-	3-methylthiophen-2-yl	3.02	346
78	Cl	F	Me	O	H	CH(Et)	CH2	CH2	-	3-methylthiophen-2-yl	3.48	376
79	F	F	Me	O	H	CH(Et)	CH2	CH2	-	3-methylthiophen-2-yl	3.31	360
80	Cl	F	Me	O	H			CH2	-	3-chlorophenyl	4.51	430
81	Cl	F	Me	O	methyl	CH2	CH2	NMe	-	3-chlorophenyl	3.19	391
82	F	F	Me	O	methyl	CH2	CH2	NMe	-	3-chlorophenyl	3.02	375
83	Cl	F	Me	O	H	C(Me)2	CH2	CH2	-	3-chlorophenyl	4.01	390
84	F	F	Me	O	H	C(Me)2	CH2	CH2	-	3-chlorophenyl	3.83	374
85	Cl	F	Me	O	cyclopropyl	CH(Me)	CH2	CH2	-	3-chloro-5-(trifluoromethyl) pyridin-2-yl	4.11	485
86	F	F	Me	O	cyclopropyl	CH(Me)	CH2	CH2	-	3-chloro-5-(trifluoromethyl) pyridin-2-yl	3.92	469

Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
87	F	F	Me	O	methyl	CH(Me)	CH2	CH2	-	3-chloro-5-(trifluoromethyl) pyridin-2-yl	3.29	443
88	Cl	F	Me	O	methyl	CH(Me)	CH2	CH2	-	3-chloro-5-(trifluoromethyl) pyridin-2-yl	3.45	459
89	F	F	Me	O	H	CH(Et)	CH2	CH2	-	3-bromothiophen-2-yl	3.46	424
90	Cl	F	Me	O	H	CH(Et)	CH2	CH2	-	3-bromothiophen-2-yl	3.63	440
91	F	F	Me	O	cyclopropyl	CH2	CH2	CH2	-	1-benzofuran-2-yl	3.52	392
92	F	F	Me	O	H	CH2	CH2	CH2	-	1-benzofuran-2-yl	2.90	352
93	F	F	Me	O	methyl	CH2	CH2	CH2	-	1-benzofuran-2-yl	3.00	366
94	F	F	Me	O	cyclopropyl	CH2	CH2	CH2	-	1-benzothiophen-2-yl	3.79	408
95	F	F	Me	O	H	CH2	CH2	CH2	-	1-benzothiophen-2-yl	3.17	368
96	F	F	Me	O	methyl	CH2	CH2	CH2	-	1-benzothiophen-2-yl	3.25	382
97	F	F	Me	O	H	CH2	CH2	CH2	-	2,3-dihydro-1-benzofuran-2-yl	2.69	354
98	F	F	Me	O	cyclopropyl	CH2	CH2	CH2	-	2,3-dihydrofuran-2-yl	1.45	344
99	F	F	Me	O	cyclopropyl	CH2	CH2	CH2	-	2-furyl	2.75	342

Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
100	F	F	Me	O	H	CH2	CH2	CH2	-	2-furyl	2.17	302
101	F	F	Me	O	methyl	CH2	CH2	CH2	-	2-furyl	2.25	316
102	F	F	Me	O	cyclopropyl	CH2	CH2	CH2	-	2-thienyl	3.04	358
103	Cl	F	Me	O	cyclopropyl	CH(Me)	CH2	CH2	-	2-thienyl	3.57	388
104	F	F	Me	O	methyl	CH2	CH2	CH2	-	2-thienyl	2.52	332
105	F	F	Me	O	cyclopropyl	CH2	CH2	CH2	-	3-methyl-2-thienyl	3.33	372
106	F	F	Me	O	cyclopropyl	CH2	CH2	CH2	-	5-methyl-1-benzothiophen-2-yl	4.21	422
107	F	F	Me	O	cyclopropyl	CH2	CH2	CH(Me)	-	5-methyl-2-furyl	3.41	370
108	Cl	F	Me	O	cyclopropyl	CH2	CH2	CH(Me)	-	5-methyl-2-furyl	3.56	386
109	F	F	Me	O	methyl	CH2	CH2	CH(Me)	-	5-methyl-2-furyl	2.88	344
110	Cl	F	Me	O	methyl	CH2	CH2	CH(Me)	-	5-methyl-2-furyl	3.02	360
111	Cl	F	Me	O	methoxy	CH2	CH2	CH(Me)	-	5-methyl-2-furyl	3.29	376
112	F	F	Me	O	methoxy	CH2	CH2	CH(Me)	-	5-methyl-2-furyl	3.23	360

Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
113	F	F	Me	O	cyclopropyl	CH2	CH2	CH2	-	5-methyl-2-thienyl	3.44	372
114	F	F	Me	O	cyclopropyl	CH2	CH2	CH2	-	tetrahydrofuran-2-yl	2.21	346
115	Cl	F	Me	O	H	CH2	CH(Me)	CH2	-	3,5-dichlorophenyl	4.04	410
116	F	F	Me	O	H	CH2	CH(Me)	CH2	-	3,5-dichlorophenyl	3.83	394
117	F	F	Me	O	H	CH2	CH2	O	-	3,5-dichlorophenyl	3.35	382
118	Cl	F	Me	O	H	CH2	CH2	O	-	3,5-dichlorophenyl	3.55	398
119	Cl	F	Me	O	H	CH(Me)	CH2	CH2	-	3,5-dichlorophenyl	4.01	410
120	F	F	Me	O	H	CH(Me)	CH2	CH2	-	3,5-dichlorophenyl	3.83	394
121	F	F	Me	O	H	CH(Me)	CH2	O	-	3,5-dichlorophenyl	3.72	396
122	Cl	F	Me	O	H	CH(Me)	CH2	O	-	3,5-dichlorophenyl	3.92	412
123	F	F	Me	O	H	CH(Et)	CH2	O	-	3,5-dichlorophenyl	4.04	410
124	Cl	F	Me	O	H	CH(Et)	CH2	O	-	3,5-dichlorophenyl	4.23	426
125	Cl	F	Me	O	H	C(Me)2	CH2	CH2	-	3,5-dichlorophenyl	4.64	424

Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
126	F	F	Me	O	H	C(Me)2	CH2	CH2	-	3,5-dichlorophenyl	4.41	408
127	Cl	F	Me	O	H	CH2	CH(Me)	CH2	-	3,4-dichlorophenyl	3.87	410
128	F	F	Me	O	H	CH2	CH(Me)	CH2	-	3,4-dichlorophenyl	3.68	394
129	F	F	Me	O	cyclopropyl	CH(Me)	CH2	CH2	-	3,4-dichlorophenyl	4.44	434
130	Cl	F	Me	O	cyclopropyl	CH(Me)	CH2	CH2	-	3,4-dichlorophenyl	4.62	450
131	Cl	F	Me	O	H	CH(Me)	CH2	CH2	-	3,4-dichlorophenyl	3.85	410
132	F	F	Me	O	H	CH(Me)	CH2	CH2	-	3,4-dichlorophenyl	3.65	394
133	Cl	F	Me	O	H	C(Me)2	CH2	CH2	-	3,4-dichlorophenyl	4.44	424
134	F	F	Me	O	H	C(Me)2	CH2	CH2	-	3,4-dichlorophenyl	4.21	408
135	Cl	F	Me	O	H	C(Me)2	CH2	CH2	-	3-(trifluoromethyl) phenyl	4.11	424
136	F	F	Me	O	H	C(Me)2	CH2	CH2	-	3-(trifluoromethyl) phenyl	3.94	408
137	F	F	Me	O	H	CH(c-Pr)	CH2	O	-	2-naphthyl	3.74	404
138	Cl	F	Me	O	H	CH(c-Pr)	CH2	O	-	2-naphthyl	3.94	420

Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
139	F	F	Me	O	methyl	CH(c-Pr)	CH2	O	-	2-naphthyl	3.76	418
140	Cl	F	Me	O	methyl	CH(c-Pr)	CH2	O	-	2-naphthyl	3.96	434
141	Cl	F	Me	O	methyl	CH2	CH2	CH2	-	2-chlorophenyl	3.17	376
142	F	F	Me	O	methyl	CH2	CH2	CH2	-	2-chlorophenyl	3.06	360
143	Cl	F	Me	O	H	CH(Me)	CH2	CH2	-	2-chlorophenyl	3.41	376
144	F	F	Me	O	H	CH(Me)	CH2	CH2	-	2-chlorophenyl	3.21	360
145	F	F	Me	O	methyl	CH(c-Pr)	CH2	O	-	2-chlorophenyl	3.44	402
146	Cl	F	Me	O	methyl	CH(c-Pr)	CH2	O	-	2-chlorophenyl	3.67	418
147	Cl	F	Me	O	H	C(Me)2	CH2	CH2	-	2-chlorophenyl	3.99	390
148	F	F	Me	O	H	C(Me)2	CH2	CH2	-	2-chlorophenyl	3.79	374
149	Cl	F	Me	O	H	CH2	CH(Me)	CH2	-	2,6-dimethylphenyl	3.63	370
150	F	F	Me	O	H	CH2	CH(Me)	CH2	-	2,6-dimethylphenyl	3.44	354
151	F	F	Me	O	H	CH2	CH2	O	-	2,6-dimethylphenyl	2.88	342

Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
152	Cl	F	Me	O	H	CH2	CH2	O	-	2,6-dimethylphenyl	3.13	358
153	Cl	F	Me	O	H	CH(Me)	CH2	CH2	-	2,6-dimethylphenyl	3.61	370
154	F	F	Me	O	H	CH(Me)	CH2	CH2	-	2,6-dimethylphenyl	3.41	354
155	F	F	Me	O	cyclopropyl	CH(Me)	CH2	O	-	2,6-dimethylphenyl	3.94	396
156	Cl	F	Me	O	cyclopropyl	CH(Me)	CH2	O	-	2,6-dimethylphenyl	4.15	412
157	F	F	Me	O	H	CH2	CH(Me)	CH2	-	2,6-difluorophenyl	3.02	362
158	Cl	F	Me	O	H	CH2	CH(Me)	CH2	-	2,6-difluorophenyl	3.21	378
159	F	F	Me	O	H	CH2	CH2	O	-	2,6-difluorophenyl	2.44	350
160	Cl	F	Me	O	H	CH2	CH2	O	-	2,6-difluorophenyl	2.64	366
161	Cl	F	Me	O	cyclopropyl	CH2	CH2	O	-	2,6-dichlorophenyl	3.69	438
162	F	F	Me	O	cyclopropyl	CH2	CH2	O	-	2,6-dichlorophenyl	3.55	422
163	F	F	Me	O	H	CH(Me)	CH2	CH2	-	2,6-dichlorophenyl	3.59	394
164	Cl	F	Me	O	H	CH2	CH(Me)	CH2	-	2,5-dichlorophenyl	3.87	410

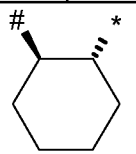
Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
165	F	F	Me	O	H	CH2	CH(Me)	CH2	-	2,5-dichlorophenyl	3.65	394
166	F	F	Me	O	methyl	CH2	CH2	CH2	-	2,5-dichlorophenyl	3.48	394
167	Cl	F	Me	O	methyl	CH2	CH2	CH2	-	2,5-dichlorophenyl	3.62	410
168	F	F	Me	S	Me	CH2	CH2	CH2	-	2,5-dichlorophenyl	4.11	410
169	F	F	Me	O	H	CH2	CH2	O	-	2,5-dichlorophenyl	3.11	382
170	Cl	F	Me	O	H	CH2	CH2	O	-	2,5-dichlorophenyl	3.31	398
171	Cl	F	Me	O	H	CH(Me)	CH2	CH2	-	2,5-dichlorophenyl	3.87	410
172	F	F	Me	O	H	CH(Me)	CH2	CH2	-	2,5-dichlorophenyl	3.68	394
173	F	F	Me	O	H	CH(Me)	CH2	O	-	2,5-dichlorophenyl	3.46	396
174	Cl	F	Me	O	H	CH(Me)	CH2	O	-	2,5-dichlorophenyl	3.69	412
175	F	F	Me	O	H	CH(Et)	CH2	O	-	2,5-dichlorophenyl	3.83	410
176	Cl	F	Me	O	H	CH(Et)	CH2	O	-	2,5-dichlorophenyl	4.01	426
177	Cl	F	Me	O	H	C(Me)2	CH2	CH2	-	2,5-dichlorophenyl	4.49	424

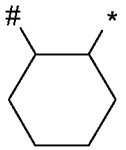
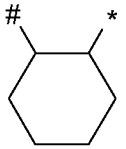
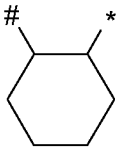
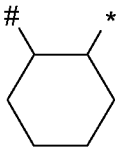
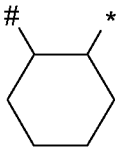
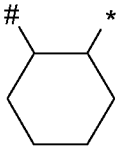
Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
178	F	F	Me	O	H	C(Me)2	CH2	CH2	-	2,5-dichlorophenyl	4.26	408
179	Cl	F	Me	O	H	CH2	CH2	CH2	-	2,4-dichlorophenyl	3.68	396
180	F	F	Me	O	H	CH2	CH2	CH2	-	2,4-dichlorophenyl	3.46	380
181	F	F	Me	O	cyclopropyl	CH(Me)	C(Me)2	CH2	-	2,4-dichlorophenyl	5.14	462
182	Cl	F	Me	O	cyclopropyl	CH(Me)	C(Me)2	CH2	-	2,4-dichlorophenyl	5.39	478
183	Cl	F	Me	O	cyclopropyl	CH(Me)	CH2	CH2	-	2,4-dichlorophenyl	4.72	450
184	F	F	Me	O	cyclopropyl	CH(Me)	CH2	CH2	-	2,4-dichlorophenyl	4.56	434
185	Cl	F	Me	O	H	CH(Me)	CH2	CH2	-	2,4-dichlorophenyl	3.99	410
186	F	F	Me	O	H	CH(Me)	CH2	CH2	-	2,4-dichlorophenyl	3.79	394
187	F	F	Me	O	cyclopropyl	CH(Me)	CH2	O	-	2,4-dichlorophenyl	4.16	436
188	Cl	F	Me	O	cyclopropyl	CH(Me)	CH2	O	-	2,4-dichlorophenyl	4.41	452
189	F	F	Me	O	H	CH(Me)	CH2	O	-	2,4-dichlorophenyl	3.58	396
190	Cl	F	Me	O	H	CH(Me)	CH2	O	-	2,4-dichlorophenyl	3.76	412

Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
191	F	F	Me	O	H	CH(Me)	CH2	S	-	2,4-dichlorophenyl	3.76	412
192	Cl	F	Me	O	H	CH(Me)	CH2	S	-	2,4-dichlorophenyl	4.01	428
193	F	F	Me	O	H	CH(c-Pr)	CH2	O	-	2,4-dichlorophenyl	3.92	422
194	Cl	F	Me	O	H	CH(c-Pr)	CH2	O	-	2,4-dichlorophenyl	4.18	438
195	Cl	F	Me	O	H	C(Me)2	CH2	CH2	-	2,4-dichlorophenyl	4.61	424
196	F	F	Me	O	H	C(Me)2	CH2	CH2	-	2,4-dichlorophenyl	4.39	408
197	F	F	Me	O	H	CH2	C=O	NH	-	2,4,6-trichlorophenyl	2.39	429
198	Cl	F	Me	O	H	CH2	C=O	NH	-	2,4,6-trichlorophenyl	2.56	445
199	Cl	F	Me	O	propyl	CH2	C=O	NH	-	2,4,6-trichlorophenyl	3.11	487
200	F	F	Me	O	propyl	CH2	C=O	NH	-	2,4,6-trichlorophenyl	2.96	471
201	Cl	F	Me	O	H	CH2	CH2	O	-	2,4,6-trichlorophenyl	3.80	432
202	F	F	Me	O	H	CH2	CH2	O	-	2,4,6-trichlorophenyl	3.60	416
203	F	F	Me	O	isopropyl	CH2	CH2	O	-	2,4,6-trichlorophenyl	4.51	458

Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
204	F	F	Me	O	propyl	CH2	CH2	O	-	2,4,6-trichlorophenyl	4.37	458
205	Cl	F	Me	O	propyl	CH2	CH2	O	-	2,4,6-trichlorophenyl	4.56	474
206	Cl	F	Me	O	cyclopentyl	CH2	CH2	O	-	2,4,6-trichlorophenyl	5.27	500
207	Cl	F	Me	O	3-oxetanyl	CH2	CH2	O	-	2,4,6-trichlorophenyl	3.55	488
208	Cl	F	Me	O	isopropyl	CH2	CH2	O	-	2,4,6-trichlorophenyl	4.71	474
209	F	F	Me	O	cyclopentyl	CH2	CH2	O	-	2,4,6-trichlorophenyl	5.08	484
210	F	F	Me	O	3-oxetanyl	CH2	CH2	O	-	2,4,6-trichlorophenyl	3.42	472
211	Cl	F	Me	O	H	CH(Me)	CH2	O	-	2,4,6-trichlorophenyl	4.20	446
212	F	F	Me	O	H	CH(Me)	CH2	O	-	2,4,6-trichlorophenyl	3.92	430
213	F	F	Me	O	cyclopropyl	CH(Me)	CH2	CH2	-	2,4,6-trichlorophenyl	5.14	468
214	Cl	F	Me	O	cyclopropyl	CH(Me)	CH2	CH2	-	2,4,6-trichlorophenyl	5.31	484
215	F	F	Me	O	H	CH(Me)	CH2	CH2	-	2,4,6-trichlorophenyl	4.29	428
216	Cl	F	Me	O	H	CH(Me)	CH2	CH2	-	2,4,6-trichlorophenyl	4.53	444

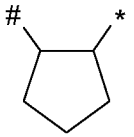
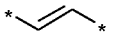
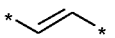
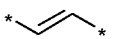
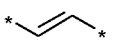
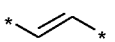
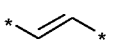
Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
217	F	F	Me	O	methoxy	CH(Me)	CH2	CH2	-	2,4,6-trichlorophenyl	4.77	458
218	Cl	F	Me	O	methoxy	CH(Me)	CH2	CH2	-	2,4,6-trichlorophenyl	4.89	474
219	F	F	Me	S	cyclopropyl	CH(Me)	CH2	CH2	-	2,4,6-trichlorophenyl	5.81	484
220	Cl	F	Me	O	cyclopropyl	CH(Me)	CH2	CH2	-	2-(trifluoromethyl) phenyl	4.26	450
221	F	F	Me	O	cyclopropyl	CH(Me)	CH2	CH2	-	2-(trifluoromethyl) phenyl	4.09	434
222	F	F	Me	O	H	CH(Et)	CH2	O	-	1-naphthyl	3.71	392
223	Cl	F	Me	O	H	CH(Et)	CH2	O	-	1-naphthyl	3.85	408
224	Cl	F	Me	O	methyl	CH(c-Pr)	CH2	S	CH2	phenyl	3.62	414
225	F	F	Me	O	methyl	CH(c-Pr)	CH2	S	CH2	phenyl	3.46	398
226	F	F	Me	O	methyl	CH2	C=O	O	CH2	phenyl	2.44	356
227	F	F	Me	O	methyl	CH(i-Pr)	C=O	O	CH2	phenyl	3.35	398
228	Cl	F	Me	O	methyl	CH2	C=O	O	CH2	phenyl	2.57	372
229	Cl	F	Me	O	methyl	CH(i-Pr)	C=O	O	CH2	phenyl	3.48	414

Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
230	F	F	Me	O	methyl	CH2	CH2	NMe	C=O	phenyl	1.66	369
231	Cl	F	Me	O	methyl	CH2	CH2	NMe	C=O	phenyl	1.76	385
232	F	F	Me	O	methyl	CH2	CH2	C=O	NH	3,4-dichlorophenyl	2.71	423
233	Cl	F	Me	O	methyl	CH2	CH2	C=O	NH	3,4-dichlorophenyl	2.86	439
234	Cl	F	Me	O	propyl	CH2	CH2	CH2	O	2,4,6-trimethylphenyl	4.39	428
235	F	F	Me	O	propyl	CH2	CH2	CH2	O	2,4,6-trimethylphenyl	4.27	412
236	F	F	Me	O	cyclopropyl	CH(Me)	CH2	S	CH2	2-furyl	3.11	388
237	Cl	F	Me	O	cyclopropyl	CH(Me)	CH2	S	CH2	2-furyl	3.27	404
238	F	F	Me	O	methyl	CH(Me)	CH2	S	CH2	2-furyl	2.49	362
239	Cl	F	Me	O	methyl	CH(Me)	CH2	S	CH2	2-furyl	2.64	378
240	F	F	Me	O	cyclopropyl	CH2			-	phenyl	4.31	406

Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
241	F	F	Me	O	cyclopropyl	CH2			-	2-chlorophenyl	4.67	440
242	F	F	Me	O	cyclopropyl	CH2			-	2,4-dichlorophenyl	5.31	474
243	F	F	Me	O	cyclopropyl			CH2	-	phenyl	4.34 + 4.41(1)	406
244	F	F	Me	O	cyclopropyl			O	-	phenyl	3.89	408
245	F	F	Me	O	H			O	-	phenyl	3.52	368
246	Cl	F	Me	O	H			O	-	phenyl	3.76	384

Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
247	F	F	Me	O	cyclopropyl			O	-	phenyl	4.21	408
248	F	F	Me	O	cyclopropyl			O	-	2,4,6-trichlorophenyl	5.36 + 5.74[1]	510
249	F	F	Me	O	cyclopropyl			O	-	2,4-dichlorophenyl	4.87 + 5.31[1]	476
250	F	F	Me	O	cyclopropyl			O	-	2,6-dichlorophenyl	4.59 + 4.87[1]	476
251	F	F	Me	O	cyclopropyl			O	-	2-chlorophenyl	4.25 + 4.59[1]	442
252	Cl	F	Me	O	cyclopropyl			O	-	phenyl	4.06 + 4.41[1]	424

Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
253	F	F	Me	O	methyl			CH2	-	phenyl	3.72	380
254	Cl	F	Me	O	methyl			CH2	-	phenyl	3.87	396
255	F	F	Me	O	H			CH2	-	3-chlorophenyl	4.31 + 4.44 + 4.54[1]	414
256	F	F	Me	O	cyclopropyl				-	phenyl	4.01	392
257	Cl	F	Me	O	H			S	-	pyrimidin-2-yl	2.26	388
258	F	F	Me	O	H			S	-	pyrimidin-2-yl	2.17	372
259	F	F	Me	O	H			O	-	3-methylphenyl	3.52	368

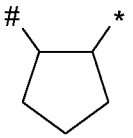
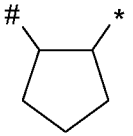
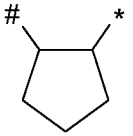
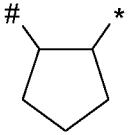
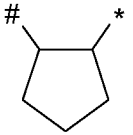
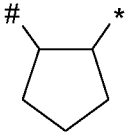
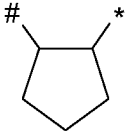
Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
260	Cl	F	Me	O	H			O	-	3-methylphenyl	3.78	384
261	Cl	F	Me	O	methyl	CH2		-	-	phenyl	2.84	340
262	F	F	Me	O	methyl	CH2		-	-	phenyl	2.73	324
263	Cl	F	Me	O	ethyl	CH2		-	-	phenyl	3.17	354
264	F	F	Me	O	ethyl	CH2		-	-	phenyl	3.02	338
265	Cl	F	Me	O	2-methoxyethyl	CH2		-	-	phenyl	3.02	384
266	F	F	Me	O	2-methoxyethyl	CH2		-	-	phenyl	2.86	368
267	F	F	Me	O	terbutyl	CH2		-	-	phenyl	3.83	364
268	Cl	F	Me	O	terbutyl	CH2		-	-	phenyl	3.96	380
269	F	F	Me	O	methyl	CH2		-	-	phenyl	2.78	322
270	Cl	F	Me	O	methyl	CH2		-	-	phenyl	2.92	338
271	F	F	Me	O	cyclopropyl	CH2		-	-	phenyl	3.19	348

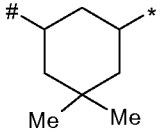
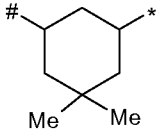
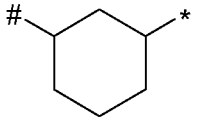
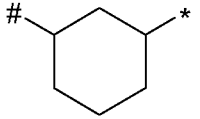
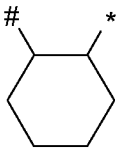
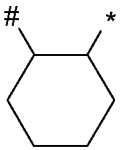
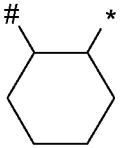
Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
272	Cl	F	Me	O	cyclopropyl	CH2	*—≡—*	-	-	phenyl	3.33	364
273	F	F	Me	O	cyclopentyl	CH2	*—≡—*	-	-	phenyl	3.73	376
274	Cl	F	Me	O	cyclopentyl	CH2	*—≡—*	-	-	phenyl	3.92	392
275	F	F	Me	O	cyclopropyl	CH2	*—≡—*	-	-	1-benzofuran-2-yl	3.55	388
276	F	F	Me	O	cyclopropyl	CH2	*—≡—*	-	-	1-benzothiophen-2-yl	3.85	404
277	F	F	Me	O	H	CH2	*—≡—*	-	-	1-benzothiophen-2-yl	3.19	364
278	F	F	Me	O	methyl	CH2	*—≡—*	-	-	1-benzothiophen-2-yl	3.39	378
279	F	F	Me	O	cyclopropyl	CH2	*—≡—*	-	-	2-furyl	2.70	338
280	F	F	Me	O	H	CH2	*—≡—*	-	-	2-furyl	2.14	298
281	F	F	Me	O	methyl	CH2	*—≡—*	-	-	2-furyl	2.32	312
282	F	F	Me	O	cyclopropyl	CH2	*—≡—*	-	-	2-thienyl	3.00	354
283	F	F	Me	O	cyclopropyl	CH2	*—≡—*	-	-	3-methyl-2-thienyl	3.31	368
284	F	F	Me	O	H	C(Me)2	*—≡—*	-	-	4-cyanophenyl	2.82	361

Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
285	F	F	Me	O	cyclopropyl	CH2		-	-	5-methyl-1-benzothiophen-2-yl	4.26	418
286	F	F	Me	O	cyclopropyl	CH2		-	-	5-methyl-2-thienyl	3.37	368
287	Cl	F	Me	O	cyclopropyl	CH2	Si(Me)2	CH2	-	phenyl	4.20	412
288	F	F	Me	O	cyclopropyl	CH2	Si(Me)2	CH2	-	phenyl	4.03	396
289	F	F	Me	S	cyclopropyl	CH2	Si(Me)2	CH2	-	phenyl	4.67	412
290	Cl	F	Me	O	cyclopropyl	CH2	Si(Me)2	CH2	-	3-chlorophenyl	4.59	446
291	F	F	Me	O	cyclopropyl	CH2	Si(Me)2	CH2	-	3-chlorophenyl	4.44	430
292	Cl	F	Me	O	cyclopropyl	CH2	Si(Me)2	CH2	-	3,5-dichlorophenyl	5.14	480
293	F	F	Me	O	cyclopropyl	CH2	Si(Me)2	CH2	-	3,5-dichlorophenyl	4.98	464
294	Cl	F	Me	O	cyclopropyl	CH2	Si(Me)2	CH2	-	2-chlorophenyl	4.56	446
295	F	F	Me	O	cyclopropyl	CH2	Si(Me)2	CH2	-	2-chlorophenyl	4.41	430
296	F	F	Me	S	cyclopropyl	CH2	Si(Me)2	CH2	-	2-chlorophenyl	5.00	446(2)
297	Cl	F	Me	O	cyclopropyl	CH2	Si(Me)2	CH2	-	2,4-dichlorophenyl	5.19	480

Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
298	F	F	Me	O	cyclopropyl	CH2	Si(Me)2	CH2	-	2,4-dichlorophenyl	5.03	464
299	F	F	Me	S	cyclopropyl	CH2	Si(Me)2	CH2	-	2,4-dichlorophenyl	5.57	480
300	Cl	F	Me	O	Et	CH(Me)	CH(Me)	CH2	CH2	Me	3.59	336
301	F	F	Me	O	Et	CH(Me)	CH(Me)	CH2	CH2	Me	3.35 + 3.39[(1)]	320
302	F	F	Me	O	cyclopropyl	CH(Me)	CH(Me)	CH2	-	Me	3.29 + 3.31[(1)]	318
303	Cl	F	Me	O	cyclopropyl	CH(Me)	CH(Me)	CH2	-	Me	3.52	334
304	F	F	Me	O	cyclopropyl	CH(Me)	CH2	CH2	Si(Me)2	Me	4.39	362
305	F	F	Me	O	H	CH2	CH2	CH2	CH2	OMe	1.40	280
306	F	F	Me	O	H			CH2	CH2	Et	3.59	
307	Cl	F	Me	O	H			CH2	CH2	Et	3.83	

Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
308	F	F	Me	S	H			CH2	CH2	Et	4.39	334
309	Cl	F	Me	O	H			CH2	CH2	i-Pr	4.20	
310	F	F	Me	O	H			CH2	CH2	i-Pr	3.98	
311	Cl	F	Me	O	H			CH(Me)	CH2	i-Pr	mixture	
312	Cl	F	Me	O	H			CH(Me)	CH2	i-Pr	4.40 isomer A	
313	Cl	F	Me	O	H			CH(Me)	CH2	i-Pr	4.46 isomer B	
314	Cl	F	Me	O	H			CH(Me)	CH2	i-Pr	4.47 isomer C	

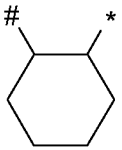
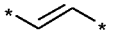
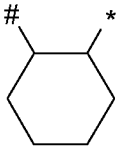
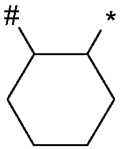
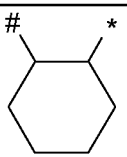
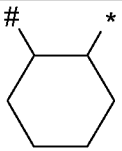
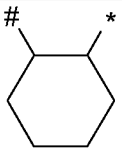
Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
315	F	F	Me	O	H			CH(Me)	CH2	i-Pr	mixture	
316	F	F	Me	O	H			CH(Me)	CH2	i-Pr	4.19 isomer A	
317	F	F	Me	O	H			CH(Me)	CH2	i-Pr	4.22 isomer B	
318	F	F	Me	O	H			CH(Me)	CH2	i-Pr	4.27 isomer C	
319	F	F	Me	O	H			CH2	CH2	t-Bu	4.22 + 4.28[(1)]	
320	Cl	F	Me	O	H			CH2	CH2	t-Bu	4.49	
321	F	F	Me	S	H			CH2	CH2	t-Bu	5.01	362

Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
322	F	F	Me	O	cyclopropyl				CH2	H	4.31	358
323	F	F	Me	S	cyclopropyl				CH2	H	4.96	374
324	F	F	Me	O	H				CH2	CH2C(Me)3	4.80	
325	F	F	Me	O	H				O	i-Pr	2.06	
326	F	F	Me	O	H			CH2	CH2	Bu	5.07	
327	F	F	Me	S	H			CH2	CH2	Bu	5.81	376
328	Cl	F	Me	O	H			CH2	CH(Me)	c-Pr	4.28	

Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
329	F	F	Me	O	H			CH2	CH2	Et	3.80 isomer A	
330	F	F	Me	O	H			CH2	CH2	Et	4.06 isomer B	
331	Cl	F	Me	O	H			CH2	CH2	Et	4.10	
332	F	F	Me	S	H			CH2	CH2	Et	4.86	348
333	F	F	Me	O	H			CH2	CH2	i-Pr	4.22	
334	Cl	F	Me	O	H			CH(Me)	CH2	i-Pr	4.75 isomer A	

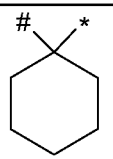
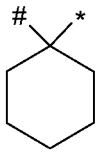
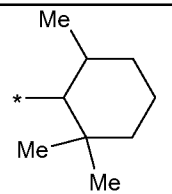
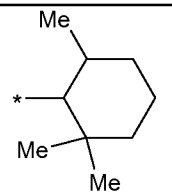
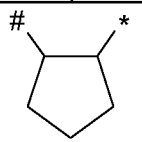
Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
335	Cl	F	Me	O	H			CH(Me)	CH2	i-Pr	4.96 isomer B	
336	Cl	F	Me	S	H			CH(Me)	CH2	i-Pr	5.42	392
337	F	F	Me	O	H			CH(Me)	CH2	i-Pr	4.47 isomer A	
338	F	F	Me	O	H			CH(Me)	CH2	i-Pr	4.73 isomer B	
339	F	F	Me	O	H			CH(Me)	CH2	i-Pr	4.54	
340	F	F	Me	O	H			CH2	CH(Me)	Me	3.94	

Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
341	F	F	Me	O	H			CH(OH)	-	Me	1.72 isomer A	
342	F	F	Me	O	H			CH(OH)	-	Me	2.08 isomer B	
343	F	F	Me	O	H			CH2	CH2	Me	3.42 isomer A	
344	F	F	Me	O	H			CH2	CH2	Me	3.61 isomer B	
345	F	F	Me	S	H			CH2	CH2	Me	4.21	334
346	F	F	Me	O	cyclopropyl			CH2		H	3.94	356

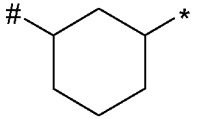
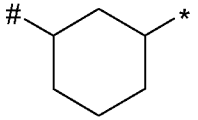
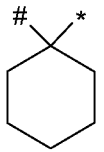
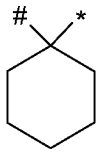
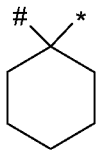
Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
347	Cl	F	Me	O	cyclopropyl			CH2		H	4.16	372
348	Cl	F	Me	O	H			C(Me)2	-	Me	4.15	348
349	F	F	Me	O	H			C(Me)2	-	Me	3.79	332
350	F	F	Me	O	cyclopropyl			C(Me)2	-	Me	4.71	372
351	F	F	Me	O	cyclopropyl			S	-	Me	3.50	362
352	Cl	F	Me	O	cyclopropyl			S	-	Me	3.73	378

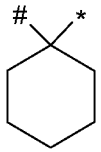
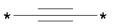
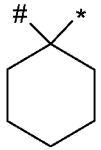
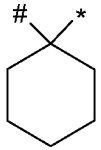
Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
353	F	F	Me	O	H			CH2	CH2	Si(Me)3	4.70	
354	Cl	F	Me	O	H			CH2	CH2	t-Bu	4.73 isomer A	
355	Cl	F	Me	O	H			CH2	CH2	t-Bu	4.95 isomer B	
356	Cl	F	Me	S	H			CH2	CH2	t-Bu	5.60	392
357	F	F	Me	O	H			CH2	CH2	t-Bu	4.50 isomer A	
358	F	F	Me	O	H			CH2	CH2	t-Bu	4.51 isomer B	

Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
359	Cl	F	Me	O	H			CH(Me)	CH2	t-Bu	5.28	
360	F	F	Me	O	H			CH(Me)	CH2	t-Bu	4.85 isomer A	
361	F	F	Me	O	H			CH(Me)	CH2	t-Bu	4.89 isomer B	
362	Cl	F	Me	O	H				CH2	Me	4.44	362
363	F	F	Me	O	H				CH2	Me	4.23	346
364	F	F	Me	O	H	CH2			CH2	Me	3.49	

Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
365	Cl	F	Me	O	H	CH2		CH2	-	Me	3.78	334
366	F	F	Me	O	H	CH2		CH2	-	Me	3.55	318
367	F	F	Me	O	cyclopropyl	CH(Me)	CH2	CH2	-		5.81	414
368	Cl	F	Me	O	cyclopropyl	CH(Me)	CH2	CH2	-		6.07	430
369	Cl	F	Me	O	cyclopropyl			-	-	cyclopentyl	4.83	386
370	F	F	Me	O	cyclopropyl	CH(Me)	CH2	-	-	cyclohexyl	4.36	358
371	Cl	F	Me	O	cyclopropyl	CH(Me)	CH2	-	-	cyclohexyl	4.56	374

Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
372	F	F	Me	O	cyclopropyl			-	-	cyclohexyl	5.28	398
373	Cl	F	Me	O	cyclopropyl			-	-	cyclohexyl	5.59	414
374	F	F	Me	O	H			-	-	cyclohexyl	4.34	358
375	Cl	F	Me	O	H			-	-	cyclohexyl	4.56	374
376	F	F	Me	O	cyclopropyl			-	-	cyclohex-1-en-1-yl	4.88	396
377	Cl	F	Me	O	cyclopropyl			-	-	cyclohex-1-en-1-yl	5.17	412

Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
378	Cl	F	Me	O	H	CH2				CF3	3.13 + 3.15(1)	374
379	F	F	Me	O	H	CH2				CF3	2.96	358
380	Cl	F	Me	O	H		-	-	-	cyclohexyl	3.29	332
381	F	F	Me	O	H		-	-	-	cyclohexyl	3.11	316
382	F	F	Me	O	H			-	-	Me	2.90	314
383	Cl	F	Me	O	H			-	-	Me	3.11	330
384	Cl	F	Me	O	H			-	-	H	2.73	316

Example	X1	X2	Y	T	Z1	Q1	Q2	Q3	Q4	B	logP	Mass (M+H)
385	F	F	Me	O	H			-	-	H	2.56	300
386	Cl	F	Me	O	H		-	-	-	CF3	3.15	360
387	F	F	Me	O	H		-	-	-	CF3	3.00	344

Note [1] : mixture of two or more isomers ;

Note [2] : mass M ;

Note : # denotes the point of attachement to the amide moiety ;

* denotes the point of attachement to the side chain.

Table 2 provides the NMR data (^{1}H) of a selected number of compounds from table 1.
The ^{1}H-NMR data of selected examples are stated in the form of ^{1}H-NMR peak lists. For each signal peak, the δ value in ppm and the signal intensity in brackets are listed:

Table 2:

Example 306 Solvent: DMSO-d_6 7.7657 (0.35) 7.7492 (0.95) 7.7287 (0.77) 7.5612 (0.53) 7.5402 (0.54) 7.2237 (0.57) 7.2191 (1.23) 7.1717 (0.88) 7.0889 (1.21) 7.0842 (2.72) 7.0368 (1.88) 6.9542 (0.63) 6.9495 (1.34) 6.9022 (0.96) 4.2971 (0.33) 4.2868 (0.39) 4.2812 (0.4) 4.2745 (0.38) 3.809 (0.82) 3.7885 (1.43) 3.7734 (16) 3.5677 (1.1) 3.3526 (0.32) 3.3481 (0.37) 3.3056 (589.57) 2.6737 (0.49) 2.6691 (0.69) 2.6646 (0.5) 2.5392 (0.93) 2.5225 (1.71) 2.5177 (2.67) 2.5091 (36.9) 2.5047 (72.29) 2.5001 (97.2) 2.4957 (66.33) 2.4912 (30.83) 2.3314 (0.46) 2.3268 (0.67) 2.3221 (0.45) 2.0692 (0.62) 1.9867 (0.48) 1.9287 (0.33) 1.923 (0.51) 1.9097 (0.85) 1.9035 (0.51) 1.8911 (1.05) 1.8785 (1.2) 1.8592 (1.36) 1.8506 (1.21) 1.8422 (0.94) 1.8313 (1.03) 1.8192 (0.94) 1.8121 (0.57) 1.8006 (0.52) 1.7597 (0.42) 1.7507 (0.7) 1.7385 (0.87) 1.7295 (1.16) 1.7182 (1.08) 1.7093 (1.58) 1.6878 (1.52) 1.677 (1.17) 1.6629 (0.77) 1.6562 (0.58) 1.6426 (0.63) 1.6312 (0.49) 1.6235 (0.64) 1.611 (0.8) 1.6002 (0.91) 1.5904 (0.96) 1.5808 (0.87) 1.5736 (0.92) 1.5688 (0.84) 1.5585 (1.1) 1.5525 (0.92) 1.5475 (1) 1.5414 (1.24) 1.5322 (0.97) 1.5217 (1.04) 1.5113 (1.04) 1.5051 (0.96) 1.5012 (0.94) 1.4913 (1.15) 1.4839 (1.19) 1.4653 (1.37) 1.4543 (1.19) 1.4486 (1.26) 1.4419 (1.25) 1.4356 (1.12) 1.4168 (0.66) 1.4121 (0.66) 1.3436 (0.54) 1.3228 (0.66) 1.314 (0.65) 1.2897 (1) 1.2779 (1.48) 1.2688 (1.72) 1.2634 (1.75) 1.2593 (1.83) 1.2484 (3.33) 1.2398 (2.67) 1.2314 (2.89) 1.222 (1.92) 1.2132 (1.46) 1.2035 (1.22) 1.1927 (1.16) 1.1827 (1.56) 1.1748 (1.27) 1.1612 (1.3) 1.1518 (1.22) 1.1395 (0.82) 1.1305 (0.94) 1.1156 (0.45) 1.1092 (0.49) 0.8616 (2.28) 0.8443 (4.9) 0.8316 (4.27) 0.8273 (2.42) 0.8195 (0.95) 0.8138 (1.03) -0.0002 (2.56)
Example 312 Solvent: CD_3CN 7.2157 (1.27) 7.1527 (0.7) 7.1439 (1.52) 7.1311 (1.2) 7.1259 (2.77) 7.0629 (1.51) 7.054 (3.13) 7.0412 (2.33) 7.0361 (1.36) 6.9731 (0.75) 6.9642 (1.63) 6.9515 (1.24) 4.5202 (0.48) 4.5131 (0.45) 4.5049 (0.47) 4.4779 (0.52) 4.4698 (0.42) 4.4629 (0.51) 4.1307 (0.53) 4.1175 (0.96) 4.1044 (1.09) 4.0913 (0.7) 3.8568 (11.44) 3.8556 (10.96) 3.8544 (10.51) 3.8501 (16) 2.1768 (124.26) 1.9944 (0.35) 1.9921 (0.73) 1.9815 (0.75) 1.9792 (0.76) 1.9732 (0.64) 1.9709 (0.98) 1.9665 (3.26) 1.9605 (0.94) 1.9584 (1.76) 1.9543 (1.54) 1.9504 (16.34) 1.9463 (32.24) 1.9422 (47.65) 1.9382 (30.99) 1.934 (15.22) 1.9292 (0.8) 1.9253 (0.37) 1.9228 (0.35) 1.8794 (0.36) 1.8749 (0.32) 1.8704 (0.41) 1.8658 (0.68) 1.8622 (0.56) 1.8569 (0.7) 1.8527 (0.7) 1.8477 (0.43) 1.8436 (0.58) 1.8357 (0.58) 1.8318 (0.42) 1.8275 (0.46) 1.8234 (0.35) 1.8197 (0.44) 1.7568 (0.49) 1.7485 (0.64) 1.7466 (0.62) 1.742 (0.64) 1.7343 (1.03) 1.7267 (0.83) 1.7235 (1.17) 1.7201 (1.28) 1.7142 (1.31) 1.7062 (1.7) 1.6915 (1.39) 1.6875 (1.54) 1.6817 (1.52) 1.6749 (1.61) 1.67 (1.46) 1.6645 (1.77) 1.66 (1.31) 1.6581 (1.48) 1.655 (1.59) 1.6532 (1.5) 1.6473

(1.69) 1.644 (1.65) 1.6365 (1.74) 1.6338 (1.49) 1.6313 (1.24) 1.6267 (1.66) 1.6225 (2.13) 1.6157 (1.88) 1.611 (1.9) 1.6094 (1.82) 1.6045 (1.44) 1.5986 (1.48) 1.5914 (0.82) 1.5879 (0.78) 1.5838 (0.58) 1.5789 (0.36) 1.5705 (0.34) 1.5177 (0.48) 1.5064 (0.79) 1.5025 (0.6) 1.4957 (0.96) 1.4917 (0.87) 1.4839 (1.17) 1.4794 (0.78) 1.473 (0.97) 1.4678 (0.77) 1.4615 (0.5) 1.4563 (0.43) 1.4505 (0.4) 1.4363 (11.79) 1.3752 (0.33) 1.365 (0.69) 1.3585 (0.46) 1.3503 (0.77) 1.3454 (0.8) 1.3363 (0.78) 1.3293 (0.75) 1.3218 (0.58) 1.3159 (0.94) 1.3104 (0.69) 1.3006 (0.53) 1.2981 (0.56) 1.2931 (0.9) 1.2882 (0.72) 1.2757 (0.49) 1.2704 (0.6) 1.2301 (0.34) 1.2249 (0.34) 1.212 (0.47) 1.2077 (0.73) 1.2041 (0.47) 1.203 (0.47) 1.1896 (0.74) 1.1848 (0.89) 1.175 (0.51) 1.1711 (0.52) 1.1668 (0.33) 1.1622 (1) 1.1529 (0.69) 1.1487 (0.76) 1.1392 (0.63) 1.114 (0.5) 1.1023 (0.97) 1.0921 (0.75) 1.0881 (0.76) 1.0797 (0.54) 1.078 (0.77) 1.0698 (0.43) 1.0658 (0.44) 1.0557 (0.69) 1.0485 (0.74) 1.0424 (0.48) 1.0391 (0.33) 1.0313 (0.68) 1.026 (0.75) 1.0203 (0.4) 1.0091 (0.54) 1.0054 (0.57) 1.0028 (0.42) 0.9993 (0.51) 0.9874 (0.49) 0.983 (0.61) 0.9816 (0.59) 0.9773 (0.45) 0.9654 (0.41) 0.9593 (0.4) 0.904 (3.49) 0.8926 (9.38) 0.8817 (13.38) 0.8713 (7.79) 0.8695 (6.32) 0.8616 (9.02) 0.858 (0.81) 0.8506 (8.87) 0.8451 (9.19) 0.8432 (10.55) 0.8423 (11.04) 0.834 (8.78) 0.8315 (10.76) 0.8235 (5.81) 0.8127 (5.69) 0.8096 (3.91) 0.7987 (3.56) 0.6928 (6.25) 0.682 (6.11) -0.0002 (1.09)

Example 316

Solvent: CD_3CN

7.2147 (0.44) 7.2082 (0.82) 7.183 (0.78) 7.1327 (0.56) 7.0797 (0.89) 7.0733 (1.67) 7.0482 (1.6) 6.9979 (1.11) 6.9448 (0.46) 6.9384 (0.84) 6.9134 (0.81) 6.8631 (0.57) 4.5032 (0.35) 4.4808 (0.34) 4.1165 (0.64) 4.0966 (0.75) 4.0765 (0.46) 3.7434 (12.99) 2.1409 (72.15) 1.9827 (0.47) 1.9711 (1.8) 1.9631 (1.7) 1.957 (1.86) 1.9512 (10.83) 1.945 (19.73) 1.9389 (27.64) 1.9327 (19.24) 1.9265 (9.8) 1.9114 (0.76) 1.9003 (0.56) 1.8964 (0.48) 1.8899 (0.56) 1.8817 (0.53) 1.8755 (0.51) 1.8679 (0.35) 1.8622 (0.48) 1.8592 (0.45) 1.8528 (0.43) 1.8399 (0.47) 1.8272 (0.43) 1.7736 (0.38) 1.7673 (0.43) 1.7612 (0.34) 1.7546 (0.42) 1.7457 (0.54) 1.7335 (0.73) 1.7254 (0.74) 1.7132 (1.07) 1.7073 (0.93) 1.6958 (1.31) 1.6897 (1.17) 1.6794 (1.69) 1.6734 (1.59) 1.6701 (1.53) 1.6634 (1.78) 1.6606 (1.75) 1.6568 (1.88) 1.6473 (1.94) 1.6389 (1.73) 1.631 (2.19) 1.6149 (1.88) 1.611 (1.83) 1.5975 (1.75) 1.5885 (1.04) 1.5825 (1.12) 1.579 (1.04) 1.5683 (0.68) 1.5638 (0.65) 1.5006 (0.44) 1.4847 (0.45) 1.4774 (0.45) 1.4691 (0.64) 1.4609 (0.54) 1.4527 (0.64) 1.4371 (2.96) 1.4267 (0.56) 1.4185 (0.55) 1.4093 (0.35) 1.4012 (0.32) 1.3917 (0.36) 1.3682 (0.39) 1.361 (0.58) 1.3419 (0.79) 1.3257 (0.54) 1.3147 (0.82) 1.2989 (0.41) 1.2884 (0.67) 1.2813 (0.77) 1.2738 (0.54) 1.2549 (0.43) 1.2471 (0.41) 1.2215 (0.48) 1.2176 (0.39) 1.21 (0.56) 1.2037 (1) 1.1857 (0.84) 1.1742 (0.53) 1.1682 (0.34) 1.1543 (0.7) 1.14 (0.5) 1.1346 (0.53) 1.1199 (0.42) 1.0958 (0.51) 1.0801 (0.54) 1.0748 (0.53) 1.0592 (0.58) 1.0553 (0.45) 1.0514 (0.38) 1.0461 (0.59) 1.0409 (0.46) 1.0265 (0.52) 1.0197 (0.52) 1.0018 (0.44) 0.9933 (0.6) 0.9749 (0.4) 0.9679 (0.46) 0.9596 (0.34) 0.9418 (0.32) 0.8966 (3.97) 0.8926 (2.77) 0.8804 (7.7) 0.8759 (3.22) 0.8662 (5.67) 0.858 (5.97) 0.8527 (3.83) 0.8416 (16) 0.8345 (4.77) 0.8252 (10.7) 0.8182 (4.04) 0.8049 (2.39) 0.7886 (2.17) 0.6955 (3.9) 0.6791 (3.76) 0.008 (0.47) -0.0002 (11.82) -0.0086 (0.45)

Example 319

Solvent: DMSO-d_6

7.2105 (0.41) 7.0755 (0.92) 7.0349 (0.53) 6.9408 (0.45) 4.0393 (0.45) 4.0215 (0.45) 3.79 (0.48) 3.7742

(3.73) 3.3093 (168.59) 2.5228 (0.43) 2.5181 (0.66) 2.5094 (9.06) 2.505 (17.8) 2.5005 (24.03) 2.496 (16.41) 2.4915 (7.68) 1.9867 (2.05) 1.8508 (0.33) 1.5979 (0.37) 1.5843 (0.37) 1.4587 (0.38) 1.1929 (0.79) 1.1751 (1.58) 1.1683 (0.37) 1.1573 (1.02) 1.1472 (1.02) 1.1219 (0.84) 1.1154 (0.51) 1.0992 (0.74) 0.8486 (1.04) 0.8438 (1.07) 0.8324 (16) 0.8221 (1.24) 0.8126 (9.14) 0.8007 (0.7) 0.7906 (0.98) 0.7852 (0.8) -0.0002 (1.73)
Example 326 Solvent: DMSO-d_6 7.6444 (1.62) 7.6244 (1.63) 7.2284 (1.97) 7.0936 (4.54) 6.9589 (2.17) 3.7683 (14.62) 3.7159 (0.32) 3.7036 (0.41) 3.6844 (0.77) 3.6745 (0.95) 3.6649 (0.83) 3.6549 (0.95) 3.6454 (0.78) 3.6363 (0.47) 3.6258 (0.42) 3.4746 (0.38) 3.3181 (533.16) 3.2959 (4.34) 3.2707 (0.33) 2.6747 (0.34) 2.6702 (0.44) 2.5401 (0.67) 2.5233 (1.66) 2.5099 (24.83) 2.5055 (46.48) 2.5011 (60.77) 2.4967 (42.16) 2.4923 (20.06) 2.3279 (0.38) 2.0689 (1.12) 1.8494 (1.07) 1.8164 (1.83) 1.7797 (0.99) 1.7332 (1.01) 1.7254 (0.81) 1.717 (0.63) 1.7081 (0.93) 1.7009 (1.22) 1.6936 (0.97) 1.6638 (1.03) 1.6331 (1.07) 1.3223 (1) 1.2895 (2.73) 1.2784 (3.48) 1.2438 (16) 1.2067 (2.19) 1.1926 (2.42) 1.1834 (2.87) 1.1768 (2.89) 1.152 (1.34) 1.1221 (0.41) 1.114 (0.37) 0.9417 (0.78) 0.912 (2.05) 0.8819 (2.36) 0.8729 (3.89) 0.8563 (11.23) 0.839 (4.04) 0.8132 (0.44) 0.8056 (0.48) 0.7821 (0.98) 0.7744 (0.97) 0.7521 (0.89) 0.7439 (0.88) 0.7216 (0.36) 0.008 (0.37) -0.0002 (8.1)
Example 330 Solvent: DMSO-d_6 7.4069 (1.5) 7.3849 (1.5) 7.1692 (2.38) 7.0345 (5.15) 6.9 (2.63) 4.1114 (1.13) 4.1029 (1.11) 3.8657 (0.57) 3.7749 (16) 3.7578 (0.4) 3.3014 (141.26) 2.5224 (0.75) 2.5176 (1.21) 2.509 (12.2) 2.5046 (23) 2.5001 (30.25) 2.4957 (20.51) 2.4912 (9.48) 2.0696 (2.94) 1.6631 (1.28) 1.6504 (1.04) 1.6372 (0.78) 1.619 (0.42) 1.5971 (1.06) 1.5906 (1.02) 1.5618 (1.59) 1.5373 (1.03) 1.4726 (1.14) 1.4491 (3.19) 1.4341 (5) 1.4087 (1.02) 1.3544 (0.5) 1.3464 (0.46) 1.3271 (1.06) 1.3202 (1.1) 1.2941 (1.69) 1.2661 (1.85) 1.2546 (2.18) 1.2321 (6.94) 1.2287 (7.18) 1.2199 (8.09) 1.2036 (2.68) 1.1809 (0.76) 1.1628 (0.93) 1.1444 (1.04) 1.1255 (0.94) 1.1076 (0.48) 0.8495 (3.55) 0.8404 (3.19) 0.8324 (9.9) 0.8149 (2.86) -0.0002 (1.5)
Example 333 Solvent: DMSO-d_6 7.6924 (0.47) 7.6706 (0.46) 7.433 (0.86) 7.4116 (0.88) 7.201 (0.56) 7.1647 (1.15) 7.066 (1.2) 7.03 (2.44) 6.9313 (0.62) 6.8954 (1.23) 4.139 (0.51) 4.117 (0.67) 4.1084 (0.65) 3.7753 (12.35) 3.7007 (0.39) 3.4947 (0.33) 3.4863 (0.36) 3.473 (0.49) 3.4654 (0.68) 3.4449 (0.32) 3.436 (0.32) 3.322 (53.06) 2.9918 (0.62) 2.8915 (0.45) 2.7326 (0.35) 2.51 (12.59) 2.5058 (23.15) 2.5015 (29.75) 2.4972 (20.92) 1.822 (0.34) 1.7828 (0.53) 1.7616 (0.45) 1.6633 (1.29) 1.6523 (1.07) 1.6382 (0.84) 1.5947 (0.78) 1.5901 (0.76) 1.5604 (0.75) 1.5292 (0.91) 1.5196 (1.04) 1.5028 (1.3) 1.493 (1.07) 1.475 (1.52) 1.4592 (1.79) 1.4426 (3.18) 1.4313 (3.74) 1.4115 (1.62) 1.3567 (0.99) 1.3359 (0.96) 1.329 (1.01) 1.3026 (1.34) 1.2767 (1.57) 1.2464 (1.93) 1.2299 (1.74) 1.2104 (1.28) 1.1987 (1.04) 1.1891 (1.02) 1.1804 (1.06)

1.1603 (1.42) 1.1529 (1.83) 1.1389 (2.94) 1.1265 (3.48) 1.1038 (1.13) 1.0792 (0.66) 1.0646 (0.62) 1.0506 (0.92) 1.0341 (0.99) 1.0267 (0.8) 1.0055 (0.55) 0.9976 (0.46) 0.9849 (0.36) 0.9741 (0.54) 0.9689 (0.53) 0.9435 (0.38) 0.8783 (0.79) 0.8719 (1.14) 0.867 (1.83) 0.8616 (1.43) 0.8557 (1.77) 0.8503 (2.23) 0.8319 (12.16) 0.8201 (10.95) 0.8155 (16) 0.8037 (9.49) 0.7994 (5.7) 0.7742 (0.88) 0.7674 (0.75) 0.7579 (0.61) 0.7499 (0.49) 0.7414 (0.45) 0.7249 (0.36) 0.7083 (0.32) -0.0002 (2.31)

Example 334

Solvent: DMSO-d_6

7.8032 (0.32) 7.7607 (0.59) 7.7382 (0.6) 7.1657 (0.89) 7.1602 (0.5) 7.0306 (2.02) 7.025 (0.98) 6.8955 (1) 6.8899 (0.56) 3.8645 (9.89) 3.7287 (0.32) 3.7191 (0.34) 3.7063 (0.44) 3.6957 (0.45) 3.2898 (163.83) 2.668 (0.34) 2.538 (0.69) 2.5214 (1) 2.5165 (1.6) 2.5081 (18.42) 2.5035 (37.5) 2.499 (50.91) 2.4944 (35.99) 2.4898 (16.62) 2.067 (16) 1.9377 (0.33) 1.9209 (0.4) 1.9138 (0.41) 1.9069 (0.4) 1.8949 (0.37) 1.8251 (0.51) 1.817 (0.53) 1.6918 (1.19) 1.6678 (1.49) 1.567 (0.4) 1.5486 (0.36) 1.5339 (0.41) 1.5183 (0.46) 1.5023 (0.43) 1.3433 (0.36) 1.3148 (0.72) 1.2849 (0.5) 1.2778 (0.54) 1.2473 (0.8) 1.2226 (0.97) 1.2015 (0.64) 1.1161 (0.59) 1.1088 (0.6) 1.0994 (0.52) 1.0834 (1) 1.0703 (0.54) 1.0579 (0.53) 1.0498 (0.78) 1.032 (0.48) 1.0151 (0.52) 0.9969 (0.48) 0.9894 (0.44) 0.981 (0.41) 0.9633 (0.36) 0.9474 (0.47) 0.9377 (0.43) 0.9188 (0.44) 0.915 (0.45) 0.9092 (0.48) 0.8867 (0.35) 0.8766 (0.44) 0.8628 (2.61) 0.8486 (6.05) 0.8429 (5.04) 0.8323 (5.48) 0.8285 (4.65) 0.8256 (4.81) 0.8122 (2.46) 0.7999 (0.33) 0.7217 (4.69) 0.7152 (2.8) 0.7055 (4.49) 0.6981 (2.47) -0.0002 (6.7)

Example 335

Solvent: DMSO-d_6

7.636 (1.01) 7.6135 (1.02) 7.5345 (0.52) 7.5127 (0.53) 7.1804 (0.83) 7.1666 (1.59) 7.0452 (1.78) 7.0315 (3.51) 7.0257 (0.5) 6.9101 (0.92) 6.8965 (1.74) 4.3874 (0.38) 4.3812 (0.41) 4.365 (0.42) 4.3431 (0.74) 4.3364 (0.73) 4.3205 (0.73) 4.3145 (0.67) 3.8684 (16) 3.2902 (124.98) 3.2673 (2.37) 2.5383 (0.44) 2.5214 (0.78) 2.5083 (11.52) 2.5038 (22.91) 2.4992 (30.77) 2.4946 (21.63) 2.4901 (10.03) 2.0673 (1.43) 1.7708 (0.79) 1.7551 (1) 1.7474 (0.89) 1.7088 (1.49) 1.6932 (2.05) 1.6337 (0.4) 1.624 (0.52) 1.6171 (0.69) 1.6081 (0.85) 1.6006 (0.92) 1.5923 (0.92) 1.5838 (0.86) 1.5758 (0.76) 1.5675 (0.64) 1.5596 (0.39) 1.437 (1.78) 1.4241 (1.59) 1.4147 (1.86) 1.3974 (1.7) 1.3842 (1.27) 1.3764 (1.47) 1.3598 (1.07) 1.3521 (1.19) 1.3452 (0.9) 1.3359 (0.85) 1.3284 (0.92) 1.3203 (0.59) 1.3119 (0.58) 1.3026 (0.65) 1.2933 (0.5) 1.2683 (1.49) 1.2607 (1.06) 1.2427 (1.97) 1.2359 (2.08) 1.2278 (1.24) 1.212 (2.04) 1.203 (1.47) 1.1931 (1.29) 1.1718 (0.9) 1.1632 (0.76) 1.1384 (0.99) 1.1136 (0.84) 1.1064 (0.81) 1.0838 (0.42) 0.9178 (0.71) 0.9078 (1) 0.8984 (0.59) 0.8928 (0.82) 0.883 (1.57) 0.8707 (8.87) 0.8632 (2.21) 0.8542 (8.57) 0.8467 (6.31) 0.8301 (5.28) 0.82 (0.91) 0.8125 (1.28) 0.7966 (8.24) 0.7844 (13.33) 0.7806 (8.71) 0.7685 (8.15) 0.7151 (5.15) 0.6988 (4.96) -0.0002 (3.34)

Example 343

Solvent: DMSO-d_6

7.652 (1.66) 7.6298 (1.68) 7.2099 (2.55) 7.0749 (5.52) 6.9402 (2.83) 4.1406 (0.41) 3.7762 (16) 3.5069 (0.43) 3.4908 (0.83) 3.4809 (1.04) 3.4683 (1.37) 3.458 (0.91) 3.4421 (0.4) 3.4319 (0.33) 3.3041 (98.21) 2.5228 (0.52) 2.5179 (0.81) 2.5094 (7.95) 2.505 (14.97) 2.5005 (19.67) 2.496 (13.33) 2.4916 (6.15)

2.0697 (7.08) 1.8331 (1.06) 1.8177 (0.59) 1.803 (1.28) 1.7953 (1.28) 1.7789 (1.07) 1.7684 (1.21) 1.7622 (1.22) 1.7574 (1.23) 1.6845 (1.19) 1.6631 (1.78) 1.63 (1.18) 1.4884 (0.37) 1.4811 (0.45) 1.4746 (0.48) 1.4665 (0.6) 1.4626 (0.7) 1.4555 (0.97) 1.4488 (1.02) 1.4409 (0.92) 1.4309 (0.76) 1.4233 (0.91) 1.418 (0.89) 1.4106 (0.93) 1.3986 (0.68) 1.3889 (0.7) 1.3812 (0.7) 1.369 (1.15) 1.3571 (1.16) 1.35 (1.21) 1.3392 (1.66) 1.332 (1.54) 1.3238 (1.16) 1.3124 (1.61) 1.3061 (1.29) 1.2971 (0.72) 1.2922 (0.68) 1.2782 (1.64) 1.2495 (2.64) 1.2384 (1.14) 1.226 (1.76) 1.1906 (1.08) 1.1775 (0.93) 1.1663 (1.29) 1.1595 (1.6) 1.152 (1.56) 1.1489 (1.51) 1.1416 (1.11) 1.1344 (1.71) 1.1201 (1.14) 1.1169 (1.17) 1.1026 (0.77) 1.0861 (0.37) 1.0702 (0.76) 1.0593 (0.74) 1.0485 (0.73) 1.0382 (1.31) 1.0276 (0.75) 1.0219 (0.57) 1.0166 (0.85) 1.0131 (1) 1.0033 (1) 0.9923 (0.89) 0.9819 (0.49) 0.9698 (1.17) 0.9636 (1.03) 0.9398 (0.97) 0.9323 (0.86) 0.9082 (0.37) 0.8369 (7.5) 0.8189 (15.5) 0.8011 (5.59) -0.0002 (0.84)
Example 344 Solvent: DMSO-d_6 7.3972 (1.36) 7.3755 (1.39) 7.1723 (2.53) 7.0376 (5.47) 6.9031 (2.8) 4.1106 (1.1) 4.1019 (1.09) 3.8658 (0.6) 3.7749 (16) 3.303 (283.9) 2.669 (0.37) 2.5391 (0.54) 2.5224 (1.13) 2.5177 (1.76) 2.509 (20.22) 2.5045 (38.92) 2.5 (52.05) 2.4955 (35.35) 2.491 (16.46) 2.3268 (0.36) 2.0694 (4.18) 1.6614 (1.33) 1.6491 (1.05) 1.6352 (0.83) 1.5935 (1.5) 1.5868 (1.58) 1.5779 (1.73) 1.5699 (1.71) 1.5613 (1.6) 1.4814 (0.8) 1.4514 (2.92) 1.4367 (5.34) 1.4104 (1.1) 1.4026 (0.87) 1.3472 (0.51) 1.3398 (0.48) 1.3199 (1.16) 1.3131 (1.17) 1.3015 (0.77) 1.2866 (2.86) 1.2668 (3.78) 1.2495 (5.06) 1.2351 (3.46) 1.2327 (3.49) 1.2193 (2.16) 1.2034 (1.77) 1.1865 (1.11) 1.1825 (1.26) 1.1656 (0.75) 1.1582 (0.71) 1.1501 (0.62) 1.1438 (1.31) 1.1231 (1.31) 1.1108 (0.8) 1.1052 (0.73) 1.0912 (0.58) 0.8754 (0.4) 0.8577 (0.89) 0.8417 (6.23) 0.833 (1.96) 0.8244 (13.45) 0.8063 (6.11) -0.0002 (2.62)
Example 354 Solvent: DMSO-d_6 7.8628 (0.34) 7.8404 (0.35) 7.1594 (0.47) 7.0241 (1.04) 6.8891 (0.53) 3.8649 (4) 3.2896 (60.33) 2.508 (5.24) 2.5035 (10.59) 2.4989 (14.32) 2.4943 (10.13) 2.4898 (4.71) 2.067 (0.66) 1.8013 (0.37) 1.6664 (0.38) 1.2869 (0.33) 1.2657 (0.5) 1.2542 (0.55) 1.2328 (0.66) 1.0099 (0.8) 0.988 (0.37) 0.9807 (0.45) 0.82 (16) -0.0002 (1.46)
Example 355 Solvent: DMSO-d_6 7.1667 (0.44) 7.0315 (0.98) 6.8965 (0.49) 3.8698 (3.74) 3.2879 (20.21) 3.2641 (0.69) 2.5081 (1.95) 2.5035 (3.91) 2.4989 (5.29) 2.4944 (3.74) 2.4899 (1.74) 2.0671 (4.7) 1.4676 (0.46) 1.4465 (0.83) 1.4374 (0.74) 1.2051 (0.35) 1.1741 (0.38) 1.1272 (0.47) 1.1042 (0.34) 0.8198 (16) -0.0002 (0.38)
Example 358 Solvent: DMSO-d_6 7.7273 (0.35) 7.7052 (0.36) 7.1934 (0.43) 7.0584 (0.98) 6.9236 (0.5) 3.7745 (3.05) 3.3107 (118.65) 2.5227 (0.64) 2.5093 (7.8) 2.5049 (14.31) 2.5004 (18.44) 2.496 (12.62) 2.4916 (6.04) 1.7773 (0.43)

1.6623 (0.4) 1.2665 (0.56) 1.2417 (0.71) 1.2167 (0.49) 1.0095 (0.83) 0.9904 (0.63) 0.9831 (0.49) 0.8194 (0.56) 0.8044 (16) -0.0002 (0.37)
Example 361 Solvent: DMSO-d_6 7.6998 (0.59) 7.6774 (0.61) 7.1848 (0.46) 7.0497 (0.93) 6.9157 (0.48) 3.7781 (5.13) 3.6192 (0.34) 3.5954 (0.39) 3.3091 (188.57) 3.3066 (192.79) 2.6695 (0.37) 2.5001 (53.35) 2.4964 (50.37) 2.3268 (0.36) 1.8674 (0.63) 1.8455 (0.79) 1.6884 (0.64) 1.6629 (0.88) 1.6267 (0.5) 1.3116 (0.9) 1.2911 (0.39) 1.2761 (0.86) 1.2346 (0.34) 1.2012 (0.54) 1.1712 (0.84) 1.1395 (0.45) 1.1174 (0.39) 1.0878 (0.32) 0.9834 (0.43) 0.9417 (2.83) 0.9253 (2.73) 0.8605 (1.23) 0.8332 (0.68) 0.7964 (16) 0.7768 (0.69) -0.0002 (3.56) -0.0032 (3.32)
Example 363 Solvent: DMSO-d_6 5.8221 (1.12) 3.8508 (1.53) 3.7829 (0.91) 3.7612 (0.76) 3.7535 (0.51) 3.3821 (87.87) 3.3589 (0.94) 2.5851 (6.75) 2.5808 (12.43) 2.5764 (16) 2.572 (11.07) 2.5678 (5.34) 1.752 (0.39) 1.7147 (0.45) 1.6778 (0.46) 1.565 (0.35) 1.5589 (0.37) 1.5271 (0.53) 1.5228 (0.53) 1.5038 (0.56) 1.4743 (0.51) 1.4322 (0.35) 1.3199 (0.59) 1.3117 (0.62) 1.2912 (0.52) 1.2758 (0.45) 1.2689 (0.47) 1.251 (0.6) 1.2417 (0.51) 1.2332 (0.56) 1.2272 (0.53) 1.2173 (0.52) 1.209 (0.52) 1.1829 (0.38) 0.0755 (0.75) 0.0471 (0.8) 0.0411 (0.5) 0.0325 (0.89) 0.0291 (0.83) 0.0266 (1.07) 0.0208 (2.71) 0.0135 (2.05) 0.0071 (5.2) -0.0002 (6.36) -0.0032 (5.69) -0.0059 (5.4) -0.007 (5.33) -0.0136 (3.64) -0.0159 (3.31) -0.0181 (4.06) -0.0241 (4.65) -0.0361 (2.89) -0.0427 (2.74)

Intensity of sharp signals correlates with the height of the signals in a printed example of a NMR spectrum in cm and shows the real relations of signal intensities. From broad signals several peaks or the middle of the signal and their relative intensity in comparison to the most intensive signal in the spectrum can be shown. The ^{1}H-NMR peak lists are similar to classical ^{1}H-NMR prints and contain therefore usually all peaks, which are listed at classical NMR-interpretation. Additionally they can show like classical 1H-NMR prints signals of solvents, stereoisomers of the target compounds, which are also object of the invention, and/or peaks of impurities. To show compound signals in the delta-range of solvents and/or water the usual peaks of solvents, for example peaks of DMSO in DMSO-d6 and the peak of water are shown in our ^{1}H-NMR peak lists and have usually on average a high intensity. The peaks of stereoisomers of the target compounds and/or peaks of impurities have usually on average a lower intensity than the peaks of target compounds (for example with a purity >90%). Such stereoisomers and/or impurities can be typical for the specific preparation process. Therefore their peaks can help to recognize the reproduction of our preparation process via “side-products-fingerprints”. An expert, who calculates the peaks of the target compounds with known methods (MestreC, ACD-simulation, but also with empirically evaluated expectation values) can isolate the peaks of the target compounds as needed optionally using additional intensity filters. This isolation would be similar to relevant peak picking at classical ^{1}H-NMR interpretation.

The following examples illustrate in a non-limiting manner the preparation and efficacy of the compounds of formula (I) according to the invention.

Preparation example 1 : preparation of N-cyclopropyl-N-[2-(2,6-dichlorophenoxy)ethyl]-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide (compound 124)

Step 1 : preparation of of 5-chloro-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxylic acid (IIIa-1)
In a 500 ml flask, 6.0 g (31 mmol) of 5-chloro-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carbaldehyde are added to 30 ml of toluene. A solution of 2.4 g (62 mmol) of sodium hydroxide in 6ml of water is added to the reaction mixture, followed by 103 ml of a 30% solution of hydrogen peroxide in water, whilst keeping the temperature below 37°C. After the end of the addition, the reaction mixture is stirred at 50°C for 7 hours. Once the reaction mixture is back to room temperature, the two phases are separated and the organic phase is extracted with 100 ml of water. The combined aqueous phases are acidified to pH 2 with aqueous hydrochloric acid. The resulting white precipitate is filtered, washed twice with 20 ml of water, and dried to yield 3.2 g of 5-chloro-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxylic acid as a white solid. ^{1}H NMR (400 MHz, DMSO-d_6) δ ppm : 3.78 (s, 3H); 7.12 (t, 1H, JHF = 53.60 Hz)13.19 (s, 1H); IR (KBr) : 1688 cm^{-1} (C=O); 2200-3200 cm^{-1} broad (hydrogen bond).

Step 2 : preparation of of 5-chloro-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carbonyl chloride (IIIb-1)
3.2 g of 5-chloro-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxylic acid and 44.3 ml of thionyl chloride are refluxed for 5 hours. After cooling down, the reaction mixture is evaporated under vacuum to yield 3.5 g of 5-chloro-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carbonyl chloride as a yellow oil. ^{1}H NMR (400 MHz, CHCl3-d_6) δ ppm : 3.97 (s, 3H); 7.00 (t, J = 52.01 Hz, 1 H); IR (TQ) : 1759 and 1725 cm^{-1} (C=O).

Step 3 : preparation of 3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carbonyl fluoride (IIIc-1)
To a dried solution of 4.0 g (70 mmol) of potassium fluoride in 21 ml of tetrahydrothiophene-1,1-dioxide is added a solution of 5.0 g (22 mmol) of 5-chloro-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carbonyl chloride in 15 ml of toluene at 100°C. The resulting reaction mixture is stirred at 190-200°C for 22 hours. Distillation under vacuum yields 8 g of a solution (25% molar) of 3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carbonyl fluoride in tetrahydro-thiophene-1,1-dioxide. ^{1}H NMR (250 MHz, $CHCl_3$-d_6) δ ppm : 3.87 (s, 3H); 6.79 (t, *J* = 53.75 Hz, 1 H); ^{19}F NMR (250 MHz, $CHCl_3$-d_6) δ ppm : 45.37 (s, COF); -117.5 (d, *J = 28.2 Hz*); -131.6 (m).

Step 4 : preparation of of 3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxylic acid (IIId-1)
To 400 ml of a 1N sodium hydroxyde aqueous solution, is added dropwise 67.5 g of a solution (10% molar) of 3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carbonyl fluoride in tetra-hydrothiophene-1,1-dioxide. The temperature is kept below 20°C during the addition. After 2 hours of stirring at room temperature, the reaction mixture is carefully acidified to pH 2 with concentrated aqueous hydrochloric acid. The resulting white precipitate is filtered, washed with water, and dried to yield 6 g of 3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxylic acid as a white solid. ^{1}H NMR (400 MHz, DMSO-d_6) δ ppm: 3.90 (s, 3H); 7.22 (t, 1H, J_{HF} = 53.55Hz); 13.33 (s, 1H).

Step 5 : preparation of 3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carbonyl chloride (IIIe-1)

9.1 g of 3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxylic acid and 75.5 ml of thionyl chloride are refluxed for 1.5 hours. After cooling down, the reaction mixture is evaporated under vacuum to yield 10 g of 3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carbonyl chloride as a yellow oil. GC-MS ; observed M/z :Molecular ion : ($M^{+\cdot}$) = 212 ; fragments : ($M^{+\cdot}$-Cl) = 177 and ($M^{+\cdot}$-F) = 193.

Step 6 : preparation of N-cyclopropyl-N-[2-(2,6-dichlorophenoxy)ethyl]-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide

In a 13 ml Chemspeed™ vial is weighted 73 mg (0.726 mmol) of triethylamine. Then 3 ml of a 0.23 molar solution of N-[2-(2,6-dichlorophenoxy)ethyl]cyclopropanamine (0.594mmole) in dichloromethane is added followed by 3 ml of a 0.26 molar solution of 3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carbonyl chloride (0.66mmole) in dichloromethane and stirred at ambient temperature for 15 hrs. 1 ml of water is then added and the mixture is deposited on a basic alumina cartridge (2g) and eluted twice by 8 ml of dichloromethane. The solvents are removed to yield 183 mg (64%) of pure N-cyclopropyl-N-[2-(2,6-dichlorophenoxy)ethyl]-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide as an oil (M+H = 422).

Preparation example 2 : preparation of 3-(difluoromethyl)-N-[2-(3,3-dimethylbutyl)cyclopentyl]-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide (compound 319)

Step 1 : preparation of methyl 1-(3,3-dimethylbutyl)-2-oxocyclopentanecarboxylate

117.0 g (846.0 mmol) of potassium carbonate are added to a solution consisting of 40.0 g (281.7 mmol) of methyl 2-oxocyclopentanecarboxylate in 160 ml of dry toluene. 93 g (563.4 mmol) of 1-bromo-3,3-dimethylbutane are then added dropwise, and the mixture is stirred at reflux for 14 hours. After the reaction has ended the mixture is cooled to room temperature and filtered off through Celite. The product is concentrated under reduced pressure and purified by column chromatography (silica gel 100-200 mesh, mobile phase: ethyl acetate 5%/petroleum ether). This gives 48 g (75% of theory) of methyl 1-(3,3-dimethylbutyl)-2-oxocyclopentanecarboxylate.

Step 2 : preparation of 2-(3,3-dimethylbutyl)cyclopentanone

A solution consisting of 23.0 g (101.7 mmol) of methyl 1-(3,3-dimethylbutyl)-2-oxocyclopentanecarboxylate in 80 ml of acetic acid and 80 ml of conc. hydrochloric acid is stirred at 90°C for 14 hours. After the reaction has ended, the mixture is cooled to room temperature and ice-water is added. The product is extracted with diethyl ether. The org. phase is washed with water, dried with sodium sulphate and concentrated under reduced pressure. The crude product is purified by column chromatography (silica gel 60-120, mobile phase: ethyl acetate 3% / petroleum ether). This gives 10 g (59% of theory) of 2-(3,3-dimethylbutyl)cyclopentanone.

Step 3 : preparation of 2-(3,3-dimethylbutyl)-N-hydroxycyclopentanimine

At 0°C, aq. sodium carbonate solution is added to a solution consisting of 20.0 g of (119 mmol) of 2-(3,3-dimethylbutyl)cyclopentanone and 16.5 g (238 mmol) of hydroxylamine hydrochloride in 200 ml of methanol until the pH is 8. The mixture is then stirred at 50°C for 15 hours. After the reaction has ended,

the mixture is cooled to room temperature and filtered off and the product is concentrated under reduced pressure. The residue is extracted with water/diethyl ether. The org. phase is dried with sodium sulphate and concentrated under reduced pressure. This gives 20.0 g (92% of theory) of an 2-(3,3-dimethylbutyl)-N-hydroxycyclopentanimine.

Step 4 : preparation of 2-(3,3-dimethylbutyl)cyclopentanamine hydrochloride (1:1)

3.0 g of Raney nickel are added to a solution consisting of 1.00 g (5.4 mmol) of 2-(3,3-dimethylbutyl)-N-hydroxycyclopentanimine in 10 ml of methanolic ammonia solution, and the mixture is hydrogenated with hydrogen at 20°C for 18 hours. After the reaction has ended, the mixture is filtered off and the product is concentrated under reduced pressure. The residue is dissolved in diethyl ether, and HCl gas is added. Decanting and washing with diethyl ether gives 0.5 g (45% of theory) of 2-(3,3-dimethylbutyl)cyclopentanamine hydrochloride (1:1).

Step 5 : preparation of 3-(difluoromethyl)-N-[2-(3,3-dimethylbutyl)cyclopentyl]-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide

As for example 1 – step 6, condensation of 1.03 g 2-(3,3-dimethylbutyl)cyclopentanamine hydrochloride over 1.06 g of 3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carbonyl chloride gives 0.6 (31% of theory) of a syn + anti mixture of 3-(difluoromethyl)-N-[2-(3,3-dimethylbutyl)cyclopentyl]-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide. logP = 4.22 (isomer A) and logP = 4.28 (isomer B).

Preparation example 3 : preparation of 3-(difluoromethyl)-N-[3-(3,3-dimethylbutyl)cyclohexyl]-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide (compound 324)

Step 1 : 3-(3,3-dimethylbut-1-yn-1-yl)aniline

1.05 g (1.5 mmol) of bis(triphenylphosphine)palladium(II) chloride and 0.26 g (1.5 mmol) of copper(I) iodide are added to a solution consisting of 5.47 g (25 mmol) of 3-iodoaniline in 40 ml of triethylamine. With ice-cooling, 3.08 g (37.5 mmol) of 3,3-dimethyl-1-butyne are added dropwise such that the temperature remains at 20°C. After the addition has ended, the mixture is stirred at 20°C for 20 hours. The reaction solution is concentrated under reduced pressure and the residue formed is stirred into 1 l of water. The mixture is then extracted three times with diethyl ether. The combined organic phases are once more washed with water, dried with sodium sulphate and concentrated under reduced pressure. The crude product obtained is purified by silica gel chromatography (mobile phase methylene chloride). This gives 2.70 g (60% of theory) of 3-(3,3-dimethylbut-1-yn-1-yl)aniline having a content of 97% according to HPLC. logP = 2.71.

Step 2 : 3-(3,3-dimethylbutyl)cyclohexanamine

0.5 g of Ru/C 5% is added to a solution consisting of 1.04 g (0.6 mol) of 3-(3,3-dimethylbut-1-yn-1-yl)aniline in 20 ml of tetrahydrofuran, and the mixture is hydrogenated with 100 bar of hydrogen at 120°C for 40 hours. After cooling to room temperature, the catalyst is filtered off through kieselguhr and the product is concentrated under reduced pressure. This gives 0.9 g (81% of theory) of 3-(3,3-dimethylbutyl)cyclohexanamine as main component according to MSD-HPLC.

Step 3 : preparation of 3-(difluoromethyl)-N-[3-(3,3-dimethylbutyl)cyclohexyl]-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide

As for example 1 – step 6, condensation of 0.50 g 3-(3,3-dimethylbutyl)cyclohexanamine over 0.638 g of 3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carbonyl chloride gives 0.65 (54% of theory) of 3-(difluoromethyl)-N-[3-(3,3-dimethylbutyl)cyclohexyl]-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide. logP = 4.80.

General preparation example 4 : thionation of amide of formula (I) on Chemspeed™ apparatus

In a 13 ml Chemspeed™ vial is weighted 0.27mmole of phosphorous pentasulfide (P_2S_5). 3 ml of a 0.18 molar solution of the amide (I) (0.54mmole) in dioxane is added and the mixture is heated at reflux for two hours. The temperature is then cooled to 80°C and 2.5 ml of water are added. The mixture is heated at 80°C for one more hour. 2 ml of water are then added and the reaction mixture is extracted twice by 4 ml of dichloromethane. The organic phase is deposited on a basic alumina cartridge (2g) and eluted twice by 8 ml of dichloromethane. The solvents are removed and the crude thioamide derivative is analyzed by LCMS and NMR. Insufficiently pure compounds are further purified by preparative LCMS.

Example A : *in vivo* preventive test on *Sphaerotheca fuliginea* (cucumber)

Solvent: 49 parts by weight of N,N-dimethylformamide

Emulsifier: 1 part by weight of Alkylarylpolyglycolether

To produce a suitable preparation of active compound, 1 part by weight of active compound is mixed with the stated amounts of solvent and emulsifier, and the concentrate is diluted with water to the desired concentration.

To test for preventive activity, young plants are sprayed with the preparation of active compound at the stated rate of application. One day after this treatment, the plants are inoculated with an aqueous spore suspension of *Sphaerotheca fuliginea*. Then the plants are placed in a greenhouse at approximately 23°C and a relative atmospheric humidity of approximately 70 %.

The test is evaluated 7 days after the inoculation. 0 % means an efficacy which corresponds to that of the untreated control, while an efficacy of 100 % means that no disease is observed.

Under these conditions, good (at least 70 %) to total protection is observed at a dose of 500 ppm of active ingredient with the following compounds from table A :

Table A :

Example	Efficacy	Example	Efficacy	Example	Efficacy
9	95	241	100	320	100
70	75	242	100	322	90
71	95	243	100	328	100
89	88	244	100	329	100
129	100	247	100	330	88
144	90	256	100	331	100
150	83	271	98	333	100
153	100	288	94	337	100
154	100	289	93	338	100
162	95	291	73	339	100
163	100	296	70	340	90
172	93	298	85	344	100
181	100	302	98	350	100
182	75	306	95	357	100
184	100	307	83	358	100
187	100	309	98	359	100
196	75	310	100	360	100
213	99	311	90	361	91
215	100	312	90	367	100
216	100	314	90	368	93
217	100	315	71	370	100
219	100	316	98	372	100
221	100	318	93	374	100
240	100	319	100	381	95

Under the same conditions, total protection is observed at a dose of 500 ppm of active ingredient with compound 240, whereas poor protection (less than 25%) is observed with the des-fluoro analogue compound CMP1 as in table A2..

Table A2:

Example	dose (ppm)	Efficacy
240 from this invention	500	100
compound CMP1	500	23

The des-fluoro analogue compound CMP1 corresponds to N-cyclopropyl-3-(difluoromethyl)-1-methyl-N-[(2-phenylcyclohexyl)methyl]-1H-pyrazole-4-carboxamide.

These results show that the compounds according to the invention have a much better biological activity than the structurally closest compounds.

Under the same conditions, total protection is observed at a dose of 500 ppm of active ingredient with compound 256, whereas poor protection (less than 15%) is observed with the des-fluoro analogues compound CMP2 and compound CMP3 as in table A3.

Table A3:

Example	dose (ppm)	Efficacy
256 from this invention	500	100
compound CMP2	500	10
compound CMP3	500	0

The des-fluoro analogue compound CMP2 corresponds to N-cyclopropyl-5-fluoro-1,3-dimethyl-N-(3-phenylcyclohexyl)-1H-pyrazole-4-carboxamide and the des-fluoro analogue compound CMP3 corresponds to N-cyclopropyl-3-(difluoromethyl)-1-methyl-N-(3-phenylcyclohexyl)-1H-pyrazole-4-carboxamide.

These results show that the compounds according to the invention have a much better biological activity than the structurally closest compounds.

Under the same conditions, total protection is observed at a dose of 500 ppm of active ingredient with compound 374, whereas no protection is observed with the des-fluoro analogues compound CMP4 and compound CMP5 as in table A4.

Table A4:

Example	dose (ppm)	Efficacy
374 from this invention	500	100
compound CMP4	500	0
compound CMP5	500	0

The des-fluoro analogue compound CMP4 corresponds to N-[1,1'-bi(cyclohexyl)-2-yl]-5-fluoro-1,3-dimethyl-1H-pyrazole-4-carboxamide and the des-fluoro analogue compound CMP5 corresponds to N-[1,1'-bi(cyclohexyl)-2-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide.

These results show that the compounds according to the invention have a much better biological activity than the structurally closest compounds.

Example B : *in vivo* preventive test on *Alternaria solani* (tomato)

Solvent: 49 parts by weight of N,N-dimethylformamide

Emulsifier: 1 part by weight of Alkylarylpolyglycolether

To produce a suitable preparation of active compound, 1 part by weight of active compound is mixed with the stated amounts of solvent and emulsifier, and the concentrate is diluted with water to the desired concentration.

To test for preventive activity, young plants are sprayed with the preparation of active compound at the stated rate of application. One day after this treatment, the plants are inoculated with an aqueous spore suspension of *Alternaria solani*. The plants remain for one day in an incubation cabinet at approximately 22°C and a relative atmospheric humidity of 100%. Then the plants are placed in an incubation cabinet at approximately 20°C and a relative atmospheric humidity of 96 %.

The test is evaluated 7 days after the inoculation. 0 % means an efficacy which corresponds to that of the untreated control while an efficacy of 100 % means that no disease is observed.

Under these conditions, good (at least 70 %) to total protection is observed at a dose of 500 ppm of active ingredient with the following compounds from table B :

Table B :

Example	Efficacy	Example	Efficacy	Example	Efficacy
5	80	128	95	195	95
6	95	129	100	196	95
9	90	130	95	210	70
10	90	131	95	213	100
11	95	132	100	214	80
12	95	136	80	215	95
13	90	137	95	218	90
14	90	142	100	219	95
16	90	143	100	220	95
17	95	144	100	221	100
19	95	145	70	222	90
21	90	148	95	224	70
22	95	149	90	225	95
29	80	150	80	240	100
32	95	151	90	241	100
33	95	154	100	242	100
34	90	156	80	243	100
36	70	157	80	244	100
37	80	158	80	245	90
38	80	159	90	256	93
40	95	163	100	259	90
42	70	164	95	287	95
44	100	165	90	288	100
45	95	166	100	289	95
46	100	167	100	290	95
47	80	168	90	291	100
48	90	169	90	294	95
63	100	170	90	295	100
66	95	171	95	296	80
67	70	172	100	297	100
69	80	173	90	298	100
70	95	174	100	299	95
71	95	175	95	300	90
74	95	176	80	301	100
81	90	177	100	302	95
82	95	178	95	303	80
83	95	180	90	306	100
84	95	181	100	307	100
89	80	182	95	309	100
115	90	183	95	310	100
116	90	184	90	311	100
121	90	188	100	312	95
122	100	189	90	313	80
123	95	190	90	314	95
124	95	191	95	315	100
125	95	192	95	316	90
126	90	193	95	318	90
127	90	194	70	319	100

Table B (next) :

Example	Efficacy	Example	Efficacy	Example	Efficacy
320	100	340	100	364	95
322	90	341	80	366	90
324	90	343	95	367	90
325	95	344	100	368	80
328	95	349	95	370	100
329	100	350	90	372	95
330	95	353	95	378	100
331	100	357	100	379	95
333	100	358	100	380	95
337	100	359	95	381	100
338	100	360	95		
339	100	361	95		

Under the same conditions, high protection (at least 90%) is observed at a dose of 500 ppm of active ingredient with compound 13 and compound 14, whereas poor protection (less than 10%) is observed with the des-halogeno analogue compound CMP6 as in table B2.

Table B2:

Example	dose (ppm)	Efficacy
13 from this invention	500	90
14 from this invention	500	90
compound CMP6	500	10

The des-halogeno analogue compound CMP6 corresponds to 3-(difluoromethyl)-1-methyl-N-(1-phenoxypropan-2-yl)-1H-pyrazole-4-carboxamide.

These results show that the compounds according to the invention have a much better biological activity than the structurally closest compounds.

Under the same conditions, excellent protection (at least 95%) is observed at a dose of 500 ppm and 100 ppm of active ingredient with compound 349, whereas moderate protection (less than 60%) is observed with the des-fluoro analogue compound CMP7 as in table B3.

Table B3:

Example	dose (ppm)	Efficacy
349 from this invention	500	95
	100	95
compound CMP7	500	57
	100	43

The des-fluoro analogue compound CMP7 corresponds to N-(2-tert-butylcyclohexyl)-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide.

These results show that the compounds according to the invention have a much better biological activity than the structurally closest compounds.

Example C : *in vivo* preventive test on *Pyrenophora teres* (barley)

Solvent: 49 parts by weight of N,N-dimethylformamide

Emulsifier: 1 part by weight of alkylaryl polyglycol ether

To produce a suitable preparation of active compound, 1 part by weight of active compound is mixed with the stated amounts of solvent and emulsifier, and the concentrate is diluted with water to the desired concentration.

To test for preventive activity, young plants are sprayed with the preparation of active compound at the stated rate of application. One day after this treatment, the plants are inoculated with an aqueous spore suspension of *Pyrenophora teres*. The plants remain for 48 hours in an incubation cabinet at 22°C and a relative atmospheric humidity of 100 %. Then the plants are placed in a greenhouse at a temperature of approximately 20°C and a relative atmospheric humidity of approximately 80 %.

The test is evaluated 7-9 days after the inoculation. 0 % means an efficacy which corresponds to that of the untreated control while an efficacy of 100 % means that no disease is observed.

Under these conditions, good (at least 70 %) to total protection is observed at a dose of 500 ppm of active ingredient with the following compounds from table C :

Table C :

Example	Efficacy	Example	Efficacy	Example	Efficacy
6	70	137	89	202	80
9	100	139	90	210	90
10	95	141	90	213	100
11	100	142	95	214	100
12	100	143	100	215	100
13	94	144	100	216	100
14	95	145	70	217	100
16	90	147	100	218	100
19	89	148	95	219	100
21	80	149	95	220	100
28	90	150	100	221	95
29	100	151	94	222	90
32	70	153	100	240	100
33	95	154	100	241	100
35	70	155	100	242	100
36	100	156	95	243	100
37	100	157	100	244	95
38	80	158	95	245	78
40	80	161	100	247	100
42	94	162	95	256	100
43	89	163	100	258	89
46	100	164	100	259	78
62	80	165	100	260	70
63	100	166	100	271	95
66	100	167	80	287	100
67	100	168	100	288	100
68	80	171	100	289	100
70	100	172	100	290	100
71	100	173	78	291	100
83	95	174	95	294	95
84	95	175	95	295	100
89	100	176	95	296	100
115	100	177	100	297	100
116	100	178	100	298	100
117	78	179	100	299	100
121	100	180	100	300	100
122	100	181	100	301	100
123	100	182	100	302	100
124	90	183	100	303	100
125	100	184	100	306	100
126	100	187	100	307	100
127	100	188	100	309	100
128	100	189	100	310	100
129	100	190	95	311	100
130	95	191	100	312	100
131	100	192	100	313	100
132	100	193	94	314	100
135	90	195	95	315	100
136	95	196	100	316	100

Table C (next) :

Example	Efficacy	Example	Efficacy	Example	Efficacy
318	100	338	100	361	95
319	100	339	94	364	80
320	95	340	100	367	100
322	100	343	100	368	95
324	94	344	100	370	100
326	100	349	95	372	100
328	95	350	100	378	100
329	100	353	95	379	100
330	100	357	100	380	100
331	95	358	100	381	100
333	100	359	100		
337	100	360	95		

Under the same conditions, total protection is observed at a dose of 500 ppm and 100 ppm of active ingredient with compound 326, whereas poor protection (less than 10%) to no protection is observed with the des-halogeno analogue compound CMP8 as in table C2.

Table C2:

Example	dose (ppm)	Efficacy
326 from this invention	500	100
	100	100
compound CMP8	500	20
	100	0

The des-fluoro analogue compound CMP8 corresponds to N-(2-hexylcyclohexyl)-1-methyl-3-(trifluoromethyl)-1H-pyrazole-4-carboxamide.

These results show that the compounds according to the invention have a much better biological activity than the structurally closest compounds.

Example D : *in vivo* preventive test on *Venturia inaequalis* (apple scab)

Solvent: 24.5 parts by weight of acetone
24.5 parts by weight of N,N-dimethylacetamide

Emulsifier: 1 part by weight of alkylaryl polyglycol ether

To produce a suitable preparation of active compound, 1 part by weight of active compound is mixed with the stated amounts of solvent and emulsifier, and the concentrate is diluted with water to the desired concentration.

To test for preventive activity, young plants are sprayed with the preparation of active compound at the stated rate of application. After the spray coating has dried on, the plants are inoculated with an aqueous conidia suspension of the causal agent of apple scab (*Venturia inaequalis*) and then remain for 1 day in an incubation cabinet at approximately 20°C and a relative atmospheric humidity of 100 %.

The plants are then placed in a greenhouse at approximately 21°C and a relative atmospheric humidity of approximately 90 %.

The test is evaluated 10 days after the inoculation. 0 % means an efficacy which corresponds to that of the untreated control, while an efficacy of 100 % means that no disease is observed.

Under these conditions, good (at least 70 %) to total protection is observed at a dose of 100 ppm of active ingredient with the following compounds from table D :

Table D :

Example	Efficacy	Example	Efficacy	Example	Efficacy
9	100	288	100	335	100
129	100	306	99	337	74
181	100	307	100	338	100
184	100	310	100	339	100
187	100	311	100	343	97
217	100	312	99	353	99
218	100	314	98	354	100
221	100	315	100	355	99
240	100	316	100	357	100
241	100	320	100	358	100
242	100	329	100	359	99
243	100	331	100	360	100
244	100	333	99	361	88
256	100	334	100	378	100

Example E : *in vivo* preventive test on *Septoria tritici* (wheat)

Solvent: 49 parts by weight of N,N-dimethylacetamide

Emulsifier: 1 part by weight of alkylaryl polyglycol ether

To produce a suitable preparation of active compound, 1 part by weight of active compound or active compound combination is mixed with the stated amounts of solvent and emulsifier, and the concentrate is diluted with water to the desired concentration.

To test for preventive activity, young plants are sprayed with the preparation of active compound or active compound combination at the stated rate of application.

After the spray coating has been dried, the plants are sprayed with a spore suspension of *Septoria tritici*. The plants remain for 48 hours in an incubation cabinet at approximately 20°C and a relative atmospheric humidity of approximately 100 % and afterwards for 60 hours at approximately 15°C in a translucent incubation cabinet at a relative atmospheric humidity of approximately 100 %.

The plants are placed in the greenhouse at a temperature of approximately 15°C and a relative atmospheric humidity of approximately 80 %.

The test is evaluated 21 days after the inoculation. 0% means an efficacy which corresponds to that of the untreated control, while an efficacy of 100 % means that no disease is observed.

Under these conditions, good (at least 70 %) to total protection is observed at a dose of 500 ppm of active ingredient with the following compounds from table E :

Table E :

Example	Efficacy	Example	Efficacy	Example	Efficacy
9	100	241	100	334	100
129	80	243	100	337	78
161	80	244	100	338	100
162	90	256	100	339	100
181	100	271	88	343	100
184	100	288	90	344	94
187	100	311	93	353	80
213	93	315	100	357	100
215	90	319	100	358	80
216	100	326	78	359	100
217	100	329	100	360	90
218	86	330	78	361	100
221	100	331	100		
240	100	333	100		

Example F : *in vivo* preventive test on *Blumeria graminis* (barley)

Solvent: 49 parts by weight of N,N-dimethylacetamide

Emulsifier: 1 part by weight of alkylaryl polyglycol ether

To produce a suitable preparation of active compound, 1 part by weight of active compound or active compound combination is mixed with the stated amounts of solvent and emulsifier, and the concentrate is diluted with water to the desired concentration.

To test for preventive activity, young plants are sprayed with the preparation of active compound or active compound combination at the stated rate of application.

After the spray coating has been dried, the plants are dusted with spores of *Blumeria graminis f.sp. hordei*.

The plants are placed in the greenhouse at a temperature of approximately 18°C and a relative atmospheric humidity of approximately 80 % to promote the development of mildew pustules.

The test is evaluated 7 days after the inoculation. 0% means an efficacy which corresponds to that of the untreated control, while an efficacy of 100 % means that no disease is observed.

Under these conditions, good (at least 70 %) to total protection is observed at a dose of 500 ppm of active ingredient with the following compounds from table F :

Table F :

Example	Efficacy	Example	Efficacy	Example	Efficacy
9	100	244	100	338	100
129	100	271	78	339	100
161	100	288	100	343	94
162	100	306	100	344	100
181	100	311	100	353	90
184	100	315	100	354	100
187	100	319	100	355	80
213	100	329	100	357	100
215	100	330	100	358	100
217	100	331	100	359	94
221	100	333	100	360	100
240	100	334	90		
243	100	335	70		

Example G : *in vivo* preventive test on *Fusarium nivale* (wheat)

Solvent: 49 parts by weight of N,N-dimethylacetamide

Emulsifier: 1 part by weight of alkylaryl polyglycol ether

To produce a suitable preparation of active compound, 1 part by weight of active compound or active compound combination is mixed with the stated amounts of solvent and emulsifier, and the concentrate is diluted with water to the desired concentration.

To test for preventive activity, young plants are sprayed with the preparation of active compound or active compound combination at the stated rate of application.

After the spray coating has been dried, the plants are slightly injured by using a sandblast and afterwards they are sprayed with a conidia suspension of *Fusarium nivale* (var. majus).

The plants are placed in the greenhouse under a translucent incubation cabinet at a temperature of approximately 10°C and a relative atmospheric humidity of approximately 100 %.

The test is evaluated 5 days after the inoculation. 0% means an efficacy which corresponds to that of the untreated control, while an efficacy of 100 % means that no disease is observed.

Under these conditions, good (at least 70 %) to total protection is observed at a dose of 500 ppm of active ingredient with the following compounds from table G :

Table G :

Example	Efficacy	Example	Efficacy	Example	Efficacy
9	100	315	100	339	100
184	100	319	100	343	100
213	93	324	100	344	100
215	71	326	92	353	100
216	93	329	100	354	100
217	100	330	100	355	100
218	100	331	100	357	100
240	71	333	100	358	100
256	100	334	93	359	100
306	100	335	86	360	86
311	100	338	100		

Example H : *in vivo* preventive test on *Fusarium graminearum* (barley)

Solvent: 49 parts by weight of N,N-dimethylacetamide

Emulsifier: 1 part by weight of alkylaryl polyglycol ether

To produce a suitable preparation of active compound, 1 part by weight of active compound or active compound combination is mixed with the stated amounts of solvent and emulsifier, and the concentrate is diluted with water to the desired concentration.

To test for preventive activity, young plants are sprayed with the preparation of active compound or active compound combination at the stated rate of application.

After the spray coating has been dried, the plants are slightly injured by using a sandblast and afterwards they are sprayed with a conidia suspension of *Fusarium graminearum*.

The plants are placed in the greenhouse under a translucent incubation cabinet at a temperature of approximately 22°C and a relative atmospheric humidity of approximately 100 %.

The test is evaluated 5 days after the inoculation. 0 % means an efficacy which corresponds to that of the untreated control, while an efficacy of 100 % means that no disease is observed.

Under these conditions, high (at least 85 %) to total protection is observed at a dose of 500 ppm of active ingredient with the following compounds from table H :

Table H :

Example	Efficacy	Example	Efficacy	Example	Efficacy
129	100	187	100	244	100
161	86	221	100	271	93
162	100	243	100	288	100

Example I : *in vivo* preventive test on *Leptosphaeria nodorum* (wheat)

Solvent: 49 parts by weight of N,N-dimethylacetamide

Emulsifier: 1 part by weight of alkylaryl polyglycol ether

To produce a suitable preparation of active compound, 1 part by weight of active compound is mixed with the stated amounts of solvent and emulsifier, and the concentrate is diluted with water to the desired concentration.

To test for preventive activity, young plants are sprayed with a preparation of active compound at the stated rate of application. One day after this treatment, the plants are inoculated with an aqueous spore suspension of *Leptosphaeria nodorum*. The plants remain for 48 hours in an incubation cabinet at 22°C and a relative atmospheric humidity of 100 %. Then the plants are placed in a greenhouse at a temperature of approximately 22°C and a relative atmospheric humidity of approximately 90 %.

The test is evaluated 7-9 days after the inoculation. 0% means an efficacy which corresponds to that of the untreated control, while an efficacy of 100% means that no disease is observed.

Under these conditions, good (at least 70 %) to total protection is observed at a dose of 500 ppm of active ingredient with the following compounds from table I :

Table I :

Example	Efficacy	Example	Efficacy	Example	Efficacy
9	100	221	95	296	95
29	80	240	70	298	95
37	90	241	80	299	95
129	100	243	100	312	95
130	90	244	95	314	80
131	80	245	90	316	80
157	80	247	95	318	70
161	90	256	95	322	90
162	90	271	90	328	80
168	90	287	95	329	90
181	95	288	100	333	80
184	95	289	95	339	70
187	90	290	80	339	94
213	95	291	100	344	90
217	78	293	94	365	90
219	90	294	70	370	90
220	90	295	100	372	94

Under the same conditions, hioh protection (at least 90%) is observed at a dose of 500 ppm of active ingredient with compound 220 and compound 221, whereas poor protection (less than 10%) is observed with the compound of example E-12 disclosed in patent application WO-2008/101976 as in table I2.

Table I2:

Example	dose (ppm)	Efficacy
220 from this invention	500	90
221 from this invention	500	95
E-12 from WO-2008/101976	500	10

Example E-12 disclosed in international patent WO-2008/101976 corresponds to N-cyclopropyl-5-fluoro-1,3-dimethyl-N-{4-[2-(trifluoromethyl)phenyl]butan-2-yl}-1H-pyrazole-4-carboxamide.

These results show that the compounds according to the invention have a much better biological activity than the structurally closest compounds disclosed in WO-2008/101976.

Example J : *in vivo* preventive test on *Uromyces appendiculatus* (beans)

Solvent: 24.5 parts by weight of acetone
24.5 parts by weight of N,N-dimethylacetamide

Emulsifier: 1 part by weight of alkylaryl polyglycol ether

To produce a suitable preparation of active compound, 1 part by weight of active compound is mixed with the stated amounts of solvent and emulsifier, and the concentrate is diluted with water to the desired concentration.

To test for preventive activity, young plants are sprayed with the preparation of active compound at the stated rate of application. After the spray coating has dried on, the plants are inoculated with an aqueous spore

suspension of the causal agent of bean rust (*Uromyces appendiculatus*) and then remain for 1 day in an incubation cabinet at approximately 20°C and a relative atmospheric humidity of 100 %.

The plants are then placed in a greenhouse at approximately 21°C and a relative atmospheric humidity of approximately 90 %.

The test is evaluated 10 days after the inoculation. 0% means an efficacy which corresponds to that of the untreated control, while an efficacy of 100 % means that no disease is observed.

Under these conditions, good (at least 70 %) to total protection is observed at a dose of 100 ppm of active ingredient with the following compounds from table J :

Table J :

Example	Efficacy	Example	Efficacy	Example	Efficacy
9	94	256	100	329	100
129	99	288	100	331	100
181	78	306	70	334	100
184	100	307	100	335	100
187	95	310	100	337	86
218	95	311	100	339	100
221	100	312	100	354	100
240	100	313	88	355	100
241	100	314	85	357	100
242	100	315	100	359	100
243	98	316	100	376	94
244	100	320	99	378	100

Example K : *in vivo* preventive test on *Puccinia triticina* (wheat)

Solvent: 49 parts by weight of N,N-dimethylacetamide

Emulsifier: 1 part by weight of alkylaryl polyglycol ether

To produce a suitable preparation of active compound, 1 part by weight of active compound or active compound combination is mixed with the stated amounts of solvent and emulsifier, and the concentrate is diluted with water to the desired concentration.

To test for preventive activity, young plants are sprayed with the preparation of active compound or active compound combination at the stated rate of application. After the spray coating has been dried, the plants are sprayed with a spore suspension of *Puccinia triticina*. The plants remain for 48 hours in an incubation cabinet at approximately 20°C and a relative atmospheric humidity of approximately 100 %.

The plants are placed in the greenhouse at a temperature of approximately 20°C and a relative atmospheric humidity of approximately 80 %.

The test is evaluated 8 days after the inoculation. 0 % means an efficacy which corresponds to that of the untreated control, while an efficacy of 100 % means that no disease is observed.

Under these conditions, good (at least 75 %) to total protection is observed at a dose of 500 ppm of active ingredient with the following compounds from table K :

Table K :

Example	Efficacy	Example	Efficacy	Example	Efficacy
129	70	243	100	330	80
130	70	244	100	331	90
153	95	245	70	333	90
154	70	246	95	335	100
155	90	247	100	337	70
161	90	256	95	338	100
162	80	271	89	339	100
163	80	288	95	343	70
166	78	306	95	344	100
167	70	307	80	353	70
184	90	311	100	354	100
187	95	312	100	357	100
213	90	315	95	358	100
216	78	316	100	359	100
217	89	319	80	360	100
220	90	320	70	361	90
221	100	322	95	370	90
240	95	324	100	372	100
241	100	326	100	374	100
242	100	329	100		

Under the same conditions, moderate protection (at least 70%) is observed at a dose of 500 ppm of active ingredient with compound 129 and compound 130, whereas no protection is observed with the compound of example E-13 disclosed in patent application WO-2008/101976 as in table K2.

Table K2:

Example	dose (ppm)	Efficacy
129 from this invention	500	70
130 from this invention	500	70
E-13 from WO-2008/101976	500	0

Example E-13 disclosed in international patent WO-2008/101976 corresponds to N-cyclopropyl-N-[4-(3,4-dichlorophenyl)butan-2-yl]-5-fluoro-1,3-dimethyl-1H-pyrazole-4-carboxamide.
These results show that the compounds according to the invention have a much better biological activity than the structurally closest compounds disclosed in WO-2008/101976.

Under the same conditions, excellent protection (at least 95%) is observed at a dose of 500 ppm of active ingredient with compound 187, whereas weak protection (less than 30%) is observed with the compound of example 18 disclosed in patent application WO-2010/012795 as in table K3.

Table K3:

Example	dose (ppm)	Efficacy
187 from this invention	500	95
18 from WO-2010/012795	500	30

Example 18 disclosed in international patent WO-2010/012795 corresponds to N-cyclopropyl-N-[1-(2,4-dichlorophenoxy)propan-2-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide.
These results show that the compounds according to the invention have a much better biological activity than the structurally closest compounds disclosed in WO-2010/012795.

Under the same conditions, total protection to good protection (at least 80%) is observed at a dose of 500 ppm and 100 ppm of active ingredient with compound 243, whereas moderate protection (less than 60%) to no protection is observed with the compound of example 16 disclosed in patent application WO-2010/094666 as in table K4.

Table K4:

Example	dose (ppm)	Efficacy
243 from this invention	500	100
	100	80
16 from WO-2010/094666	500	60
	100	0

Example 16 disclosed in international patent WO-2010/094666 corresponds to N-(2-benzylcyclohexyl)-N-cyclopropyl-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide.
These results show that the compounds according to the invention have a much better biological activity than the structurally closest compounds disclosed in WO-2010/012795.

Under the same conditions, excellent protection (at least 95%) is observed at a dose of 500 ppm of active ingredient with compound 256, whereas no protection is observed with the des-fluoro analogues compound CMP2 and compound CMP3 as in table K5.

Table K5:

Example	dose (ppm)	Efficacy
256 from this invention	500	95
compound CMP2	500	0
compound CMP3	500	0

The des-fluoro analogue compound CMP2 corresponds to N-cyclopropyl-5-fluoro-1,3-dimethyl-N-(3-phenylcyclohexyl)-1H-pyrazole-4-carboxamide and the des-fluoro analogue compound CMP3 corresponds to N-cyclopropyl-3-(difluoromethyl)-1-methyl-N-(3-phenylcyclohexyl)-1H-pyrazole-4-carboxamide.
These results show that the compounds according to the invention have a much better biological activity than the structurally closest compounds.

Under the same conditions, total protection is observed at a dose of 500 ppm of active ingredient with compound 374, whereas no protection is observed with the des-fluoro analogues compound CMP4 and compound CMP5 as in table K6.

Table K6:

Example	dose (ppm)	Efficacy
374 from this invention	500	100
compound CMP4	500	0
compound CMP5	500	0

The des-fluoro analogue compound CMP4 corresponds to N-[1,1'-bi(cyclohexyl)-2-yl]-5-fluoro-1,3-dimethyl-1H-pyrazole-4-carboxamide and the des-fluoro analogue compound CMP5 corresponds to N-[1,1'-bi(cyclohexyl)-2-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide.

These results show that the compounds according to the invention have a much better biological activity than the structurally closest compounds.

Example L : *in vivo* preventive test on *Botrytis cinerea* (beans)

Solvent: 24.5 parts by weight of acetone
24.5 parts by weight of N,N-dimethylacetamide

Emulsifier: 1 part by weight of alkylaryl polyglycol ether

To produce a suitable preparation of active compound, 1 part by weight of active compound is mixed with the stated amounts of solvent and emulsifier, and the concentrate is diluted with water to the desired concentration.

To test for preventive activity, young plants are sprayed with the preparation of active compound. After the spray coating has dried on, 2 small pieces of agar covered with growth of *Botrytis cinerea* are placed on each leaf. The inoculated plants are placed in a darkened chamber at 20°C and a relative atmospheric humidity of 100 %.

2 days after the inoculation, the size of the lesions on the leaves is evaluated. 0 % means an efficacy which corresponds to that of the untreated control, while an efficacy of 100 % means that no disease is observed.

Under these conditions, good (at least 70 %) to total protection is observed at a dose of 500 ppm of active ingredient with the following compounds from table L :

Table L :

Example	Efficacy	Example	Efficacy	Example	Efficacy
9	100	256	93	329	99
10	85	288	100	337	93
213	86	289	100	344	100
240	95	291	100	366	84
241	99	302	93	370	100
242	95	306	94	372	91
243	90	315	70	378	96
244	88	319	73	381	88

Under the same conditions, excellent protection (at least 95%) is observed at a dose of 500 ppm of active ingredient with compound 240, whereas poor protection (less than 15%) is observed with the des-fluoro analogues compound CMP1 and compound CMP9 as in table L2.

Table L2:

Example	dose (ppm)	Efficacy
240 from this invention	500	95
compound CMP1	500	0
compound CMP9	500	13

The des-fluoro analogue compound CMP1 corresponds to N-cyclopropyl-3-(difluoromethyl)-1-methyl-N-[(2-phenylcyclohexyl)methyl]-1H-pyrazole-4-carboxamide and the des-fluoro analogue compound CMP9 corresponds to N-cyclopropyl-5-fluoro-1,3-dimethyl-N-[(2-phenylcyclohexyl)methyl]-1H-pyrazole-4-carboxamide.

These results show that the compounds according to the invention have a much better biological activity than the structurally closest compounds.

Under the same conditions, high protection (at least 90%) is observed at a dose of 500 ppm of active ingredient with compound 243, whereas poor protection (less than 30%) is observed with the compound of example 16 disclosed in patent application WO-2010/094666 as in table L3.

Table L3:

Example	dose (ppm)	Efficacy
243 from this invention	500	90
16 from WO-2010/094666	500	29

Example 16 disclosed in international patent WO-2010/094666 corresponds to N-(2-benzylcyclohexyl)-N-cyclopropyl-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide.

These results show that the compounds according to the invention have a much better biological activity than the structurally closest compounds disclosed in WO-2010/012795.

Under the same conditions, good protection (at least 85%) is observed at a dose of 500 ppm of active ingredient with compound 244, whereas poor protection (less than 30%) is observed with the des-fluoro analogue compound CMP10 as in table L4.

Table L4:

Example	dose (ppm)	Efficacy
244 from this invention	500	88
compound CMP10	500	29

The des-fluoro analogue compound CMP10 corresponds to N-cyclopropyl-5-fluoro-1,3-dimethyl-N-(2-phenoxycyclohexyl)-1H-pyrazole-4-carboxamide.

These results show that the compounds according to the invention have a much better biological activity than the structurally closest compounds..

Under the same conditions, high protection (at least 90%) is observed at a dose of 500 ppm of active ingredient with compound 256, whereas poor protection (less than 5%) is observed with the des-fluoro analogues compound CMP2 and compound CMP3 as in table L5.

Table L5:

Example	dose (ppm)	Efficacy
256 from this invention	500	93
compound CMP2	500	5
compound CMP3	500	0

The des-fluoro analogue compound CMP2 corresponds to N-cyclopropyl-5-fluoro-1,3-dimethyl-N-(3-phenylcyclohexyl)-1H-pyrazole-4-carboxamide and the des-fluoro analogue compound CMP3 corresponds to N-cyclopropyl-3-(difluoromethyl)-1-methyl-N-(3-phenylcyclohexyl)-1H-pyrazole-4-carboxamide.

These results show that the compounds according to the invention have a much better biological activity than the structurally closest compounds.

Example M : *in vivo* protective test on *Cochliobolus miyabeanus* (rice)

Solvent: 28.5 parts by weight of acetone

Emulsifier: 1.5 part by weight of polyoxyethylene alkyl phenyl ether

To produce a suitable preparation of active compound, 1 part by weight of active compound is mixed with the stated amounts of solvent and emulsifier, and the concentrate is diluted with water to the desired concentration.

To test for protective activity, young plants are sprayed with the preparation of active compound at the stated rate of application. One day after spraying, the plants are inoculated with an aqueous spore suspension of the causal agent of rice brown spot (*Cochliobolus miyabeanus*). The plants are then placed in an incubator at approximately 25°C and a relative atmospheric humidity of approximately 100 % for 1 day.

The test is evaluated 4 days after the inoculation. 0 % means an efficacy which corresponds to that of the control, while an efficacy of 100 % means that no disease is observed.

Under these conditions, high (at least 85 %) protection is observed at a dose of 250 ppm of active ingredient with the following compounds from table M :

Table M :

Example	Efficacy	Example	Efficacy	Example	Efficacy
215	98	315	97	339	92
216	90	324	97	344	95
217	98	329	98	357	93
306	95	330	85	360	94
311	97	338	96		

Example N : *in vivo* protective test on *Phakopsora pachyrhizi* (soybeans)

Solvent: 28.5 parts by weight of acetone

Emulsifier: 1.5 part by weight of polyoxyethylene alkyl phenyl ether

To produce a suitable preparation of active compound, 1 part by weight of active compound is mixed with the stated amounts of solvent and emulsifier, and the concentrate is diluted with water to the desired concentration.

To test for protective activity, young plants are sprayed with the preparation of active compound at the stated rate of application. One day after spraying, the plants are inoculated with an aqueous spore suspension of the causal agent of soybean rust (*Phakopsora pachyrhizi*). The plants are then placed in a greenhouse at approximately 20°C and a relative atmospheric humidity of approximately 80 %.

The test is evaluated 11 days after the inoculation. 0% means an efficacy which corresponds to that of the control, while an efficacy of 100 % means that no disease is observed.

Under these conditions, high (at least 85 %) to total protection is observed at a dose of 250 ppm of active ingredient with the following compounds from table M :

Table N :

Example	Efficacy	Example	Efficacy	Example	Efficacy
221	80	256	85	339	98
240	85	311	98	353	85
241	99	333	97	357	85
242	99	334	100	358	95
244	98	338	98		

Example O : *in vivo* protective test on *Pyricularia oryzae* (rice)

Solvent: 28.5 parts by weight of acetone

Emulsifier: 1.5 part by weight of polyoxyethylene alkyl phenyl ether

To produce a suitable preparation of active compound, 1 part by weight of active compound is mixed with the stated amounts of solvent and emulsifier, and the concentrate is diluted with water to the desired concentration.

To test for preventive activity, young plants are sprayed with the preparation of active compound at the stated rate of application. One day after spraying, the plants are inoculated with an aqueous spore suspension of the causal agent of rice blast (*Pyricularia oryzae*). The plants are then placed in an incubator at approximately 25°C and a relative atmospheric humidity of approximately 100 % for 1 day.

The test is evaluated 5 days after the inoculation. 0 % means an efficacy which corresponds to that of the control, while an efficacy of 100 % means that no disease is observed.

Under these conditions, high (at least 80 %) to total protection is observed at a dose of 250 ppm of active ingredient with the following compounds from table O :

Table O :

Example	Efficacy	Example	Efficacy	Example	Efficacy
215	98	311	96	338	97
216	95	315	95	339	98
217	97	329	98	344	95
306	95	330	80	357	97

Example P : inhibition of aflatoxines produced by *Aspergillus parasiticus*

Compounds were tested in microtiter plates (96 well black flat and transparent bottom) in Aflatoxin-inducing liquid media (20g sucrose, yeast extract 4g, KH_2PO_4 1g, and $MgSO_4$ $7H_2O$ 0.5g per liter), supplemented with 20mM of Cavasol (hydroxypropyl-beta-cyclodextrin) and containing 1% of DMSO. The assay is started by inoculating the medium with a concentrated spore suspension of *Aspergillus parasiticus* at a final concentration of 1000 spores/ml.

The plate was covered and incubated at 20°C for 7 days.

After 7 days of culture, OD measurement at OD_{620nm} with multiple read per well (circle: 4 x 4) was taken with an Infinite 1000 (Tecan) to calculate the growth inhibition. In the same time bottom fluorescence measurement at Em_{360nm} and Ex_{426nm} with multiple read per well (square: 3 x 3) was taken to calculate inhibition of aflatoxin formation.

Compounds from table O show good (at least 80%) to total inhibition of aflatoxines production at 50 µM. Growth inhibition of *Fusarium graminearum* of these examples vary from 67 to 100 % at 50 µM.

Table P :

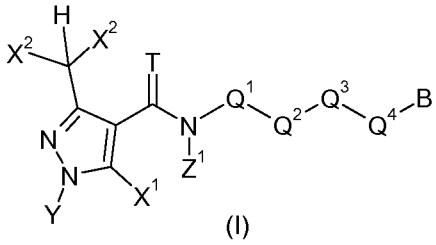
Example	% Inhibition of Aflatoxin at 50 µM	% Inhibition of fungal growth at 50 µM	Example	% Inhibition of Aflatoxin at 50 µM	% Inhibition of fungal growth at 50 µM
70	97	78	189	100	94
71	100	83	190	88	77
76	100	83	191	100	100
77	100	98	192	100	91
78	83	65	193	100	92
79	100	93	196	100	91
81	97	80	202	100	84
82	100	100	213	100	100
89	100	89	214	100	93
116	100	82	215	100	100
117	99	81	216	100	100
119	95	77	217	100	100
120	100	100	219	81	71
121	100	98	221	100	100
122	100	91	222	91	78
123	100	96	225	100	85
124	99	81	240	100	98
125	96	76	241	100	97
126	100	89	242	100	100
128	83	71	243	100	100
129	100	100	244	99	82
132	100	85	247	93	78
134	100	79	255	100	90
136	93	71	256	96	79
142	100	84	259	97	82
143	96	73	288	100	99
144	100	94	290	82	72
148	90	67	291	100	100
150	100	82	292	100	86
151	100	100	293	100	100
153	100	99	294	100	84
154	100	100	295	100	100
155	100	100	297	100	85
162	100	100	298	100	100
163	100	100	301	100	100
165	99	83	302	100	100
166	100	88	303	100	90
169	100	84	306	100	100
172	100	100	307	100	92
173	100	85	309	100	82
174	85	67	310	100	96
175	100	92	311	100	97
178	100	88	312	100	99
180	100	100	313	99	82
182	100	90	315	100	100
183	82	79	316	100	100
184	100	100	317	100	90
185	100	89	318	100	89
187	100	100	319	100	89

Table P (next) :

Example	% Inhibition of Aflatoxin at 50 µM	% Inhibition of fungal growth at 50 µM	Example	% Inhibition of Aflatoxin at 50 µM	% Inhibition of fungal growth at 50 µM
320	99	82	343	100	87
322	100	99	344	100	89
328	100	91	350	100	100
329	100	97	351	100	100
330	100	87	352	99	85
331	99	79	353	99	85
333	100	92	359	100	90
334	100	90	360	100	96
335	100	84	361	100	84
338	100	100	364	99	81
339	100	100	367	100	100
340	100	95	368	100	93

CLAIMS

1. A compound of formula (I)



(I)

wherein

- X^1 and X^2 which can be the same or different, represent a halogen atom ;
- Y represents a C_1-C_4-alkyl ;
- T represents O or S ;
- Q^1 represents CR^1R^2 ; $-CR^3=CR^4-$; $-CR^3=N-O-$; or -C(=W)- ;
- Q^2, Q^3 and Q^4 , which can be the same or different, represent a direct bond ; CR^1R^2 ; $-CR^3=CR^4-$; -C≡C- ; $-CR^3=N-O-$; $-O-N=CR^3-$; O ; S ; SO ; SO_2 ; NR^5 ; SiR^6R^7 ; or -C(=U)-;
- B represents a phenyl ring that can be susbtituted by up to 5 groups X which can be the same or different ; a naphthyl ring that can be susbtituted by up to 7 groups X which can be the same or different ; a saturated, partially saturated or unsaturated, monocyclic or fused bicyclic 4-, 5-, 6-, 7-, 8-, 9-, 10-membered ring comprising from 1 up to 4 heteroaroms selected in the list consisting of N, O, S, that can be substituted by up to 6 groups X which can be the same or different ; a hydrogen atom ; a halogen atom ; a substituted or non-substituted C_1-C_{12}-alkyl group ; a C_1-C_{12}-halogenoalkyl group having 1 to 9 halogen atoms that can be the same or different ; a substituted or non-substituted C_3-C_8-cycloalkyl group ; a substituted or non-substituted C_3-C_8-cycloalkenyl group, a bicyclo[2.2.1]heptan-2-yl group ; a tri(C_1-C_8-alkyl)silyl group ; a substituted or non-substituted C_2-C_{12} alkenyl group ; or a substituted or non-substituted C_2-C_{12} alkynyl group ;
- X represents a halogen atom ; nitro ; cyano ; isonitrile ; hydroxy ; amino ; sulfanyl ; pentafluoro-λ^6-sulfanyl ; formyl ; formyloxy ; formylamino ; substituted or non-substituted (hydroxyimino)-C_1-C_8-alkyl ; substituted or non-substituted (C_1-C_8-alkoxyimino)-C_1-C_8-alkyl ; substituted or non-substituted (C_2-C_8-alkenyloxyimino)-C_1-C_8-alkyl ; substituted or non-substituted (C_2-C_8-alkynyloxyimino)-C_1-C_8-alkyl ; substituted or non-substituted (benzyloxyimino)-C_1-C_8-alkyl ; carboxy ; carbamoyl ; N-hydroxycarbamoyl ; carbamate ; substituted or non-substituted C_1-C_8-alkyl ; C_1-C_8-halogenoalkyl having 1 to 5 halogen atoms ; substituted or non-substituted C_2-C_8-alkenyl ; C_2-C_8-halogenoalkenyl having 1 to 5 halogen atoms ; substituted or non-substituted C_2-C_8-alkynyl ; C_2-C_8-halogenoalkynyl having 1 to 5 halogen atoms ; substituted or non-substituted C_1-C_8-alkoxy ; C_1-C_8-halogenoalkoxy having 1 to 5 halogen atoms ; substituted or non-substituted C_1-C_8-alkylsulfanyl ; C_1-C_8-halogenoalkylsulfanyl having 1 to 5 halogen atoms ; substituted or non-substituted C_1-C_8-alkylsulfinyl ; C_1-C_8-halogenoalkylsulfinyl having 1 to 5 halogen atoms ;

substituted or non-substituted C_1-C_8-alkylsulfonyl ; C_1-C_8-halogenoalkylsulfonyl having 1 to 5 halogen atoms ; substituted or non-substituted C_1-C_8-alkylamino ; substituted or non-substituted di-C_1-C_8-alkylamino ; substituted or non-substituted C_2-C_8-alkenyloxy ; C_2-C_8-halogenoalkenyloxy having 1 to 5 halogen atoms ; substituted or non-substituted C_3-C_8-alkynyloxy ; C_2-C_8-halogenoalkynyloxy having 1 to 5 halogen atoms ; substituted or non-substituted C_3-C_7-cycloalkyl ; C_3-C_7-halogenocycloalkyl having 1 to 5 halogen atoms ; substituted or non-substituted (C_3-C_7-cycloalkyl)-C_1-C_8-alkyl ; substituted or non-substituted (C_3-C_7-cycloalkyl)-C_2-C_8-alkenyl ; substituted or non-substituted (C_3-C_7-cycloalkyl)-C_2-C_8-alkynyl ; substituted or non-substituted tri(C_1-C_8-alkyl)silyl ; substituted or non-substituted tri(C_1-C_8-alkyl)silyl-C_1-C_8-alkyl ; substituted or non-substituted C_1-C_8-alkylcarbonyl ; C_1-C_8-halogenoalkylcarbonyl having 1 to 5 halogen atoms ; substituted or non-substituted C_1-C_8-alkylcarbonyloxy ; C_1-C_8-halogenoalkylcarbonyloxy having 1 to 5 halogen atoms ; substituted or non-substituted C_1-C_8-alkylcarbonylamino ; C_1-C_8-halogenoalkyl- carbonylamino having 1 to 5 halogen atoms ; substituted or non-substituted C_1-C_8-alkoxycarbonyl ; C_1-C_8-halogenoalkoxycarbonyl having 1 to 5 halogen atoms ; substituted or non-substituted C_1-C_8-alkyloxycarbonyloxy ; C_1-C_8-halogenoalkoxycarbonyloxy having 1 to 5 halogen atoms ; substituted or non-substituted C_1-C_8-alkylcarbamoyl ; substituted or non-substituted di-C_1-C_8-alkylcarbamoyl ; substituted or non-substituted C_1-C_8-alkylaminocarbonyloxy ; substituted or non-substituted di-C_1-C_8-alkylaminocarbonyloxy ; substituted or non-substituted N-(C_1-C_8-alkyl)hydroxy carbamoyl ; substituted or non-substituted C_1-C_8-alkoxycarbamoyl ; substituted or non-substituted N-(C_1-C_8-alkyl)-C_1-C_8-alkoxycarbamoyl ; aryl that can be susbtituted by up to 6 groups Q which can be the same or different ; C_1-C_8-arylalkyl that can be susbtituted by up to 6 groups Q which can be the same or different ; C_2-C_8-arylalkenyl that can be susbtituted by up to 6 groups Q which can be the same or different ; C_2-C_8-arylalkynyl that can be susbtituted by up to 6 groups Q which can be the same or different ; aryloxy that can be susbtituted by up to 6 groups Q which can be the same or different ; arylsulfanyl that can be susbtituted by up to 6 groups Q which can be the same or different ; arylamino that can be susbtituted by up to 6 groups Q which can be the same or different ; C_1-C_8-arylalkyloxy that can be susbtituted by up to 6 groups Q which can be the same or different ; C_1-C_8-arylalkylsulfanyl that can be susbtituted by up to 6 groups Q which can be the same or different ; or C_1-C_8-arylalkylamino that can be susbtituted by up to 6 groups Q which can be the same or different ; or

- two substituent X together with the consecutive carbon atoms to which they are linked can form a 5- or 6-membered, saturated carbocycle or saturated heterocycle, which can be substituted by up to four groups Q which can be the same or different ;
- Z^1 represents a hydrogen atom ; a formyl group ; a substituted or non-substituted C_1-C_8-alkyl ; a substituted or non substituted C_1-C_8-alkoxy ; a non-substituted C_3-C_7-cycloalkyl or a C_3-C_7-cycloalkyl substituted by up to 10 atoms or groups that can be the same or different and that can be selected in the list consisting of halogen atoms, cyano, C_1-C_8-alkyl, C_1-C_8-halogenoalkyl comprising up to 9 halogen atoms that can be the same or different, C_1-C_8-alkoxy, C_1-C_8-halogenoalkoxy comprising up to 9 halogen atoms that can be the same or different, C_1-C_8-alkoxycarbonyl, C_1-C_8-halogenoalkoxycarbonyl comprising up to 9 halogen atoms that can be the same or different, C_1-C_8-alkylaminocarbonyl and di-C_1-C_8-alkylaminocarbonyl ;

- R^1 and R^2 independently represent a hydrogen atom ; a halogen atom ; cyano ; substituted or non-substituted C_1-C_{12}-alkyl ; substituted or non-substituted C_2-C_{12}-alkenyl ; substituted or non-substituted C_2-C_{12}-alkynyl ; substituted or non-substituted C_3-C_7-cycloalkyl ; C_1-C_{12}-halogenoalkyl having 1 to 5 halogen atoms ; substituted or non-substituted C_1-C_8-alkoxy ; substituted or non-substituted C_1-C_8-alkylsulfanyl ; substituted or non-substituted C_1-C_8-alkylamino ; substituted or non-substituted di-(C_1-C_8-alkyl)amino ; or substituted or non-substituted C_1-C_8-alkoxycarbonyl ; or R^1 and R^2 are a C_2-C_5-alkylene group that can be substituted by up to four groups that can be the same or different and that can be selected in the list consisting of halogen atoms, C_1-C_8-alkyl or C_1-C_2-halogenoalkyl comprising up to 5 halogen atoms that can be the same or different ; or
- The R^1 substituent of the group Q^i and the R^1 substituent of the group Q^{i+1}, i being an integer between 1 and 3, together with the consecutive carbon atoms to which they are linked can form a 3-, 4-, 5-, -6 or 7-membered saturated carbocycle that can be substituted by up to four groups that can be the same or different and that can be selected in the list consisting of halogen atoms, C_1-C_8-alkyl or C_1-C_2-halogenoalkyl comprising up to 5 halogen atoms that can be the same or different ; or
- The R^1 substituent of the group Q^i and the R^1 substituent of the group Q^{i+2}, i being an integer between 1 and 2, together with the consecutive carbon atoms to which they are linked can form a 3-, 4-, 5-, 6- or 7-membered saturated carbocycle that can be substituted by up to four groups that can be the same or different and that can be selected in the list consisting of halogen atoms, C_1-C_8-alkyl or C_1-C_2-halogenoalkyl comprising up to 5 halogen atoms that can be the same or different ;
- R^3 and R^4 independently represent a hydrogen atom ; substituted or non-substituted C_1-C_8-alkyl ; substituted or non-substituted C_2-C_8-alkenyl ; substituted or non-substituted C_2-C_8-alkynyl ; substituted or non-substituted C_3-C_7-cycloalkyl ; or C_1-C_8-halogenoalkyl having 1 to 5 halogen atoms ; R^5 represents a hydrogen atom ; a substituted or non-substituted C_1-C_8-alkyl ; a C_1-C_8-halogenoalkyl comprising up to 9 halogen atoms that can be the same or different ; a substituted or non-substituted C_2-C_8-alkenyl ; a C_2-C_8-halogenoalkenyl comprising up to 9 halogen atoms that can be the same or different ; a substituted or non-substituted C_3-C_8-alkynyl ; a C_3-C_8-halogenoalkynyl comprising up to 9 halogen atoms that can be the same or different ; a substituted or non-substituted C_3-C_7-cycloalkyl ; a C_3-C_7-halogeno-cycloalkyl comprising up to 9 halogen atoms that can be the same or different ; a substituted or non-substituted C_3-C_7-cycloalkyl-C_1-C_8-alkyl ; formyl ; a substituted or non-substituted C_1-C_8-alkylcarbonyl ; C_1-C_8-halogenoalkylcarbonyl comprising up to 9 halogen atoms that can be the same or different ; a substituted or non-substituted C_1-C_8-alkoxycarbonyl ; C_1-C_8-halogenoalkoxycarbonyl comprising up to 9 halogen atoms that can be the same or different ; a substituted or non-substituted C_1-C_8-alkylsulphonyl ; C_1-C_8-halogenoalkylsulphonyl comprising up to 9 halogen atoms that can be the same or different ; phenylmethylene that can be substituted by up to 7 groups Q which can be the same or different ; or phenylsulphonyl that can be substituted by up to 5 groups Q which can be the same or different ;
- R^6 and R^7 independently represent a substituted or non-substituted C_1-C_8-alkyl ;
- W represents O ; or S ;
- U represents O ; S ; N-OR^a ; or N-CN ;

- R^a represents a hydrogen atom ; a substituted or non-substituted C_1-C_4-alkyl ; or a C_1-C_4-halogenoalkyl comprising up to 7 halogen atoms that can be the same or different ;
- Q independently represents a halogen atom ; cyano ; nitro ; substituted or non-substituted C_1-C_8-alkyl ; C_1-C_8-halogenoalkyl having 1 to 9 halogen atoms that can be the same or different ; substituted or non-substituted C_1-C_8-alkoxy ; C_1-C_8-halogenoalkoxy having 1 to 9 halogen atoms that can be the same or different ; substituted or non-substituted C_1-C_8-alkylsulfanyl ; C_1-C_8-halogenoalkylsulfanyl having 1 to 9 halogen atoms that can be the same or different ; substituted or non-substituted tri(C_1-C_8)alkylsilyl ; substituted or non-substituted tri(C_1-C_8)alkylsilyl-C_1-C_8-alkyl ; substituted or non-substituted (C_1-C_8-alkoxyimino)-C_1-C_8-alkyl ; substituted or non-substituted (benzyloxyimino)-C_1-C_8-alkyl ;

with the provisio that -Q^1-Q^2-Q^3-Q^4- does not represent CR^1R^2 when B represents a substituted or non-substituted phenyl, naphthyl or 2-pyridyl ring ;

or that -Q^1-Q^2-Q^3-Q^4- does not represent $[CR^1R^2]_2$ or CR^1R^2-C(=W)- or a cycloalkyl-1,2-diyl group, when B represents a substituted or non-substituted phenyl, naphthyl or heterocyclic ring ;

or that Z^1 does not represent a hydrogen atom when -Q^1-Q^2- represents a unsubstituted cyclohexyl-1,2-diyl group and -Q^3-Q^4- represents a substituted or non-substituted cyclopropyl-1,2-diyl group ;

as well as its salts, N-oxydes, metallic complexes, metalloidic complexes and optically active isomers.

2. A compound according to claim 1 wherein X^1 and X^2 independently represent a chlorine or a fluorine atom.

3. A compound according to claim 1 or 2 wherein Y represents methyl.

4. A compound according to anyone of claims 1 to 3 wherein T represents O.

5. A compound according to anyone of claims 1 to 4 wherein B represents a substituted or non-substituted phenyl ring ; a substituted or non-substituted naphthyl ring ; a substituted or non-substituted pyridyl ring ; a substituted or non-substituted thienyl ring ; or a substituted or non-substituted benzothienyl ring; preferably a substituted or non-substituted phenyl ring or a substituted or non-substituted 2-pyridyl ring.

6. A compound according to anyone of claims 1 to 5 wherein X independently represents a halogen atom; substituted or non-substituted C_1-C_8-alkyl ; C_1-C_8-halogenoalkyl comprising up to 9 halogen atoms that can be the same or different ; substituted or non-substituted tri(C_1-C_8-alkyl)silyl ; substituted or non-substituted C_1-C_8-alkoxy or C_1-C_8-halogenoalkoxy comprising up to 9 halogen atoms that can be the same or different ; substituted or non-substituted C_1-C_8-alkylsulfanyl or C_1-C_8-halogenoalkylsulfanyl comprising up to 9 halogen atoms that can be the same or different ; or wherein two consecutive substituents X together with the phenyl ring form a substituted or non-substituted cyclopentyl or cyclohexyl ring.

7. A compound according to anyone of claims 1 to 6 wherein X independently represents fluorine, chlorine, bromine, iodine, methyl, ethyl, propyl, isopropyl, butyl, isobutyl, secbutyl, terbutyl, cyclopropyl, cyclopentyl, cyclohexyl, trimethylsilyl, methoxy, ethoxy, methylsulfanyl, ethylsulfanyl, trifluoromethyl, trichloromethyl, difluoromethoxy, trifluoromethoxy, difluorochloromethoxy, trifluoroethoxy, difluoromethysulfanyl, trifluoromethylsulfanyl and difluorochloro-methylsulfanyl

8. A compound according to anyone of claims 1 to 7 wherein Z^1 represents a hydrogen atom ; a non-substituted C_3-C_7 cycloalkyl ; or a C_3-C_7 cycloalkyl substituted by up to 10 groups or atoms that can be the same or different and that can be selected in the list consisting of halogen atoms, C_1-C_8-alkyl, C_1-C_8-halogenoalkyl comprising up to 9 halogen atoms that can be the same or different, C_1-C_8-alkoxy and C_1-C_8-halogenoalkoxy comprising up to 9 halogen atoms that can be the same or different; preferably a non-substituted C_3-C_7-cycloalkyl; more preferably a cyclopropyl.

9. A compound according to anyone of claims 1 to 8 wherein wherein Q^1 represents CR^1R^2

10. A compound according to anyone of claims 1 to 9 wherein Q^2, Q^3 and Q^4, which can be the same or different, represents a direct bond ; CR^1R^2 ; or O.

11. A compound according to anyone of claims 1 to 10 wherein Q^2 represents CR^1R^2, Q^3 represents a direct bond or O, and Q^4 represent a direct bond.

12. A compound according to anyone of claims 1 to 11 wherein R^1 and R^2 independently represent a hydrogen atom, a fluorine atom, a substituted or non-substituted C_1-C_8-alkyl or a substituted or non-substituted C_1-C_8-alkoxy

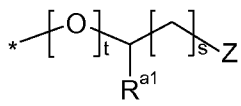
13. A compound according to anyone of claims 1 to 11 wherein the R^1 substituent of the group Q^i and the R^1 substituent of the group Q^{i+1}, i being an integer between 1 and 3, together with the consecutive carbon atoms to which they are linked can form an optionally mono or polysubstituted 3-, 4-, 5-, 6- or 7-membered saturated carbocycle; preferably an optionally mono or polysubstituted cyclopropyl, cyclopentyl, cyclohexyl or a cycloheptyl ring; more preferably a cyclopropyl, a cyclopentyl or a cyclohexyl ring.

14. A compound according to claim 13 wherein the R^1 substituent of the group Q^i and the R^1 substituent of the group Q^{i+1}, i being an integer between 1 and 3, together with the consecutive carbon atoms to which they are linked can form a cyclopentyl, cyclohexyl or cycloheptyl group that can be substituted by up to four groups that can be the same or different and that can be selected in the list consisting of fluorine, chlorine, methyl, ethyl, propyl, isopropyl, isobutyl, secbutyl, terbutyl, trifluoromethyl or difluoromethyl

15. A compound according to claim 14 wherein

- -Q^1-Q^2- represents an optionally mono or polysubstituted cyclopentyl-1,2-diyl, cyclohexyl-1,2-diyl or cycloheptyl-1,2-diyl group; and

- $-Q_3-Q_4-B$ represents a bicyclo[2.2.1]heptan-2-yl group, A^1, A^2, A^3 or A^4 wherein

  - A^1 represents  , wherein

    R^{a1} represents hydrogen, C_1-C_4-alkyl or C_1-C_4-haloalkyl ;

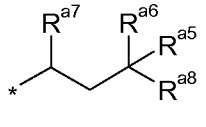
    Z represents $-CR^{a2}R^{a3}R^{a4}$ or $-Si\ R^{a2}R^{a3}R^{a4}$;

    s represents 0, 1, 2 or 3 ;

    t represents 0 or 1 ;

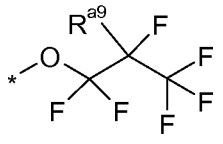
    R^{a2}, R^{a3}, R^{a4} independently of one another represent hydrogen, halogen C_1-C_4-alkyl or C_1-C_4-haloalkyl ; or

    R^{a3} and R^{a4} together with the carbon atom to which they are attached form an optionally substituted saturated or insaturated 3- to 6-membered carbocyclic ring ;

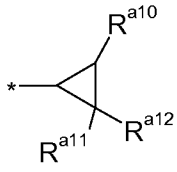
  - A^2 represents  , wherein

    R^{a6} represent hydrogen, halogen, C_1-C_8-alkyl or C_1-C_8-haloalkyl ;

    R^{a5}, R^{a7}, R^{a8} independently of one another represent hydrogen, methyl or ethyl ;

  - A^3 represents  , wherein

    R^{a9} represent hydrogen or fluorine ;

  - A^4 represents  , wherein

    R^{a10} represent optionally substituted C_2-C_{12}-alkyl, optionally substituted C_2-C_{12}-alkenyl, optionally substituted C_2-C_{12}-alkynyl, optionally substituted C_3-C_8-cycloalkyl, optionally substituted phenyl or heterocyclyl;

    R^{a11} represent hydrogen or halogen ; and

    R^{a12} represent hydrogen or halogen.

16. A compound according to claim 15 wherein

    R^{a1} represents hydrogen or methyl ;

    s represents 0 or 1 ;

    R^{a2} represents chlorine, methyl, ethyl, isopropyl or trifluoromethyl;

    R^{a3} represents chlorine, methyl, ethyl, isopropyl or trifluoromethyl;

R^{a4} represents hydrogen, chlorine, methyl, ethyl, isopropyl or trifluoromethyl;
R^{a5} represents hydrogen or methyl ;
R^{a6} represents hydrogen ;
R^{a7} represents hydrogen or methyl ;
R^{a8} represents fluorine, chlorine, methyl, ethyl or trifluoromethyl ;
R^{a9} represent hydrogen or fluorine;
R^{a10} represents ethyl, propyl, isopropyl, butyl, secbutyl, terbutyl, cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, α-methylcyclopropyl, 4-fluorophenyl, 4-bromophenyl, 2-thienyl, 3-thienyl or 2-fury;
R^{a11} represents hydrogen ;
R^{a12} represents hydrogen.

17. A compound according to anyone of claims 1 to 11 wherein the R^1 substituent of the group Q^i and the R^1 substituent of the group Q^{i+2}, i being an integer between 1 and 2, together with the consecutive carbon atoms to which they are linked can form an cyclohexyl group that can be substituted by up to four groups that can be the same or different and that can be selected in the list consisting of fluorine, chlorine, methyl, ethyl, propyl, isopropyl, isobutyl, secbutyl, terbutyl, trifluoromethyl or difluoromethyl

18. A compound according to claim 17 wherein $-Q^1-Q^2-Q^3-$ represents an optionally mono or polysubstituted cyclohexyl-1,3-diyl and $-Q_4$-B represents a bicyclo[2.2.1]heptan-2-yl group, A^1, A^2, A^3 or A^4 group as defined in claim 15 or 16.

19. A compound according to anyone of claims 1 to 18 wherein R^3 and R^4 independently represent a hydrogen atom, or a substituted or non-substituted C_1-C_8-alkyl.

20. A compound according to anyone of claims 1 to 19 wherein R^5 represents a substituted or non-substituted C_1-C_8-alkyl.

21. A compound according to anyone of claims 1 to 20 wherein R^6 and R^7 independently represent a non-substituted C_1-C_8-alkyl, preferably a non-substituted C_1-C_3-alkyl, more preferably methyl.

22. A compound according to anyone of claims 1 to 21 wherein U represents O or N-O-(C_1-C_4-alkyl).

23. A fungicide composition comprising, as an active ingredient, an effective amount of a compound of formula (I) according to claims 1 to 24 and an agriculturally acceptable support, carrier or filler.

24. A method for controlling phytopathogenic fungi of crops, characterized in that an agronomically effective and substantially non-phytotoxic quantity of a compound according to claims 1 to 22 or a composition according to claim 23 is applied to the soil where plants grow or are capable of growing, to the leaves and/or the fruit of plants or to the seeds of plants.

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2011/059026

A. CLASSIFICATION OF SUBJECT MATTER
INV. C07D231/16 A01N43/56
ADD.

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

B. FIELDS SEARCHED

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

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

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, CHEM ABS 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 2010/012795 A1 (BAYER CROPSCIENCE SA [FR]; BENNABI SAMIR [FR]; BENTING JUERGEN [DE]; B) 4 February 2010 (2010-02-04) the whole document	1-24
X	WO 2010/015681 A1 (BAYER CROPSCIENCE SA [FR]; BENNABI SAMIR [FR]; COQUERON PIERRE-YVES [F) 11 February 2010 (2010-02-11) the whole document	1-24
X	WO 2009/012998 A1 (SYNGENTA PARTICIPATIONS AG [CH]; STIERLI DANIEL [CH]; DAINA ANTOINE [C) 29 January 2009 (2009-01-29) the whole document	1-24

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

[X] See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
19 August 2011	25/08/2011

Name and mailing address of the ISA/	Authorized officer
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INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2011/059026

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 2009/127718 A2 (SYNGENTA PARTICIPATIONS AG [CH]; STIERLI DANIEL [CH]; WALTER HARALD [C) 22 October 2009 (2009-10-22) the whole document -----	1-24

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
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