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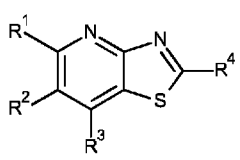
(54) Title: SUBSTITUTED THIAZOLOPYRIDINES, SALTS THEREOF AND THEIR USE AS HERBICIDALLY ACTIVE SUBSTANCES



(I)

(57) Abstract: The present invention relates to substituted thiazolopyridines of the general formula (I) or salts thereof, where the radicals in the general formula (I) correspond to the definitions given in the description, and to their use as herbicides, in particular for controlling weed grasses and/or broad-leaved weeds in crops of useful plants and/or as plant growth regulators for influencing the growth of crops of useful plants.

Bayer AG

Substituted thiazolopyridines, salts thereof and their use as herbicidally active substances

Description

The invention relates to the technical field of crop protection agents, in particular that of herbicides for the selective control of broad-leaved weeds and weed grasses in crops of useful plants. Specifically, the present invention relates to substituted thiazolopyridines and salts thereof, to processes for their preparation and to their use as herbicides.

In their application, crop protection agents known to date for the selective control of harmful plants in crops of useful plants or active compounds for controlling unwanted vegetation sometimes have disadvantages, be it (a) that they have no or insufficient herbicidal activity against particular harmful plants, (b) that the spectrum of harmful plants which can be controlled with an active compound is not broad enough, (c) that their selectivity in crops of useful plants is too low and/or (d) that they have a toxicologically unfavourable profile.

Furthermore, some active compounds which can be used as plant growth regulators for a number of useful plants cause unwanted reduced harvest yields in other useful plants or are not compatible with the crop plant, or only within a narrow application rate range. Some of the known active compounds cannot be produced economically on an industrial scale owing to precursors and reagents which are difficult to obtain, or they have only insufficient chemical stabilities. In the case of other active compounds, the activity is too highly dependent on environmental conditions, such as weather and soil conditions. The herbicidal activity of these known compounds, in particular at low application rates, and/or their compatibility with crop plants remain deserving of improvement.

Various documents describe substituted thiazolopyridines as having useful biological properties and uses. WO 2017/009806 and WO 2015/104688 demonstrate that substituted thiazolopyridines can inhibit interleukin-1 receptor associated kinases (IRAK), particularly that of IRAK4 and are therefore useful in the treatment of diseases and disorders induced by IRAK4. In addition, WO 2019/089580 discloses that substituted thiazolopyridines or pharmaceutically acceptable salts thereof can be used as a method for treating haematological disorders and solid malignant tumours via inhibition of IRAK4 and BCL-2 kinases.

WO 2018/178947 concerns the preparation of substituted thiazolopyridines and their use for the treatment of acute myeloid leukaemia. WO 2017/153601 relates to substituted thiazolopyridines and their use as a treatment for diseases that involve the build-up of amyloid-like proteins, such as

Parkinson's disease. Furthermore, WO 2010/135524 discloses substituted thiazolopyridines inhibitors of phosphatidylinositol 3-kinase (PI3Kα) that can be used against proliferative diseases.

Several documents (WO 2016/087373, WO 2014/125651, WO 2013/018928, EP 2000/1000946, WO 2012/086848 and JP 2019/112369) describe that substituted thiazolopyridines and acceptable salts thereof can be used as effective pest control agents. In addition, WO 2003/006470 reports that substituted thiazolopyridines can be potent fungicidal agents.

WO 2010/016846 describes that substituted thiazolopyridines and related compounds being able to modulate TGR5. This modulation of TGR5 could represent a new opportunity to treat patients suffering from metabolic syndrome (Syndrome X).

The publication entitled "Synthesis of Thiazolo[4,5-*d*]pyridines" (*Synthesis*, **2008**, *15*, 2337-2346) shows various methods to prepare compounds containing a thiazolopyridine core.

However, the use of substituted thiazolopyridines or salts thereof as herbicidally active compounds has not been previously described. Surprisingly, it has now been found that substituted thiazolopyridines or salts thereof are particularly suitable as herbicides.

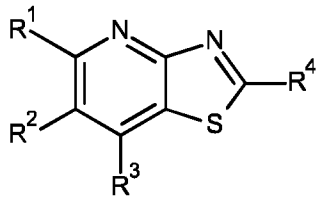
In their application, herbicides that are known to date for controlling harmful plants in crops of useful plants or herbicides for controlling unwanted vegetation sometimes have disadvantages, be it (a) that they have no or insufficient herbicidal activity against particularly harmful plants, (b) that the spectrum of harmful plants which can be controlled with an active compound is not broad enough, and/or (c) that the selectivity of the herbicides in and their compatibility with crop plants is too low, thereby causing unwanted damage and/or unwanted reduced harvest yields of the crops.

Thus, there is still a need for alternative herbicides, in particular highly active herbicides that are useful at low application rates and/or having good compatibility with crop plants, for the selective application in plant crops or use on non-crop land. It is also desirable to provide alternative chemical active compounds which may be used in an advantageous manner as herbicides or plant growth regulators.

It is therefore an objective of the present invention to provide compounds having herbicidal activity which are highly effective against economically important harmful plants even at relatively low application rates and that can be used selectively in crop plants.

It has now been found that the compounds following general formula (I) or the salts thereof meet the said objectives.

Accordingly, the present invention provides substituted thiazolopyridines of the general formula (I) or salts thereof



(I)

in which

R^1 represents (C_3-C_8)-cycloalkyl, (C_3-C_8)-cycloalkenyl, (C_3-C_8)-cycloalkoxy, aryl, heteroaryl, heterocyclyl, a bicyclic or a heterobicyclic residue, wherein each of the previously mentioned eight residues is unsubstituted or is independently substituted by one or more residues selected from the group R^5,

R^2 represents hydrogen, halogen, formyl, hydroxy, hydrothio, hydroxycarbonyl, aminocarbonyl, aminothiocarbonyl, (C_1-C_8)-alkyl, (C_1-C_8)-haloalkyl, (C_2-C_8)-alkenyl, (C_2-C_8)-haloalkenyl, (C_2-C_8)-alkynyl, (C_2-C_8)-haloalkynyl, (C_1-C_8)-alkoxy, (C_1-C_8) haloalkoxy, (C_1-C_8)-alkoxy-(C_1-C_8)-alkyl, (C_1-C_8)-alkylthio, (C_1-C_8)-haloalkylthio, (C_1-C_8)-alkylsulfinyl, (C_1-C_8)-haloalkylsulfinyl, (C_1-C_8)-alkylsulfonyl, (C_1-C_8)-haloalkylsulfonyl, (C_1-C_8)-alkylcarbonyl, (C_2-C_8)-alkenylcarbonyl, (C_2-C_8)-alkynylcarbonyl, (C_1-C_8)-haloalkylcarbonyl, (C_2-C_8)-haloalkenylcarbonyl, (C_2-C_8)-haloalkynylcarbonyl, (C_1-C_8)-alkoxycarbonyl, (C_3-C_8)-cycloalkyl, (C_3-C_8)-cycloalkoxy, (C_3-C_8)-cycloalkylthio, (C_3-C_8)-cycloalkylsulfinyl, (C_3-C_8)-cycloalkylsulfonyl, (C_3-C_8)-halocycloalkyl, (C_3-C_8)-halocycloalkoxy, (C_3-C_8)-halocycloalkylthio, (C_3-C_8)-halocycloalkylsulfinyl, (C_3-C_8)-halocycloalkylsulfonyl, (C_3-C_8)-cycloalkyl-(C_1-C_8)-alkyl, (C_1-C_8)-alkyl-(C_3-C_8)-cycloalkyl, (C_3-C_8)-cycloalkylcarbonyl, (C_3-C_8)-cycloalkyl-(C_1-C_8)-alkylcarbonyl, (C_1-C_8)-alkylaminocarbonyl, (C_2-C_{12})-dialkylaminocarbonyl, (C_1-C_8)-alkylaminosulfonyl, (C_2-C_{12})-dialkylaminosulfonyl or (C_3-C_{12})-trialkylsilyl,

R^3 represents hydrogen, halogen, cyano, (C_1-C_8)-alkyl, (C_1-C_8)-haloalkyl, (C_2-C_8)-alkenyl, (C_2-C_8)-haloalkenyl, (C_1-C_8)-alkoxy, (C_1-C_8) haloalkoxy, (C_1-C_8)-alkylthio, (C_1-C_8)-haloalkylthio, (C_3-C_8)-cycloalkyl, (C_3-C_8)-halocycloalkyl, (C_3-C_8)-cycloalkoxy or (C_3-C_8)-halocycloalkoxy,

R^4 represents hydrogen, halogen, cyano, hydrothio, hydroxycarbonyl, (C_1-C_8)-alkoxycarbonyl, aminocarbonyl, aminothiocarbonyl, (C_1-C_8)-alkylaminocarbonyl, (C_2-C_{12})-dialkylaminocarbonyl, (C_2-C_8)-alkenylaminocarbonyl, *N*-(C_2-C_8)-alkenyl-*N*-(C_1-C_8)-alkylaminocarbonyl, (C_1-C_8)-haloalkyl, (C_3-C_8)-cycloalkyl, (C_3-C_8)-halocycloalkyl, (C_1-C_8)

haloalkoxy, (C_3-C_8)-cycloalkoxy, (C_3-C_8)-halocycloalkoxy, (C_1-C_8)-alkoxy-(C_1-C_8)-alkyl, (C_3-C_{12})-trialkylsilyl, or represents benzyl, unsubstituted or optionally substituted by one or more residues selected from the group R^5, or represents (C_1-C_8)-alkyl, optionally substituted by one or more residues selected from cyano, (C_1-C_8)-alkylcarbonyl, (C_1-C_8)-haloalkylcarbonyl, hydroxycarbonyl, (C_1-C_8)-alkoxycarbonyl, aminocarbonyl, (C_1-C_8)-alkylaminocarbonyl, (C_2-C_{12})-dialkylaminocarbonyl, (C_2-C_8)-alkenylaminocarbonyl and *N*-(C_2-C_8)-alkenyl-*N*-(C_1-C_8)-alkylaminocarbonyl, or represents (C_1-C_8)-alkoxy, optionally substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_8)-alkoxycarbonyl, aminocarbonyl, (C_1-C_8)-alkylaminocarbonyl, (C_2-C_{12})-dialkylaminocarbonyl, (C_2-C_8)-alkenylaminocarbonyl and *N*-(C_2-C_8)-alkenyl-*N*-(C_1-C_8)-alkylaminocarbonyl, or represents (C_1-C_8)-alkylthio, optionally substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_8)-alkoxycarbonyl, aminocarbonyl, (C_1-C_8)-alkylaminocarbonyl, (C_2-C_{12})-dialkylaminocarbonyl, (C_2-C_8)-alkenylaminocarbonyl and *N*-(C_2-C_8)-alkenyl-*N*-(C_1-C_8)-alkylaminocarbonyl, or represents (C_1-C_8)-alkylamino, substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_8)-alkoxycarbonyl, aminocarbonyl, (C_1-C_8)-alkylaminocarbonyl, (C_2-C_{12})-dialkylaminocarbonyl, (C_2-C_8)-alkenylaminocarbonyl and *N*-(C_2-C_8)-alkenyl-*N*-(C_1-C_8)-alkylaminocarbonyl, or represents (C_2-C_{12})-dialkylamino, substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_8)-alkoxycarbonyl, aminocarbonyl, (C_1-C_8)-alkylaminocarbonyl, (C_2-C_{12})-dialkylaminocarbonyl, (C_2-C_8)-alkenylaminocarbonyl and *N*-(C_2-C_8)-alkenyl-*N*-(C_1-C_8)-alkylaminocarbonyl, or represents (C_1-C_8)-haloalkylthio, (C_3-C_8)-cycloalkylthio, (C_3-C_8)-halocycloalkylthio, (C_1-C_8)-alkylsulfinyl, (C_1-C_8)-haloalkylsulfinyl, (C_3-C_8)-cycloalkylsulfinyl, (C_3-C_8)-halocycloalkylsulfinyl, (C_1-C_8)-alkylsulfonyl, (C_1-C_8)-haloalkylsulfonyl, (C_3-C_8)-cycloalkylsulfonyl or (C_3-C_8)-halocycloalkylsulfonyl, and

R^5 represents halogen, formyl, hydroxy, hydroxycarbonyl, nitro, cyano, amino, aminocarbonyl, aminothiocarbonyl, (C_1-C_8)-alkyl, (C_1-C_8)-haloalkyl, (C_2-C_8)-alkenyl, (C_2-C_8)-haloalkenyl, (C_2-C_8)-alkynyl, (C_2-C_8)-haloalkynyl, (C_1-C_8)-alkoxy, (C_1-C_8)-haloalkoxy, (C_1-C_8)-alkylthio, (C_1-C_8)-haloalkylthio, (C_1-C_8)-alkylsulfinyl, (C_1-C_8)-haloalkylsulfinyl, (C_1-C_8)-alkylsulfonyl, (C_1-C_8)-haloalkylsulfonyl, (C_1-C_8)-alkylcarbonyl, (C_1-C_8)-haloalkylcarbonyl, (C_2-C_8)-alkenylcarbonyl, (C_2-C_8)-haloalkenylcarbonyl, (C_2-C_8)-alkynylcarbonyl, (C_2-C_8)-haloalkynylcarbonyl, (C_1-C_8)-alkoxycarbonyl, (C_1-C_8)-haloalkoxycarbonyl, (C_3-C_8)-cycloalkyl, (C_3-C_8)-halocycloalkyl, (C_3-C_8)-cycloalkoxy, (C_3-C_8)-halocycloalkoxy, (C_3-C_8)-cycloalkylthio, (C_3-C_8)-halocycloalkylthio, (C_3-C_8)-cycloalkylsulfinyl, (C_3-C_8)-halocycloalkylsulfinyl, (C_3-C_8)-cycloalkylsulfonyl, (C_3-C_8)-halocycloalkylsulfonyl, (C_3-C_8)-cycloalkyl-(C_1-C_8)-alkyl, (C_1-C_8)-alkyl-(C_3-C_8)-cycloalkyl, (C_1-C_8)-alkoxycarbonyl-(C_1-C_8)-alkyl, hydroxycarbonyl-(C_1-C_8)-alkyl, (C_3-C_8)-cycloalkylcarbonyl, (C_3-C_8)-cycloalkyl-(C_1-C_8)-alkylcarbonyl, (C_1-C_8)-alkylamino, (C_2-

C_{12})-dialkylamino, (C_1-C_8)-alkylaminocarbonyl, (C_2-C_{12})-dialkylaminocarbonyl, (C_1-C_8)-alkylaminosulfonyl, (C_2-C_{12})-dialkylaminosulfonyl or (C_3-C_{12})-trialkylsilyl.

The compounds of the general formula (I) can form salts by addition of a suitable inorganic or organic acid, for example mineral acids, for example HCl, HBr, H_2SO_4, H_3PO_4 or HNO_3, or organic acids, for example carboxylic acids such as formic acid, acetic acid, propionic acid, oxalic acid, lactic acid or salicylic acid or sulfonic acids, for example p-toluenesulfonic acid, onto a basic group, for example amino, alkylamino, dialkylamino, piperidino, morpholino or pyridino. In such a case, these salts will comprise the conjugated base of the acid as the anion. Suitable substituents in deprotonated form, for example sulfonic acids, particular sulfonamides or carboxylic acids, are capable of forming internal salts with groups, such as amino groups, which are themselves protonatable. Salts may also be formed by action of a base on compounds of the general formula (I). Suitable bases are, for example, organic amines such as trialkylamines, morpholine, piperidine and pyridine, and the hydroxides, carbonates and bicarbonates of ammonium, alkali metals or alkaline earth metals, especially sodium hydroxide, potassium hydroxide, sodium carbonate, potassium carbonate, sodium bicarbonate and potassium bicarbonate. These salts are compounds in which the acidic hydrogen is replaced by an agriculturally suitable cation, for example metal salts, especially alkali metal salts or alkaline earth metal salts, in particular sodium and potassium salts, or else ammonium salts, salts with organic amines or quaternary ammonium salts, for example with cations of the formula $[NR^aR^bR^cR^d]^+$ in which R^a to R^d are each independently an organic radical, especially alkyl, aryl, arylalkyl or alkylaryl. Also suitable are alkylsulfonium and alkylsulfoxonium salts, such as (C_1-C_4)-trialkylsulfonium and (C_1-C_4)-trialkylsulfoxonium salts.

The substituted thiazolopyridines of the general formula (I) according to the invention can, depending on external conditions such as pH, solvent and temperature, be present in various tautomeric structures, all of which are embraced by the general formula (I).

The compounds of the formula (I) used in accordance with the invention and salts thereof are also referred to hereinafter as "compounds of the general formula (I)".

The invention preferably provides compounds of the general formula (I) in which

R^1 represents (C_3-C_6)-cycloalkyl, (C_3-C_6)-cycloalkenyl, (C_3-C_6)-cycloalkoxy, aryl, heteroaryl, heterocyclyl, a bicyclic or a heterobicyclic residue, wherein each of the previously mentioned eight residues is unsubstituted or is independently substituted by one or more residues selected from the group R^5,

R^2 represents hydrogen, halogen, formyl, hydroxy, hydrothio, hydroxycarbonyl, aminocarbonyl, aminothiocarbonyl, (C_1-C_6)-alkyl, (C_1-C_6)-haloalkyl, (C_2-C_6)-alkenyl, (C_2-C_6)-haloalkenyl, (C_2-C_6)-alkynyl, (C_2-C_6)-haloalkynyl, (C_1-C_6)-alkoxy, (C_1-C_6) haloalkoxy, (C_1-C_6)-alkoxy-(C_1-C_6)-alkyl, (C_1-C_6)-alkylthio, (C_1-C_6)-haloalkylthio, (C_1-C_6)-alkylsulfinyl, (C_1-C_6)-haloalkylsulfinyl, (C_1-C_6)-alkylsulfonyl, (C_1-C_6)-haloalkylsulfonyl, (C_1-C_6)-alkylcarbonyl, (C_2-C_6)-alkenylcarbonyl, (C_2-C_6)-alkynylcarbonyl, (C_1-C_6)-haloalkylcarbonyl, (C_2-C_6)-haloalkenylcarbonyl, (C_2-C_6)-haloalkynylcarbonyl, (C_1-C_6)-alkoxycarbonyl, (C_3-C_6)-cycloalkyl, (C_3-C_6)-cycloalkoxy, (C_3-C_6)-cycloalkylthio, (C_3-C_6)-cycloalkylsulfinyl, (C_3-C_6)-cycloalkylsulfonyl, (C_3-C_6)-halocycloalkyl, (C_3-C_6)-halocycloalkoxy, (C_3-C_6)-halocycloalkylthio, (C_3-C_6)-halocycloalkylsulfinyl, (C_3-C_6)-halocycloalkylsulfonyl, (C_3-C_6)-cycloalkyl-(C_1-C_6)-alkyl, (C_1-C_6)-alkyl-(C_3-C_6)-cycloalkyl, (C_3-C_6)-cycloalkylcarbonyl, (C_3-C_6)-cycloalkyl-(C_1-C_6)-alkylcarbonyl, (C_1-C_6)-alkylaminocarbonyl, (C_2-C_{10})-dialkylaminocarbonyl, (C_1-C_6)-alkylaminosulfonyl, (C_2-C_{10})-dialkylaminosulfonyl or (C_3-C_{10})-trialkylsilyl,

R^3 represents hydrogen, halogen, cyano, (C_1-C_6)-alkyl, (C_1-C_6)-haloalkyl, (C_2-C_6)-alkenyl, (C_2-C_6)-haloalkenyl, (C_1-C_6)-alkoxy, (C_1-C_6) haloalkoxy, (C_1-C_6)-alkylthio, (C_1-C_6)-haloalkylthio, (C_3-C_6)-cycloalkyl, (C_3-C_6)-halocycloalkyl, (C_3-C_6)-cycloalkoxy or (C_3-C_6)-halocycloalkoxy,

R^4 represents hydrogen, halogen, cyano, hydrothio, hydroxycarbonyl, (C_1-C_6)-alkoxycarbonyl, aminocarbonyl, aminothiocarbonyl, (C_1-C_6)-alkylaminocarbonyl, (C_2-C_{10})-dialkylaminocarbonyl, (C_2-C_6)-alkenylaminocarbonyl, *N*-(C_2-C_6)-alkenyl-*N*-(C_1-C_6)-alkylaminocarbonyl, (C_1-C_6)-haloalkyl, (C_3-C_6)-cycloalkyl, (C_3-C_6)-halocycloalkyl, (C_1-C_6) haloalkoxy, (C_3-C_6)-cycloalkoxy, (C_3-C_6)-halocycloalkoxy, (C_1-C_6)-alkoxy-(C_1-C_6)-alkyl, (C_3-C_{10})-trialkylsilyl, or represents benzyl, unsubstituted or optionally substituted by one or more residues selected from the group R^5, or represents (C_1-C_6)-alkyl, optionally substituted by one or more residues selected from cyano, (C_1-C_6)-alkylcarbonyl, (C_1-C_6)-haloalkylcarbonyl, hydroxycarbonyl, (C_1-C_6)-alkoxycarbonyl, aminocarbonyl, (C_1-C_6)-alkylaminocarbonyl, (C_2-C_{10})-dialkylaminocarbonyl, (C_2-C_6)-alkenylaminocarbonyl and *N*-(C_2-C_6)-alkenyl-*N*-(C_1-C_6)-alkylaminocarbonyl, or represents (C_1-C_6)-alkoxy, optionally substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_6)-alkoxycarbonyl, aminocarbonyl, (C_1-C_6)-alkylaminocarbonyl, (C_2-C_{10})-dialkylaminocarbonyl, (C_2-C_6)-alkenylaminocarbonyl and *N*-(C_2-C_6)-alkenyl-*N*-(C_1-C_6)-alkylaminocarbonyl, or represents (C_1-C_6)-alkylthio, optionally substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_6)-alkoxycarbonyl, aminocarbonyl, (C_1-C_6)-alkylaminocarbonyl, (C_2-C_{10})-dialkylaminocarbonyl, (C_2-C_6)-alkenylaminocarbonyl and *N*-(C_2-C_6)-alkenyl-*N*-(C_1-C_6)-alkylaminocarbonyl, or represents (C_1-C_6)-alkylamino, substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_6)-alkoxycarbonyl, aminocarbonyl, (C_1-C_6)-alkylaminocarbonyl, (C_2-C_{10})-dialkylaminocarbonyl,

(C_2-C_6)-alkenylaminocarbonyl and *N*-(C_2-C_6)-alkenyl-*N*-(C_1-C_6)-alkylaminocarbonyl, or represents (C_2-C_{10})-dialkylamino, substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_6)-alkoxycarbonyl, aminocarbonyl, (C_1-C_6)-alkylaminocarbonyl, (C_2-C_{10})-dialkylaminocarbonyl, (C_2-C_6)-alkenylaminocarbonyl and *N*-(C_2-C_6)-alkenyl-*N*-(C_1-C_6)-alkylaminocarbonyl, or represents (C_1-C_6)-haloalkylthio, (C_3-C_6)-cycloalkylthio, (C_3-C_6)-halocycloalkylthio, (C_1-C_6)-alkylsulfinyl, (C_1-C_6)-haloalkylsulfinyl, (C_3-C_6)-cycloalkylsulfinyl, (C_3-C_6)-halocycloalkylsulfinyl, (C_1-C_6)-alkylsulfonyl, (C_1-C_6)-haloalkylsulfonyl, (C_3-C_6)-cycloalkylsulfonyl or (C_3-C_6)-halocycloalkylsulfonyl, and

R^5 represents halogen, formyl, hydroxy, hydroxycarbonyl, nitro, cyano, amino, aminocarbonyl, aminothiocarbonyl, (C_1-C_6)-alkyl, (C_1-C_6)-haloalkyl, (C_2-C_6)-alkenyl, (C_2-C_6)-haloalkenyl, (C_2-C_6)-alkynyl, (C_2-C_6)-haloalkynyl, (C_1-C_6)-alkoxy, (C_1-C_6)-haloalkoxy, (C_1-C_6)-alkylthio, (C_1-C_6)-haloalkylthio, (C_1-C_6)-alkylsulfinyl, (C_1-C_6)-haloalkylsulfinyl, (C_1-C_6)-alkylsulfonyl, (C_1-C_6)-haloalkylsulfonyl, (C_1-C_6)-alkylcarbonyl, (C_1-C_6)-haloalkylcarbonyl, (C_2-C_6)-alkenylcarbonyl, (C_2-C_6)-haloalkenylcarbonyl, (C_2-C_6)-alkynylcarbonyl, (C_2-C_6)-haloalkynylcarbonyl, (C_1-C_6)-alkoxycarbonyl, (C_1-C_6)-haloalkoxycarbonyl, (C_3-C_6)-cycloalkyl, (C_3-C_6)-halocycloalkyl, (C_3-C_6)-cycloalkoxy, (C_3-C_6)-halocycloalkoxy, (C_3-C_6)-cycloalkylthio, (C_3-C_6)-halocycloalkylthio, (C_3-C_6)-cycloalkylsulfinyl, (C_3-C_6)-halocycloalkylsulfinyl, (C_3-C_6)-cycloalkylsulfonyl, (C_3-C_6)-halocycloalkylsulfonyl, (C_3-C_6)-cycloalkyl-(C_1-C_6)-alkyl, (C_1-C_6)-alkyl-(C_3-C_6)-cycloalkyl, (C_1-C_6)-alkoxycarbonyl-(C_1-C_6)-alkyl, hydroxycarbonyl-(C_1-C_6)-alkyl, (C_3-C_6)-cycloalkylcarbonyl, (C_3-C_6)-cycloalkyl-(C_1-C_6)-alkylcarbonyl, (C_1-C_6)-alkylamino, (C_2-C_{10})-dialkylamino, (C_1-C_6)-alkylaminocarbonyl, (C_2-C_{10})-dialkylaminocarbonyl, (C_1-C_6)-alkylaminosulfonyl, (C_2-C_{10})-dialkylaminosulfonyl or (C_3-C_{10})-trialkylsilyl.

The invention more preferably provides compounds of the general formula (I) in which

R^1 represents (C_3-C_6)-cycloalkyl, (C_3-C_6)-cycloalkenyl, (C_3-C_6)-cycloalkoxy, aryl, heteroaryl, heterocyclyl, a bicyclic or a heterobicyclic residue, wherein each of the previously mentioned eight residues is unsubstituted or is independently substituted by one or more residues selected from the group R^5,

R^2 represents hydrogen, halogen, formyl, hydroxy, hydrothio, hydroxycarbonyl, aminocarbonyl, aminothiocarbonyl, (C_1-C_4)-alkyl, (C_1-C_4)-haloalkyl, (C_2-C_4)-alkenyl, (C_2-C_4)-haloalkenyl, (C_2-C_4)-alkynyl, (C_2-C_4)-haloalkynyl, (C_1-C_4)-alkoxy, (C_1-C_4) haloalkoxy, (C_1-C_4)-alkoxy-(C_1-C_4)-alkyl, (C_1-C_4)-alkylthio, (C_1-C_4)-haloalkylthio, (C_1-C_4)-alkylsulfinyl, (C_1-C_4)-haloalkylsulfinyl, (C_1-C_4)-alkylsulfonyl, (C_1-C_4)-haloalkylsulfonyl, (C_2-C_4)-alkylcarbonyl, (C_2-C_4)-alkenylcarbonyl, (C_2-C_4)-alkynylcarbonyl, (C_1-C_4)-haloalkylcarbonyl, (C_2-C_4)-

haloalkenylcarbonyl, (C_2-C_4)-haloalkynylcarbonyl, (C_1-C_4)-alkoxycarbonyl, (C_3-C_6)-cycloalkyl, (C_3-C_6)-cycloalkoxy, (C_3-C_6)-cycloalkylthio, (C_3-C_6)-cycloalkylsulfinyl, (C_3-C_6)-cycloalkylsulfonyl, (C_3-C_6)-halocycloalkyl, (C_3-C_6)-halocycloalkoxy, (C_3-C_6)-halocycloalkylthio, (C_3-C_6)-halocycloalkylsulfinyl, (C_3-C_6)-halocycloalkylsulfonyl, (C_3-C_6)-cycloalkyl-(C_1-C_4)-alkyl, (C_1-C_4)-alkyl-(C_3-C_6)-cycloalkyl, (C_3-C_6)-cycloalkylcarbonyl, (C_3-C_6)-cycloalkyl-(C_1-C_4)-alkylcarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_1-C_6)-alkylaminosulfonyl, (C_2-C_8)-dialkylaminosulfonyl or (C_3-C_8)-trialkylsilyl,

R^3 represents hydrogen, halogen, cyano, (C_1-C_4)-alkyl, (C_1-C_4)-haloalkyl, (C_2-C_4)-alkenyl, (C_2-C_4)-haloalkenyl, (C_1-C_4)-alkoxy, (C_1-C_4) haloalkoxy, (C_1-C_4)-alkylthio, (C_1-C_4)-haloalkylthio, (C_3-C_4)-cycloalkyl, (C_3-C_4)-halocycloalkyl, (C_3-C_4)-cycloalkoxy or (C_3-C_4)-halocycloalkoxy,

R^4 represents hydrogen, halogen, cyano, hydrothio, hydroxycarbonyl, (C_1-C_4)-alkoxycarbonyl, aminocarbonyl, aminothiocarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_2-C_4)-alkenylaminocarbonyl, *N*-(C_2-C_4)-alkenyl-*N*-(C_1-C_4)-alkylaminocarbonyl, (C_1-C_4)-haloalkyl, (C_3-C_6)-cycloalkyl, (C_3-C_6)-halocycloalkyl, (C_1-C_4) haloalkoxy, (C_3-C_6)-cycloalkoxy, (C_3-C_6)-halocycloalkoxy, (C_1-C_4)-alkoxy-(C_1-C_4)-alkyl, (C_3-C_8)-trialkylsilyl, or represents benzyl, unsubstituted or optionally substituted by one or more residues selected from the group R^5, or represents (C_1-C_4)-alkyl, optionally substituted by one or more residues selected from cyano, (C_1-C_4)-alkylcarbonyl, (C_1-C_4)-haloalkylcarbonyl, hydroxycarbonyl, (C_1-C_4)-alkoxycarbonyl, aminocarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_2-C_4)-alkenylaminocarbonyl and *N*-(C_2-C_4)-alkenyl-*N*-(C_1-C_4)-alkylaminocarbonyl, or represents (C_1-C_4)-alkoxy, optionally substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_4)-alkoxycarbonyl, aminocarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_2-C_4)-alkenylaminocarbonyl and *N*-(C_2-C_4)-alkenyl-*N*-(C_1-C_4)-alkylaminocarbonyl, or represents (C_1-C_4)-alkylthio, optionally substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_4)-alkoxycarbonyl, aminocarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_2-C_4)-alkenylaminocarbonyl and *N*-(C_2-C_4)-alkenyl-*N*-(C_1-C_4)-alkylaminocarbonyl, or represents (C_1-C_4)-alkylamino, substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_4)-alkoxycarbonyl, aminocarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_2-C_4)-alkenylaminocarbonyl and *N*-(C_2-C_4)-alkenyl-*N*-(C_1-C_4)-alkylaminocarbonyl, or represents (C_2-C_8)-dialkylamino, substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_4)-alkoxycarbonyl, aminocarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_2-C_4)-alkenylaminocarbonyl and *N*-(C_2-C_4)-alkenyl-*N*-(C_1-C_4)-alkylaminocarbonyl, or represents (C_1-C_4)-haloalkylthio, (C_3-C_6)-cycloalkylthio, (C_3-C_6)-halocycloalkylthio, (C_1-C_4)-alkylsulfinyl, (C_1-C_4)-haloalkylsulfinyl, (C_3-C_6)-cycloalkylsulfinyl, (C_3-C_6)-halocycloalkylsulfinyl, (C_1-C_4)-

alkylsulfonyl, (C_1-C_4)-haloalkylsulfonyl, (C_3-C_6)-cycloalkylsulfonyl or (C_3-C_6)-halocycloalkylsulfonyl, and

R^5 represents halogen, formyl, hydroxy, hydroxycarbonyl, nitro, cyano, amino, aminocarbonyl, aminothiocarbonyl, (C_1-C_4)-alkyl, (C_1-C_4)-haloalkyl, (C_2-C_4)-alkenyl, (C_2-C_4)-haloalkenyl, (C_2-C_4)-alkynyl, (C_2-C_4)-haloalkynyl, (C_1-C_4)-alkoxy, (C_1-C_4)-haloalkoxy, (C_1-C_4)-alkylthio, (C_1-C_4)-haloalkylthio, (C_1-C_4)-alkylsulfinyl, (C_1-C_4)-haloalkylsulfinyl, (C_1-C_4)-alkylsulfonyl, (C_1-C_4)-haloalkylsulfonyl, (C_1-C_4)-alkylcarbonyl, (C_1-C_4)-haloalkylcarbonyl, (C_2-C_4)-alkenylcarbonyl, (C_2-C_4)-haloalkenylcarbonyl, (C_2-C_4)-alkynylcarbonyl, (C_2-C_4)-haloalkynylcarbonyl, (C_1-C_4)-alkoxycarbonyl, (C_1-C_4)-haloalkoxycarbonyl, (C_3-C_6)-cycloalkyl, (C_3-C_6)-halocycloalkyl, (C_3-C_6)-cycloalkoxy, (C_3-C_6)-halocycloalkoxy, (C_3-C_6)-cycloalkylthio, (C_3-C_6)-halocycloalkylthio, (C_3-C_6)-cycloalkylsulfinyl, (C_3-C_6)-halocycloalkylsulfinyl, (C_3-C_6)-cycloalkylsulfonyl, (C_3-C_6)-halocycloalkylsulfonyl, (C_3-C_6)-cycloalkyl-(C_1-C_4)-alkyl, (C_1-C_4)-alkyl-(C_3-C_6)-cycloalkyl, (C_1-C_4)-alkoxycarbonyl-(C_1-C_4)-alkyl, hydroxycarbonyl-(C_1-C_4)-alkyl, (C_3-C_6)-cycloalkylcarbonyl, (C_3-C_6)-cycloalkyl-(C_1-C_4)-alkylcarbonyl, (C_1-C_4)-alkylamino, (C_2-C_8)-dialkylamino, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_1-C_4)-alkylaminosulfonyl, (C_2-C_8)-dialkylaminosulfonyl or (C_3-C_8)-trialkylsilyl.

The invention particularly provides compounds of the general formula (I) in which

R^1 represents phenyl, furyl, pyrrolyl, thienyl, pyridyl, pyrimidinyl, pyridazinyl, pyrazinyl, thiazolyl, isothiazolyl, thiadiazolyl, oxazolyl, isoxazolyl, pyrazolyl, imidazolyl, triazolyl, tetrazolyl, cyclopentenyl, cyclohexenyl or an oxabicycloheptanyl residue, wherein each of the previously mentioned 20 residues is unsubstituted or is independently substituted by one or more residues selected from the group R^5,

R^2 represents hydrogen, halogen, (C_1-C_4)-alkyl, (C_1-C_4)-haloalkyl, (C_2-C_4)-alkenyl, (C_2-C_4)-haloalkenyl, (C_2-C_4)-alkynyl, (C_2-C_4)-haloalkynyl, (C_1-C_4)-alkoxy, (C_1-C_4) haloalkoxy, (C_1-C_4)-alkoxy-(C_1-C_4)-alkyl, (C_1-C_4)-alkylthio, (C_1-C_4)-haloalkylthio, (C_1-C_4)-alkylsulfinyl, (C_1-C_4)-haloalkylsulfinyl, (C_1-C_4)-alkylsulfonyl, (C_1-C_4)-haloalkylsulfonyl, (C_1-C_4)-alkylcarbonyl, (C_1-C_4)-haloalkylcarbonyl, (C_1-C_4)-alkoxycarbonyl, (C_3-C_6)-cycloalkyl, (C_3-C_6)-cycloalkoxy, (C_3-C_6)-halocycloalkyl, (C_3-C_6)-halocycloalkoxy, (C_3-C_6)-cycloalkyl-(C_1-C_4)-alkyl or (C_1-C_4)-alkyl-(C_3-C_6)-cycloalkyl,

R^3 represents hydrogen, halogen, cyano, (C_1-C_4)-alkyl, (C_1-C_4)-haloalkyl, (C_1-C_4)-alkoxy, (C_1-C_4) haloalkoxy, (C_3-C_4)-cycloalkyl or (C_3-C_4)-halocycloalkyl,

R^4 represents hydrogen, halogen, cyano, hydrothio, hydroxycarbonyl, (C_1-C_4)-alkoxycarbonyl, aminocarbonyl, aminothiocarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_2-C_4)-alkenylaminocarbonyl, *N*-(C_2-C_4)-alkenyl-*N*-(C_1-C_4)-alkylaminocarbonyl, (C_1-C_4)-haloalkyl, (C_3-C_6)-cycloalkyl, (C_3-C_6)-halocycloalkyl, (C_1-C_4) haloalkoxy, (C_3-C_6)-cycloalkoxy, (C_3-C_6)-halocycloalkoxy, (C_1-C_4)-alkoxy-(C_1-C_4)-alkyl, or represents benzyl, unsubstituted or optionally substituted by one or more residues selected from the group R^5, or represents (C_1-C_4)-alkyl, optionally substituted by one or more residues selected from cyano, (C_1-C_4)-alkylcarbonyl, (C_1-C_4)-haloalkylcarbonyl, hydroxycarbonyl, (C_1-C_4)-alkoxycarbonyl, aminocarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_2-C_4)-alkenylaminocarbonyl and *N*-(C_2-C_4)-alkenyl-*N*-(C_1-C_4)-alkylaminocarbonyl, or represents (C_1-C_4)-alkoxy, optionally substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_4)-alkoxycarbonyl, aminocarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_2-C_4)-alkenylaminocarbonyl and *N*-(C_2-C_4)-alkenyl-*N*-(C_1-C_4)-alkylaminocarbonyl, or represents (C_1-C_4)-alkylthio, optionally substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_4)-alkoxycarbonyl, aminocarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_2-C_4)-alkenylaminocarbonyl and *N*-(C_2-C_4)-alkenyl-*N*-(C_1-C_4)-alkylaminocarbonyl, or represents (C_1-C_4)-alkylamino, substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_4)-alkoxycarbonyl, aminocarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_2-C_4)-alkenylaminocarbonyl and *N*-(C_2-C_4)-alkenyl-*N*-(C_1-C_4)-alkylaminocarbonyl, or represents (C_2-C_8)-dialkylamino, substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_4)-alkoxycarbonyl, aminocarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_2-C_4)-alkenylaminocarbonyl and *N*-(C_2-C_4)-alkenyl-*N*-(C_1-C_4)-alkylaminocarbonyl, or represents (C_1-C_4)-haloalkylthio, (C_1-C_4)-alkylsulfinyl, (C_1-C_4)-haloalkylsulfinyl, (C_1-C_4)-alkylsulfonyl or (C_1-C_4)-haloalkylsulfonyl, and

R^5 represents halogen, nitro, cyano, hydroxy, amino, (C_1-C_4)-alkyl, (C_1-C_4)-haloalkyl, (C_1-C_4)-alkoxy, (C_1-C_4)-haloalkoxy, (C_1-C_4)-alkylthio, (C_1-C_4)-haloalkylthio, (C_1-C_4)-alkylsulfinyl, (C_1-C_4)-haloalkylsulfinyl, (C_1-C_4)-alkylsulfonyl, (C_1-C_4)-haloalkylsulfonyl, (C_1-C_4)-alkylcarbonyl, (C_1-C_4)-haloalkylcarbonyl, (C_1-C_4)-alkoxycarbonyl, (C_1-C_4)-haloalkoxycarbonyl, (C_3-C_6)-cycloalkyl, (C_3-C_6)-halocycloalkyl, (C_3-C_6)-cycloalkoxy, (C_3-C_6)-halocycloalkoxy, (C_3-C_6)-cycloalkylthio, (C_3-C_6)-halocycloalkylthio, (C_3-C_6)-cycloalkylsulfinyl, (C_3-C_6)-halocycloalkylsulfinyl, (C_3-C_6)-cycloalkylsulfonyl, (C_3-C_6)-halocycloalkylsulfonyl, (C_3-C_6)-cycloalkyl-(C_1-C_4)-alkyl, (C_1-C_4)-alkyl-(C_3-C_6)-cycloalkyl, (C_1-C_4)-alkoxycarbonyl-(C_1-C_4)-alkyl, hydroxycarbonyl-(C_1-C_4)-alkyl, (C_1-C_4)-alkylamino or (C_2-C_8)-dialkylamino.

The invention more particularly provides compounds of the general formula (I) in which

R^1 represents phenyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, thiazolyl, isothiazolyl, cyclopentene-1-yl, cyclohexen-1-yl or 7-oxabicyclo[4.1.0]heptan-1-yl, wherein each of the previously mentioned nine residues is unsubstituted or is optionally substituted by one or more residues selected from the group R^5,

R^2 represents hydrogen, halogen, (C_1-C_4)-alkyl, (C_1-C_4)-haloalkyl, (C_2-C_4)-alkenyl, (C_2-C_4)-haloalkenyl, (C_1-C_4)-alkoxy, (C_1-C_4) haloalkoxy, (C_1-C_4)-alkoxy-(C_1-C_4)-alkyl, (C_1-C_4)-alkylthio, (C_1-C_4)-haloalkylthio, (C_1-C_4)-alkylsulfinyl, (C_1-C_4)-haloalkylsulfinyl, (C_1-C_4)-alkylsulfonyl, (C_1-C_4)-haloalkylsulfonyl, (C_1-C_4)-alkoxycarbonyl, (C_3-C_6)-cycloalkyl, (C_3-C_6)-cycloalkoxy, (C_3-C_6)-halocycloalkyl, (C_3-C_6)-halocycloalkoxy, (C_3-C_6)-cycloalkyl-(C_1-C_4)-alkyl or (C_1-C_4)-alkyl-(C_3-C_6)-cycloalkyl,

R^3 is hydrogen, halogen, cyano, (C_1-C_4)-alkyl or (C_1-C_4)-alkoxy,

R^4 represents hydrogen, halogen, cyano, hydrothio, hydroxycarbonyl, (C_1-C_4)-alkoxycarbonyl, aminocarbonyl, aminothiocarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_2-C_4)-alkenylaminocarbonyl, *N*-(C_2-C_4)-alkenyl-*N*-(C_1-C_4)-alkylaminocarbonyl, (C_1-C_4)-haloalkyl, (C_3-C_6)-cycloalkyl, (C_3-C_6)-halocycloalkyl, (C_1-C_4) haloalkoxy, (C_3-C_6)-cycloalkoxy, (C_3-C_6)-halocycloalkoxy, (C_1-C_4)-alkoxy-(C_1-C_4)-alkyl, or represents benzyl, unsubstituted or optionally substituted by one or more residues selected from the group R^5, or represents (C_1-C_4)-alkyl, optionally substituted by one or more residues selected from cyano, (C_1-C_4)-alkylcarbonyl, (C_1-C_4)-haloalkylcarbonyl, hydroxycarbonyl, (C_1-C_4)-alkoxycarbonyl, aminocarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_2-C_4)-alkenylaminocarbonyl and *N*-(C_2-C_4)-alkenyl-*N*-(C_1-C_4)-alkylaminocarbonyl, or represents (C_1-C_4)-alkoxy, optionally substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_4)-alkoxycarbonyl, aminocarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_2-C_4)-alkenylaminocarbonyl and *N*-(C_2-C_4)-alkenyl-*N*-(C_1-C_4)-alkylaminocarbonyl, or represents (C_1-C_4)-alkylthio, optionally substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_4)-alkoxycarbonyl, aminocarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_2-C_4)-alkenylaminocarbonyl and *N*-(C_2-C_4)-alkenyl-*N*-(C_1-C_4)-alkylaminocarbonyl, or represents (C_1-C_4)-alkylamino, substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_4)-alkoxycarbonyl, aminocarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_2-C_4)-alkenylaminocarbonyl and

N-(C_2-C_4)-alkenyl-*N*-(C_1-C_4)-alkylaminocarbonyl, or represents (C_2-C_8)-dialkylamino, substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_4)-alkoxycarbonyl, aminocarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_2-C_4)-alkenylaminocarbonyl and *N*-(C_2-C_4)-alkenyl-*N*-(C_1-C_4)-alkylaminocarbonyl, or represents (C_1-C_4)-haloalkylthio, (C_1-C_4)-alkylsulfinyl, (C_1-C_4)-haloalkylsulfinyl, (C_1-C_4)-alkylsulfonyl or (C_1-C_4)-haloalkylsulfonyl, and

R^5 represents halogen, cyano, (C_1-C_4)-alkyl, (C_1-C_4)-haloalkyl, (C_1-C_4)-alkoxy, (C_1-C_4)-haloalkoxy, (C_1-C_4)-alkylthio, (C_1-C_4)-haloalkylthio, (C_3-C_6)-cycloalkyl, (C_3-C_6)-halocycloalkyl, (C_3-C_6)-cycloalkoxy, (C_3-C_6)-halocycloalkoxy, (C_3-C_6)-cycloalkylthio, (C_3-C_6)-halocycloalkylthio, (C_3-C_6)-cycloalkyl-(C_1-C_4)-alkyl, (C_1-C_4)-alkyl-(C_3-C_6)-cycloalkyl, (C_1-C_4)-alkoxycarbonyl-(C_1-C_4)-alkyl, (C_1-C_4)-alkylamino or (C_2-C_8)-dialkylamino.

The invention especially provides compounds of the general formula (I) in which

R^1 represents phenyl, 2-fluorophenyl, 3-fluorophenyl, 4-fluorophenyl, 2-chlorophenyl, 3-chlorophenyl, 4-chlorophenyl, 2-bromophenyl, 2-methylphenyl, 2-methoxyphenyl, 2-trifluoromethylphenyl, 2,3-difluorophenyl, 2,4-difluorophenyl, 2,5-difluorophenyl, 2,6-difluorophenyl, 2,4,6-trifluorophenyl, 2-fluoro-6-methylphenyl, 2,6-dichlorophenyl, 3,5-dichlorophenyl, 2,6-dimethylphenyl, 2-chloro-6-methylphenyl, 2-bromo-6-fluorophenyl, 2-bromo-6-chlorophenyl, 2-bromo-6-methylphenyl, 2-bromo-6-methoxyphenyl, 2-thienyl, 3-fluoro-2-thienyl, 3-chloro-2-thienyl, 3-bromo-2-thienyl, 3-methyl-2-thienyl, 3-methoxy-2-thienyl, 3-thienyl, 2-fluoro-3-thienyl, 2-chloro-3-thienyl, 2-bromo-3-thienyl, 2-methyl-3-thienyl, 2-methoxy-3-thienyl, 4-fluoro-3-thienyl, 4-chloro-3-thienyl, 4-bromo-3-thienyl, 4-methyl-3-thienyl, 4-methoxy-3-thienyl, 3,5-dimethyl-2-thienyl, 5-bromo-3-methyl-2-thienyl, 2,5-dimethyl-3-thienyl, 4,5-dimethyl-3-thienyl, 5-bromo-2-methyl-3-thienyl, 5-bromo-4-methyl-3-thienyl, 2,4,5-trimethyl-3-thienyl, 2,5-dibromo-4-methyl-3-thienyl, 2-pyridyl, 3-fluorine-2-pyridyl, 3-chloro-2-pyridyl, 3-bromo-2-pyridyl, 3-methyl-2-pyridyl, 3-methoxy-2-pyridyl, 3-pyridyl, 2-methyl-3-pyridyl, 4-pyridyl, 4-methylthiazol-5-yl, 4-methylisothiazol-5-yl, cyclopenten-1-yl, cyclohexen-1-yl or 7-oxabicyclo[4.1.0]heptan-1-yl,

R^2 represents hydrogen, fluorine, chlorine, bromine, iodine, methyl, ethyl, n-propyl, iso-propyl, cyclopropyl, vinyl, methoxy, ethoxy, methylthio, ethoxycarbonyl, difluoromethyl or trifluoromethyl,

R^3 represents hydrogen, fluorine, chlorine or methyl, preferably hydrogen, and

R^4 represents hydrogen, chlorine, cyano, methyl, methoxy, ethoxy, hydrothio, methylthio, methylsulfinyl, methylsulfonyl, cyanomethyl, 2-fluorobenzyl, methoxycarbonyl, aminocarbonyl, ethyl 2-cyanoacetate, diethyl 2-propanedioate, *N*-allylacetamide, 2-aminoacetic acid, 2-oxyacetic acid, *N*-allyl-2-amino-acetamide, *N*-allyl-2-oxy-acetamide, *N*-methyl-2-sulfanyl-acetamide, sulfanyl-*N*,*N*-dimethylacetamide, *N*-allyl-2-sulfanyl-acetamide or *N*-allyl-*N*-methyl-2-sulfanyl-acetamide, preferably hydrogen, chlorine, cyano, methyl, methoxy, ethoxy, hydrothio, methylthio, methylsulfinyl, methylsulfonyl, cyanomethyl or 2-fluorobenzyl.

The invention more especially provides compounds of the general formula (I) in which

R^1 represents phenyl, 2-fluorophenyl, 3-fluorophenyl, 4-fluorophenyl, 2-chlorophenyl, 2-methylphenyl, 2-methoxyphenyl, 2-trifluoromethylphenyl, 2,3-difluorophenyl, 2,4-difluorophenyl, 2,6-difluorophenyl, 2,4,6-trifluorophenyl, 2-fluoro-6-methylphenyl, 3-chloro-2-thienyl, 3-methyl-2-thienyl, 3-thienyl, 2-chloro-3-thienyl, 2-methyl-3-thienyl, 4-methyl-3-thienyl, 3,5-dimethyl-2-thienyl, 5-bromo-3-methyl-2-thienyl, 2,5-dimethyl-3-thienyl, 4,5-dimethyl-3-thienyl, 5-bromo-2-methyl-3-thienyl, 5-bromo-4-methyl-3-thienyl, 2,4,5-trimethyl-3-thienyl, 2,5-dibromo-4-methyl-3-thienyl, 2-methyl-3-pyridyl, 4-methylthiazol-5-yl, 4-methylisothiazol-5-yl, cyclohexen-1-yl or 7-oxabicyclo[4.1.0]heptan-1-yl,

R^2 represents hydrogen, chlorine, bromine, iodine, methyl, ethyl, iso-propyl, cyclopropyl, vinyl, methylthio or ethoxycarbonyl

R^3 represents hydrogen or methyl, preferably hydrogen, and

R^4 represents hydrogen, chlorine, cyano, methyl, methoxy, ethoxy, hydrothio, methylthio, methylsulfinyl, methylsulfonyl, cyanomethyl, 2-fluorobenzyl, methoxycarbonyl, aminocarbonyl, ethyl 2-cyanoacetate, *N*-allylacetamide, 2-aminoacetic acid or *N*-allyl-2-amino-acetamide, preferably hydrogen, chlorine, cyano, methyl, methoxy, ethoxy, hydrothio, methylthio, methylsulfinyl, methylsulfonyl, cyanomethyl or 2-fluorobenzyl.

The definitions of radicals listed above in general terms or within areas of preference apply both to the end products of the general formula (I) and correspondingly to the starting materials or intermediates required for preparation in each case. These radical definitions can be combined with one another as desired, i.e. including combinations between the given preferred ranges.

Primarily for reasons of higher herbicidal activity, better selectivity and/or better producibility, compounds of the abovementioned general formula (I) according to the invention or their salts or their use according to the invention are of particular interest in which individual radicals have one of the preferred meanings already specified or specified below, or in particular those in which one or more of the preferred meanings already specified or specified below occur in combination.

With regard to the compounds according to the invention, the terms used above and further below will be elucidated. These are familiar to the person skilled in the art and especially have the definitions elucidated hereinafter:

Unless defined differently, names of chemical groups are generally to be understood such that attachment to the skeleton or the remainder of the molecule is via the structural element mentioned last, i.e. for example in the case of (C_2-C_8)-alkenyloxy via the oxygen atom and in the case of (C_1-C_8)-alkoxy-(C_1-C_4)-alkyl or (C_1-C_8)-alkoxycarbonyl-(C_1-C_8)-alkyl, in each case via the carbon atom of the alkyl group.

According to the invention, "alkylsulfonyl" - alone or as part of a chemical group - refers to straight-chain or branched alkylsulfonyl, preferably having 1 to 8 or 1 to 6 carbon atoms, for example (but not limited to) (C_1-C_6)-alkylsulfonyl such as methylsulfonyl, ethylsulfonyl, propylsulfonyl, 1-methylethylsulfonyl, butylsulfonyl, 1-methylpropylsulfonyl, 2-methylpropylsulfonyl, 1,1-dimethylethylsulfonyl, pentylsulfonyl, 1-methylbutylsulfonyl, 2-methylbutylsulfonyl, 3-methylbutylsulfonyl, 1,1-dimethylpropylsulfonyl, 1,2-dimethylpropylsulfonyl, 2,2-dimethylpropylsulfonyl, 1-ethylpropylsulfonyl, hexylsulfonyl, 1-methylpentylsulfonyl, 2-methylpentylsulfonyl, 3-methylpentylsulfonyl, 4-methylpentylsulfonyl, 1,1-dimethylbutylsulfonyl, 1,2-dimethylbutylsulfonyl, 1,3-dimethylbutylsulfonyl, 2,2-dimethylbutylsulfonyl, 2,3-dimethylbutylsulfonyl, 3,3-dimethylbutylsulfonyl, 1-ethylbutylsulfonyl, 2-ethylbutylsulfonyl, 1,1,2-trimethylpropylsulfonyl, 1,2,2-trimethylpropylsulfonyl, 1-ethyl-1-methylpropylsulfonyl and 1-ethyl-2-methylpropylsulfonyl.

According to the invention, "alkylthio" - alone or as part of a chemical group - denotes straight-chain or branched S-alkyl, preferably having 1 to 8 or 1 to 6 carbon atoms, such as (C_1-C_{10})-, (C_1-C_6)- or (C_1-C_4)-alkylthio, for example (but not limited to) (C_1-C_6)-alkylthio such as methylthio, ethylthio, propylthio, 1-

methylethylthio, butylthio, 1-methylpropylthio, 2-methylpropylthio, 1,1-dimethylethylthio, pentylthio, 1-methylbutylthio, 2-methylbutylthio, 3-methylbutylthio, 1,1-dimethylpropylthio, 1,2-dimethylpropylthio, 2,2-dimethylpropylthio, 1-ethylpropylthio, hexylthio, 1-methylpentylthio, 2-methylpentylthio, 3-methylpentylthio, 4-methylpentylthio, 1,1-dimethylbutylthio, 1,2-dimethylbutylthio, 1,3-dimethylbutylthio, 2,2-dimethylbutylthio, 2,3-dimethylbutylthio, 3,3-dimethylbutylthio, 1-ethylbutylthio, 2-ethylbutylthio, 1,1,2-trimethylpropylthio, 1,2,2-trimethylpropylthio, 1-ethyl-1-methylpropylthio and 1-ethyl-2-methylpropylthio.

According to the invention, "alkylsulfinyl (alkyl-S(=O)-)", unless defined differently elsewhere, denotes alkyl radicals which are attached to the skeleton via -S(=O)-, such as (C_1-C_{10})-, (C_1-C_6)- or (C_1-C_4)-alkylsulfinyl, for example (but not limited to) (C_1-C_6)-alkylsulfinyl such as methylsulfinyl, ethylsulfinyl, propylsulfinyl, 1-methylethylsulfinyl, butylsulfinyl, 1-methylpropylsulfinyl, 2-methylpropylsulfinyl, 1,1-dimethylethylsulfinyl, pentylsulfinyl, 1-methylbutylsulfinyl, 2-methylbutylsulfinyl, 3-methylbutylsulfinyl, 1,1-dimethylpropylsulfinyl, 1,2-dimethylpropylsulfinyl, 2,2-dimethylpropylsulfinyl, 1-ethylpropylsulfinyl, hexylsulfinyl, 1-methylpentylsulfinyl, 2-methylpentylsulfinyl, 3-methylpentylsulfinyl, 4-methylpentylsulfinyl, 1,1-dimethylbutylsulfinyl, 1,2-dimethylbutylsulfinyl, 1,3-dimethylbutylsulfinyl, 2,2-dimethylbutylsulfinyl, 2,3-dimethylbutylsulfinyl, 3,3-dimethylbutylsulfinyl, 1-ethylbutylsulfinyl, 2-ethylbutylsulfinyl, 1,1,2-trimethylpropylsulfinyl, 1,2,2-trimethylpropylsulfinyl, 1-ethyl-1-methylpropylsulfinyl and 1-ethyl-2-methylpropylsulfinyl.

"Alkoxy" denotes an alkyl radical bonded via an oxygen atom, for example (but not limited to) (C_1-C_6)-alkoxy such as methoxy, ethoxy, propoxy, 1-methylethoxy, butoxy, 1-methylpropoxy, 2-methylpropoxy, 1,1-dimethylethoxy, pentoxy, 1-methylbutoxy, 2-methylbutoxy, 3-methylbutoxy, 1,1-dimethylpropoxy, 1,2-dimethylpropoxy, 2,2-dimethylpropoxy, 1-ethylpropoxy, hexoxy, 1-methylpentoxy, 2-methylpentoxy, 3-methylpentoxy, 4-methylpentoxy, 1,1-dimethylbutoxy, 1,2-dimethylbutoxy, 1,3-dimethylbutoxy, 2,2-dimethylbutoxy, 2,3-dimethylbutoxy, 3,3-dimethylbutoxy, 1-ethylbutoxy, 2-ethylbutoxy, 1,1,2-trimethylpropoxy, 1,2,2-trimethylpropoxy, 1-ethyl-1-methylpropoxy and 1-ethyl-2-methylpropoxy. Alkenyloxy denotes an alkenyl radical attached via an oxygen atom, and alkynyloxy denotes an alkynyl radical attached via an oxygen atom, such as (C_2-C_{10})-, (C_2-C_6)- or (C_2-C_4)-alkenoxy and (C_3-C_{10})-, (C_3-C_6)- or (C_3-C_4)-alkynoxy.

"Cycloalkoxy" denotes a cycloalkyl radical attached via an oxygen atom and cycloalkenyloxy denotes a cycloalkenyl radical attached via an oxygen atom.

According to the invention, "alkylcarbonyl" (alkyl-C(=O)-), unless defined differently elsewhere, represents alkyl radicals attached to the skeleton via -C(=O)-, such as (C_1-C_{10})-, (C_1-C_6)- or (C_1-C_4)-

alkylcarbonyl. Here, the number of the carbon atoms refers to the alkyl radical in the alkylcarbonyl group.

Analogously, “alkenylcarbonyl” and “alkynylcarbonyl”, unless defined differently elsewhere, in accordance with the invention, respectively represent alkenyl and alkynyl radicals attached to the skeleton via -C(=O)-, such as (C_2-C_{10})-, (C_2-C_6)- or (C_2-C_4)-alkenylcarbonyl and (C_2-C_{10})-, (C_2-C_6)- or (C_2-C_4)-alkynylcarbonyl. Here, the number of the carbon atoms refers to the alkenyl or alkynyl radical in the alkenyl or alkynyl group.

“Alkoxycarbonyl (alkyl-O-C(=O)-),” unless defined differently elsewhere: alkyl radicals attached to the skeleton via -O-C(=O)-, such as (C_1-C_{10})-, (C_1-C_6)- or (C_1-C_4)-alkoxycarbonyl. Here, the number of the carbon atoms refers to the alkyl radical in the alkoxycarbonyl group. Analogously, “alkenyloxycarbonyl” and “alkynyloxycarbonyl”, unless defined differently elsewhere, in accordance with the invention, respectively represent alkenyl and alkynyl radicals attached to the skeleton via -O-C(=O)-, such as (C_2-C_{10})-, (C_2-C_6)- or (C_2-C_4)-alkenyloxycarbonyl and (C_3-C_{10})-, (C_3-C_6)- or (C_3-C_4)-alkynyloxycarbonyl. Here, the number of the carbon atoms refers to the alkenyl or alkynyl radical in the alkenyloxycarbonyl or alkynyloxycarbonyl group.

The term "aryl" denotes an optionally substituted mono-, bi- or polycyclic aromatic system having preferably 6 to 14, especially 6 to 10, ring carbon atoms, for example phenyl, naphthyl, anthryl, phenanthrenyl and the like, preferably phenyl.

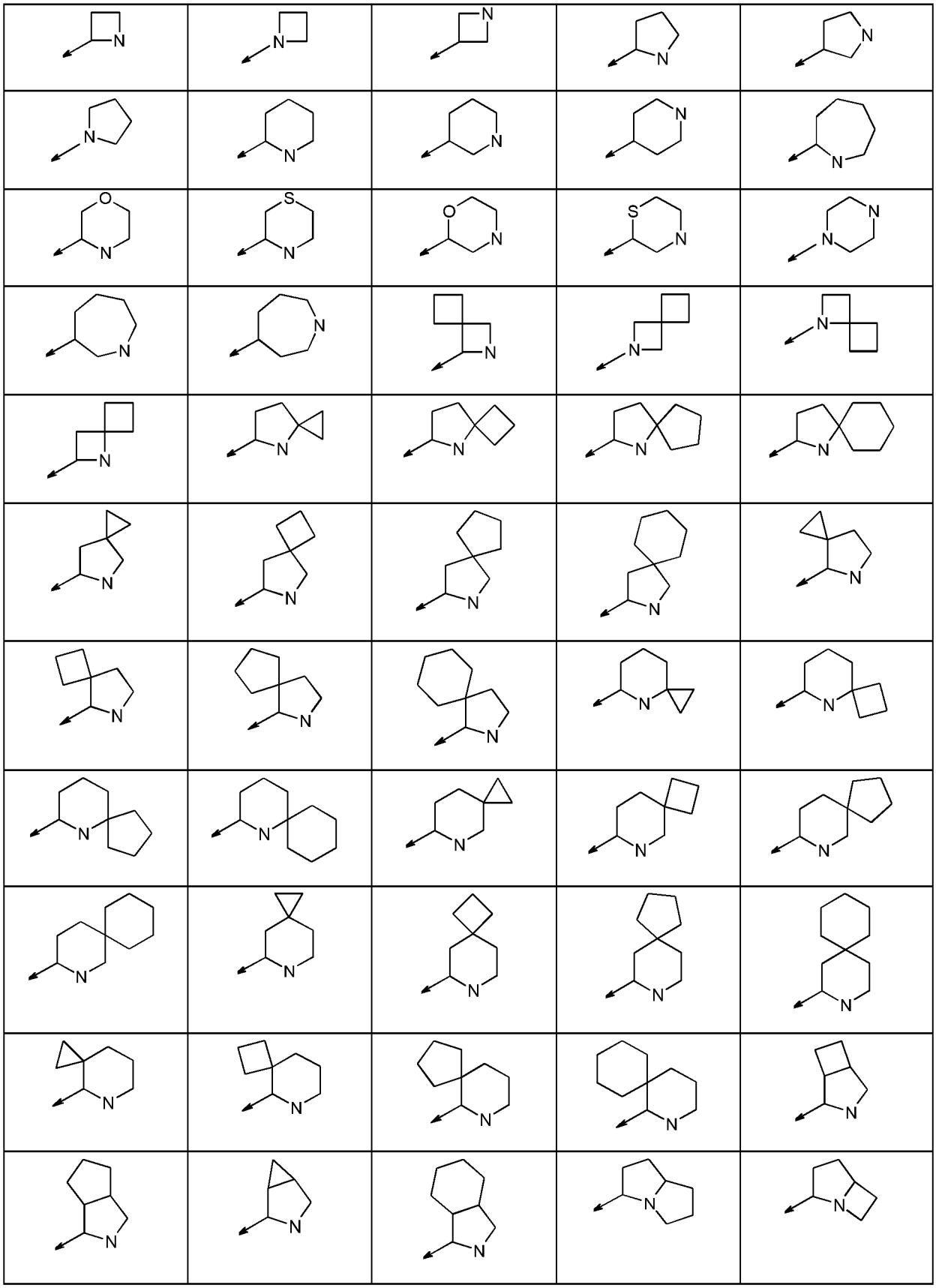
The term "optionally substituted aryl" also embraces polycyclic systems, such as tetrahydronaphthyl, indenyl, indanyl, fluorenyl, biphenylyl, where the bonding site is on the aromatic system. In systematic terms, "aryl" is generally also encompassed by the term "optionally substituted phenyl". Preferred aryl substituents here are, for example, hydrogen, halogen, alkyl, cycloalkyl, cycloalkylalkyl, cycloalkenyl, halocycloalkyl, alkenyl, alkynyl, aryl, arylalkyl, arylalkenyl, heteroaryl, heteroarylalkyl, heterocyclyl, heterocyclylalkyl, alkoxyalkyl, alkylthio, haloalkylthio, haloalkyl, alkoxy, haloalkoxy, cycloalkoxy, cycloalkylalkoxy, aryloxy, heteroraryloxy, alkoxyalkoxy, alkynylalkoxy, alkenyloxy, dialkylamino-alkoxy, tris-[alkyl]silyl, di-[alkyl]arylsilyl, di-[alkyl]alkylsilyl, tris-[alkyl]silylalkynyl, arylalkynyl, heteroarylalkynyl, alkylalkynyl, cycloalkylalkynyl, haloalkylalkynyl, heterocyclyl-N-alkoxy, nitro, cyano, amino, alkylamino, dialkylamino, alkylcarbonylamino, cycloalkylcarbonylamino, arylcarbonylamino, alkoxycarbonylamino, alkoxycarbonylalkylamino, arylalkoxycarbonylalkylamino, hydroxycarbonyl, alkoxycarbonyl, aminocarbonyl, alkylaminocarbonyl, cycloalkylaminocarbonyl, di-alkylaminocarbonyl, heteroarylalkoxy, arylalkoxy.

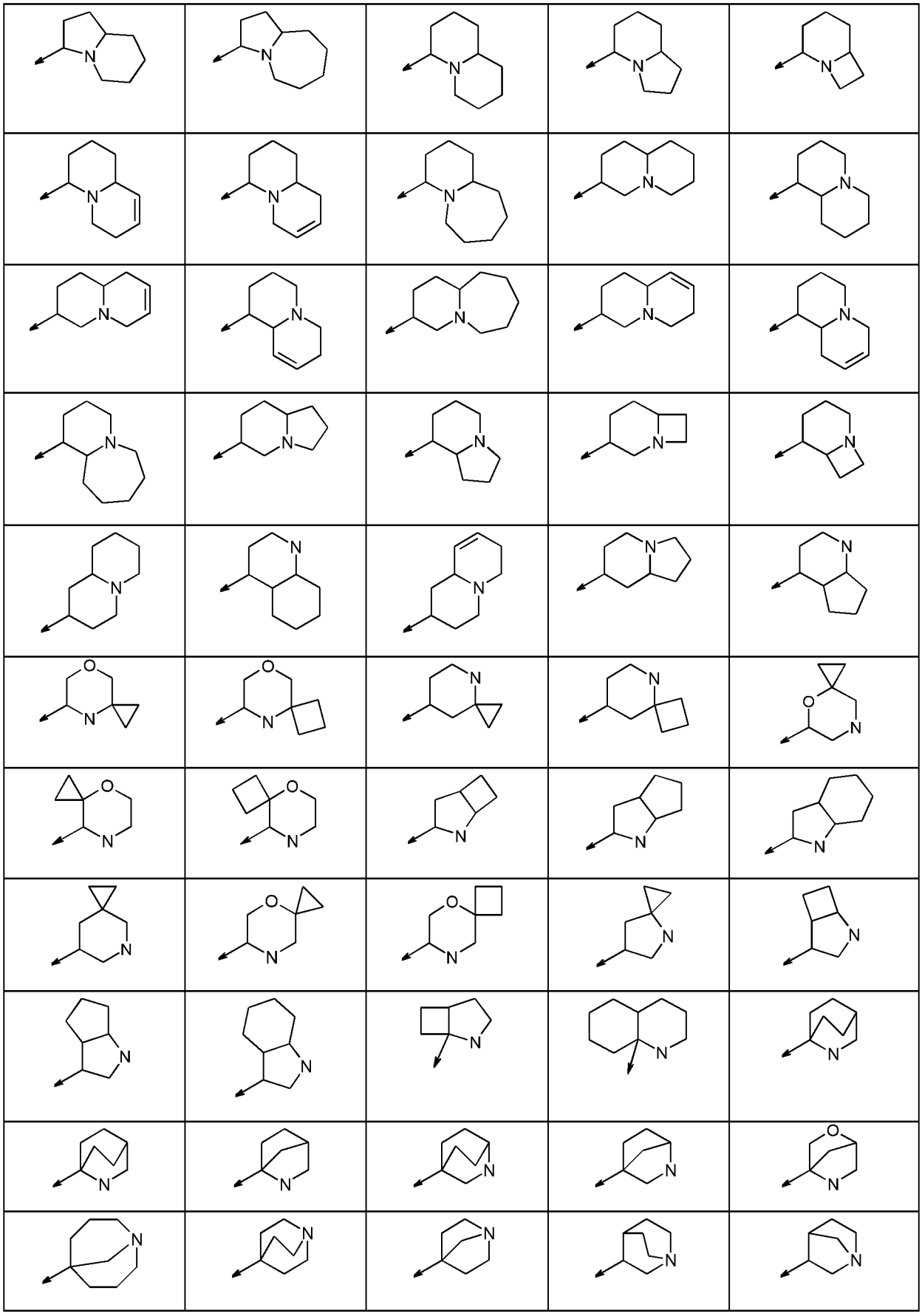
A heterocyclic radical (heterocyclyl) contains at least one heterocyclic ring (=carbocyclic ring in which at least one carbon atom has been replaced by a heteroatom, preferably by a heteroatom from the group of N, O, S, P) which is saturated, unsaturated, partially saturated or heteroaromatic and may be unsubstituted or substituted, in which case the bonding site is localized on a ring atom. If the heterocyclyl radical or the heterocyclic ring is optionally substituted, it may be fused to other carbocyclic or heterocyclic rings. In the case of optionally substituted heterocyclyl, polycyclic systems are also included, for example 8-azabicyclo[3.2.1]octanyl, 8-azabicyclo[2.2.2]octanyl or 1-azabicyclo[2.2.1]heptyl. Optionally substituted heterocyclyl also includes spirocyclic systems, such as, for example, 1-oxa-5-aza-spiro[2.3]hexyl. Unless defined otherwise, the heterocyclic ring preferably contains 3 to 9 ring atoms, in particular 3 to 6 ring atoms, and one or more, preferably 1 to 4, in particular 1, 2 or 3 heteroatoms in the heterocyclic ring, preferably from the group N, O and S, where, however, two oxygen atoms must not be directly adjacent to one another, for example having one heteroatom from the group consisting of N, O and S 1- or 2- or 3-pyrrolidinyl, 3,4-dihydro-2H-pyrrol-2- or -3-yl, 2,3-dihydro-1H-pyrrol-1- or -2- or -3- or -4- or -5-yl; 2,5-dihydro-1H-pyrrol-1- or -2- or -3-yl, 1- or 2- or 3- or 4-piperidinyl; 2,3,4,5-tetrahydropyridin-2- or -3- or -4- or -5-yl or -6-yl; 1,2,3,6-tetrahydropyridin-1- or -2- or -3- or -4- or -5- or -6-yl; 1,2,3,4-tetrahydropyridin-1- or -2- or -3- or -4- or -5- or -6-yl; 1,4-dihydropyridin-1- or -2- or -3- or -4-yl; 2,3-dihydropyridin-2- or -3- or -4- or -5- or -6-yl; 2,5-dihydropyridin-2- or -3- or -4- or -5- or -6-yl, 1- or 2- or 3- or 4-azepanyl; 2,3,4,5-tetrahydro-1H-azepin-1- or -2- or -3- or -4- or -5- or -6- or -7-yl; 2,3,4,7-tetrahydro-1H-azepin-1- or -2- or -3- or -4- or -5- or -6- or -7-yl; 2,3,6,7-tetrahydro-1H-azepin-1- or -2- or -3- or -4-yl; 3,4,5,6-tetrahydro-2H-azepin-2- or -3- or -4- or -5- or -6- or -7-yl; 4,5-dihydro-1H-azepin-1- or -2- or -3- or -4-yl; 2,5-dihydro-1H-azepin-1- or -2- or -3- or -4- or -5- or -6- or -7-yl; 2,7-dihydro-1H-azepin-1- or -2- or -3- or -4-yl; 2,3-dihydro-1H-azepin-1- or -2- or -3- or -4- or -5- or -6- or -7-yl; 3,4-dihydro-2H-azepin-2- or -3- or -4- or -5- or -6- or -7-yl; 3,6-dihydro-2H-azepin-2- or -3- or -4- or -5- or -6- or -7-yl; 5,6-dihydro-2H-azepin-2- or -3- or -4- or -5- or -6- or -7-yl; 4,5-dihydro-3H-azepin-2- or -3- or -4- or -5- or -6- or -7-yl; 1H-azepin-1- or -2- or -3- or -4- or -5- or -6- or -7-yl; 2H-azepin-2- or -3- or -4- or -5- or -6- or -7-yl; 3H-azepin-2- or -3- or -4- or -5- or -6- or -7-yl; 4H-azepin-2- or -3- or -4- or -5- or -6- or -7-yl, 2- or 3-oxolanyl (= 2- or 3-tetrahydrofuranyl); 2,3-dihydrofuran-2- or -3- or -4- or -5-yl; 2,5-dihydrofuran-2- or -3-yl, 2- or 3- or 4-oxanyl (= 2- or 3- or 4-tetrahydropyranyl); 3,4-dihydro-2H-pyran-2- or -3- or -4- or -5- or -6-yl; 3,6-dihydro-2H-pyran-2- or -3-or -4- or -5- or -6-yl; 2H-pyran-2- or -3- or -4- or -5- or -6-yl; 4H-pyran-2- or -3- or -4-yl, 2- or -3- or -4-oxepanyl; 2,3,4,5-tetrahydrooxepin-2- or -3- or -4- or -5- or -6- or -7-yl; 2,3,4,7-tetrahydrooxepin-2- or -3- or -4- or -5- or -6- or -7-yl; 2,3,6,7-tetrahydrooxepin-2- or -3- or -4-yl; 2,3-dihydrooxepin-2- or -3- or -4- or -5- or -6- or -7-yl; 4,5-dihydrooxepin-2- or -3- or -4-yl; 2,5-dihydrooxepin-2- or -3- or -4- or -5- or -6- or -7-yl; oxepin-2- or -3- or -4- or -5- or -6- or -7-yl; 2- or 3-tetrahydrothiophenyl; 2,3-dihydrothiophen-2- or -3- or -4- or -5-yl; 2,5-dihydrothiophen-2- or -3-yl; tetrahydro-2H-thiopyran-2- or -3- or -4-yl; 3,4-dihydro-2H-thiopyran-2- or -3- or -4- or -5- or -6-yl; 3,6-dihydro-2H-thiopyran-2- or -3- or -4- or -5- or -6-yl; 2H-thiopyran-2- or -3- or -4- or -5- or -6-yl; 4H-

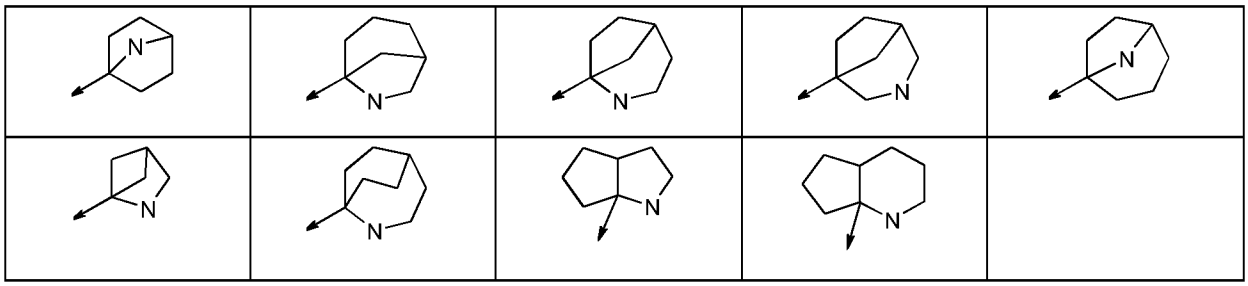
thiopyran-2- or -3- or -4-yl. Preferred 3-membered and 4-membered heterocycles are, for example, 1- or 2-aziridinyl, oxiranyl, thiiranyl, 1- or 2- or 3-azetidinyl, 2- or 3-oxetanyl, 2- or 3-thietanyl, 1,3-dioxetan-2-yl. Further examples of "heterocyclyl" are a partially or fully hydrogenated heterocyclic radical having two heteroatoms from the group of N, O and S, for example 1- or 2- or 3- or 4-pyrazolidinyl; 4,5-dihydro-3H-pyrazol-3- or -4- or -5-yl; 4,5-dihydro-1H-pyrazol-1- or -3- or -4- or -5-yl; 2,3-dihydro-1H-pyrazol-1- or -2- or -3- or -4- or -5-yl; 1- or -2- or -3- or -4-imidazolidinyl; 2,3-dihydro-1H-imidazol-1- or -2- or -3- or -4-yl; 2,5-dihydro-1H-imidazol-1- or -2- or -4- or -5-yl; 4,5-dihydro-1H-imidazol-1- or -2- or -4- or -5-yl; hexahydropyridazin-1- or -2- or -3- or -4-yl; 1,2,3,4-tetrahydropyridazin-1- or -2- or -3- or -4- or -5- or -6-yl; 1,2,3,6-tetrahydropyridazin-1- or -2- or -3- or -4- or -5- or -6-yl; 1,4,5,6-tetrahydropyridazin-1- or -3- or -4- or -5- or -6-yl; 3,4,5,6-tetrahydropyridazin-3- or -4- or -5-yl; 4,5-dihydropyridazin-3- or -4-yl; 3,4-dihydropyridazin-3- or -4- or -5- or -6-yl; 3,6-dihydropyridazin-3- or -4-yl; 1,6-dihydropyridazin-1- or -3- or -4- or -5- or -6-yl; hexahydropyrimidin-1- or -2- or -3- or -4-yl; 1,4,5,6-tetrahydropyrimidin-1- or -2- or -4- or -5- or -6-yl; 1,2,5,6-tetrahydropyrimidin-1- or -2- or -4- or -5- or -6-yl; 1,2,3,4-tetrahydropyrimidin-1- or -2- or -3- or -4- or -5- or -6-yl; 1,6-dihydropyrimidin-1- or -2- or -4- or -5- or -6-yl; 1,2-dihydropyrimidin-1- or -2- or -4- or -5- or -6-yl; 2,5-dihydropyrimidin-2- or -4- or -5-yl; 4,5-dihydropyrimidin- 4- or -5- or -6-yl; 1,4-dihydropyrimidin-1- or -2- or -4- or -5- or -6-yl; 1- or -2- or -3-piperazinyl; 1,2,3,6-tetrahydropyrazin-1- or -2- or -3- or -5- or -6-yl; 1,2,3,4-tetrahydropyrazin-1- or -2- or -3- or -4- or -5- or -6-yl; 1,2-dihydropyrazin-1- or -2- or -3- or -5- or -6-yl; 1,4-dihydropyrazin-1- or -2- or -3-yl; 2,3-dihydropyrazin-2- or -3- or -5- or -6-yl; 2,5-dihydropyrazin-2- or -3-yl; 1,3-dioxolan-2- or -4- or -5-yl; 1,3-dioxol-2- or -4-yl; 1,3-dioxan-2- or -4- or -5-yl; 4H-1,3-dioxin-2- or -4- or -5- or -6-yl; 1,4-dioxan-2- or -3- or -5- or -6-yl; 2,3-dihydro-1,4-dioxin-2- or -3- or -5- or -6-yl; 1,4-dioxin-2- or -3-yl; 1,2-dithiolan-3- or -4-yl; 3H-1,2-dithiol-3- or -4- or -5-yl; 1,3-dithiolan-2- or -4-yl; 1,3-dithiol-2- or -4-yl; 1,2-dithian-3- or -4-yl; 3,4-dihydro-1,2-dithiin-3- or -4- or -5- or -6-yl; 3,6-dihydro-1,2-dithiin-3- or -4-yl; 1,2-dithiin-3- or -4-yl; 1,3-dithian-2- or -4- or -5-yl; 4H-1,3-dithiin-2- or -4- or -5- or -6-yl; isoxazolidin-2- or -3- or -4- or -5-yl; 2,3-dihydroisoxazol-2- or -3- or -4- or -5-yl; 2,5-dihydroisoxazol-2- or -3- or -4- or -5-yl; 4,5-dihydroisoxazol-3- or -4- or -5-yl; 1,3-oxazolidin-2- or -3- or -4- or -5-yl; 2,3-dihydro-1,3-oxazol-2- or -3- or -4- or -5-yl; 2,5-dihydro-1,3-oxazol-2- or -4- or -5-yl; 4,5-dihydro-1,3-oxazol-2- or -4- or -5-yl; 1,2-oxazinan-2- or -3- or -4- or -5- or -6-yl; 3,4-dihydro-2H-1,2-oxazin-2- or -3- or -4- or -5- or -6-yl; 3,6-dihydro-2H-1,2-oxazin-2- or -3- or -4- or -5- or -6-yl; 5,6-dihydro-2H-1,2-oxazin-2- or -3- or -4- or -5- or -6-yl; 5,6-dihydro-4H-1,2-oxazin-3- or -4- or -5- or -6-yl; 2H-1,2-oxazin-2- or -3- or -4- or -5- or -6-yl; 6H-1,2-oxazin-3- or -4- or -5- or -6-yl; 4H-1,2-oxazin-3- or -4- or -5- or -6-yl; 1,3-oxazinan-2- or -3- or -4- or -5- or -6-yl; 3,4-dihydro-2H-1,3-oxazin-2- or -3- or -4- or -5- or -6-yl; 3,6-dihydro-2H-1,3-oxazin-2- or -3- or -4- or -5- or -6-yl; 5,6-dihydro-2H-1,3-oxazin-2- or -4- or -5- or -6-yl; 5,6-dihydro-4H-1,3-oxazin-2- or -4- or -5- or -6-yl; 2H-1,3-oxazin-2- or -4- or -5- or -6-yl; 6H-1,3-oxazin-2- or -4- or -5- or -6-yl; 4H-1,3-oxazin-2- or -4- or -5- or -6-yl; morpholin-2- or -3- or -4-yl; 3,4-dihydro-2H-1,4-oxazin-2- or -3- or -4- or -5- or -6-yl; 3,6-dihydro-2H-1,4-oxazin-2- or -3- or -5- or -6-yl; 2H-1,4-oxazin-2- or -3- or -5- or -6-yl; 4H-1,4-

oxazin-2- or -3-yl; 1,2-oxazepan-2- or -3- or -4- or -5- or -6- or -7-yl; 2,3,4,5-tetrahydro-1,2-oxazepin-2- or -3- or -4- or -5- or -6- or -7-yl; 2,3,4,7-tetrahydro-1,2-oxazepin-2- or -3- or -4- or -5- or -6- or -7-yl; 2,3,6,7-tetrahydro-1,2-oxazepin-2- or -3- or -4- or -5- or -6- or -7-yl; 2,5,6,7-tetrahydro-1,2-oxazepin-2- or -3- or -4- or -5- or -6- or -7-yl; 4,5,6,7-tetrahydro-1,2-oxazepin-3- or -4- or -5- or -6- or -7-yl; 2,3-dihydro-1,2-oxazepin-2- or -3- or -4- or -5- or -6- or -7-yl; 2,5-dihydro-1,2-oxazepin-2- or -3- or -4- or -5- or -6- or -7-yl; 2,7-dihydro-1,2-oxazepin-2- or -3- or -4- or -5- or -6- or -7-yl; 4,5-dihydro-1,2-oxazepin-3- or -4- or -5- or -6- or -7-yl; 4,7-dihydro-1,2-oxazepin-3- or -4- or -5- or -6- or -7-yl; 6,7-dihydro-1,2-oxazepin-3- or -4- or -5- or -6- or -7-yl; 1,2-oxazepin-3- or -4- or -5- or -6- or -7-yl; 1,3-oxazepan-2- or -3- or -4- or -5- or -6- or -7-yl; 2,3,4,5-tetrahydro-1,3-oxazepin-2- or -3- or -4- or -5- or -6- or -7-yl; 2,3,4,7-tetrahydro-1,3-oxazepin-2- or -3- or -4- or -5- or -6- or -7-yl; 2,3,6,7-tetrahydro-1,3-oxazepin-2- or -3- or -4- or -5- or -6- or -7-yl; 2,5,6,7-tetrahydro-1,3-oxazepin-2- or -4- or -5- or -6- or -7-yl; 4,5,6,7-tetrahydro-1,3-oxazepin-2- or -4- or -5- or -6- or -7-yl; 2,3-dihydro-1,3-oxazepin-2- or -3- or -4- or -5- or -6- or -7-yl; 2,5-dihydro-1,3-oxazepin-2- or -4- or -5- or -6- or -7-yl; 2,7-dihydro-1,3-oxazepin-2- or -4- or -5- or -6- or -7-yl; 4,5-dihydro-1,3-oxazepin-2- or -4- or -5- or -6- or -7-yl; 4,7-dihydro-1,3-oxazepin-2- or -4- or -5- or -6- or -7-yl; 6,7-dihydro-1,3-oxazepin-2- or -4- or -5- or -6- or -7-yl; 1,3-oxazepin-2- or -4- or -5- or -6- or -7-yl; 1,4-oxazepan-2- or -3- or -5- or -6- or -7-yl; 2,3,4,5-tetrahydro-1,4-oxazepin-2- or -3- or -4- or -5- or -6- or -7-yl; 2,3,4,7-tetrahydro-1,4-oxazepin-2- or -3- or -4- or -5- or -6- or -7-yl; 2,3,6,7-tetrahydro-1,4-oxazepin-2- or -3- or -5- or -6- or -7-yl; 2,5,6,7-tetrahydro-1,4-oxazepin-2- or -3- or -5- or -6- or -7-yl; 4,5,6,7-tetrahydro-1,4-oxazepin-2- or -3- or -4- or -5- or -6- or -7-yl; 2,3-dihydro-1,4-oxazepin-2- or -3- or -5- or -6- or -7-yl; 2,5-dihydro-1,4-oxazepin-2- or -3- or -5- or -6- or -7-yl; 2,7-dihydro-1,4-oxazepin-2- or -3- or -5- or -6- or -7-yl; 4,5-dihydro-1,4-oxazepin-2- or -3- or -4- or -5- or -6- or -7-yl; 4,7-dihydro-1,4-oxazepin-2- or -3- or -4- or -5- or -6- or -7-yl; 6,7-dihydro-1,4-oxazepin-2- or -3- or -5- or -6- or -7-yl; 1,4-oxazepin-2- or -3- or -5- or -6- or -7-yl; isothiazolidin-2- or -3- or -4- or -5-yl; 2,3-dihydroisothiazol-2- or -3- or -4- or -5-yl; 2,5-dihydroisothiazol-2- or -3- or -4- or -5-yl; 4,5-dihydroisothiazol-3- or -4- or -5-yl; 1,3-thiazolidin-2- or -3- or -4- or -5-yl; 2,3-dihydro-1,3-thiazol-2- or -3- or -4- or -5-yl; 2,5-dihydro-1,3-thiazol-2- or -4- or -5-yl; 4,5-dihydro-1,3-thiazol-2- or -4- or -5-yl; 1,3-thiazinan-2- or -3- or -4- or -5- or -6-yl; 3,4-dihydro-2H-1,3-thiazin-2- or -3- or -4- or -5- or -6-yl; 3,6-dihydro-2H-1,3-thiazin-2- or -3- or -4- or -5- or -6-yl; 5,6-dihydro-2H-1,3-thiazin-2- or -4- or -5- or -6-yl; 5,6-dihydro-4H-1,3-thiazin-2- or -4- or -5- or -6-yl; 2H-1,3-thiazin-2- or -4- or -5- or -6-yl; 6H-1,3-thiazin-2- or -4- or -5- or -6-yl; 4H-1,3-thiazin-2- or -4- or -5- or -6-yl. Further examples of "heterocyclyl" are a partially or fully hydrogenated heterocyclic radical having 3 heteroatoms from the group of N, O and S, for example 1,4,2-dioxazolidin-2- or -3- or -5-yl; 1,4,2-dioxazol-3- or -5-yl; 1,4,2-dioxazinan-2- or -3- or -5- or -6-yl; 5,6-dihydro-1,4,2-dioxazin-3- or -5- or -6-yl; 1,4,2-dioxazin-3- or -5- or -6-yl; 1,4,2-dioxazepan-2- or -3- or -5- or -6- or -7-yl; 6,7-dihydro-5H-1,4,2-dioxazepin-3- or -5- or -6- or -7-yl; 2,3-dihydro-7H-1,4,2-dioxazepin-2- or -3- or -5- or -6- or -7-yl; 2,3-dihydro-5H-1,4,2-dioxazepin-2- or -3- or -5- or -6- or -7-yl; 5H-1,4,2-dioxazepin-3-

or -5- or -6- or -7-yl; 7H-1,4,2-dioxazepin-3- or -5- or -6- or -7-yl. Structural examples of heterocycles which are optionally substituted further are also listed below:







The heterocycles listed above are preferably substituted, for example, by hydrogen, halogen, alkyl, haloalkyl, hydroxyl, alkoxy, cycloalkoxy, aryloxy, alkoxyalkyl, alkoxyalkoxy, cycloalkyl, halocycloalkyl, aryl, arylalkyl, heteroaryl, heterocyclyl, alkenyl, alkylcarbonyl, cycloalkylcarbonyl, arylcarbonyl, heteroarylcarbonyl, alkoxycarbonyl, hydroxycarbonyl, cycloalkoxycarbonyl, cycloalkylalkoxycarbonyl, alkoxycarbonylalkyl, arylalkoxycarbonyl, arylalkoxycarbonylalkyl, alkynyl, alkynylalkyl, alkylalkynyl, trisalkylsilylalkynyl, nitro, amino, cyano, haloalkoxy, haloalkylthio, alkylthio, hydrothio, hydroxyalkyl, oxo, heteroarylalkoxy, arylalkoxy, heterocyclylalkoxy, heterocyclylalkylthio, heterocyclyloxy, heterocyclylthio, heteroaryloxy, dialkylamino, alkylamino, cycloalkylamino, hydroxycarbonylalkylamino, alkoxycarbonylalkylamino, arylalkoxycarbonylalkylamino, alkoxycarbonylalkyl(alkyl)amino, aminocarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, cycloalkylaminocarbonyl, hydroxycarbonylalkylaminocarbonyl, alkoxycarbonylalkylaminocarbonyl, arylalkoxycarbonylalkylaminocarbonyl.

When a base structure is substituted "by one or more substituents" from a list of radicals (= group) or a generically defined group of radicals, this in each case includes simultaneous substitution by a plurality of identical and/or structurally different radicals.

In the case of a partially or fully saturated nitrogen heterocycle, this may be joined to the remainder of the molecule either via carbon or via the nitrogen.

Suitable substituents for a substituted heterocyclic radical are the substituents specified further down, and additionally also oxo and thioxo. The oxo group as a substituent on a ring carbon atom is then, for example, a carbonyl group in the heterocyclic ring. As a result, lactones and lactams are preferably also included. The oxo group may also occur on the ring heteroatoms, which may exist in different oxidation states, for example in the case of N and S, and in that case form, for example, the divalent -N(O)-, -S(O)- (also SO for short) and $-S(O)_2-$ (also SO_2 for short) groups in the heterocyclic ring. In the case of –N(O)- and –S(O)- groups, both enantiomers in each case are included.

According to the invention, the expression "heteroaryl" refers to heteroaromatic compounds, i.e. fully unsaturated aromatic heterocyclic compounds, preferably 5- to 7-membered rings having 1 to 4,

preferably 1 or 2, identical or different heteroatoms, preferably O, S or N. Inventive heteroaryls are, for example, 1H-pyrrol-1-yl; 1H-pyrrol-2-yl; 1H-pyrrol-3-yl; furan-2-yl; furan-3-yl; thien-2-yl; thien-3-yl, 1H-imidazol-1-yl; 1H-imidazol-2-yl; 1H-imidazol-4-yl; 1H-imidazol-5-yl; 1H-pyrazol-1-yl; 1H-pyrazol-3-yl; 1H-pyrazol-4-yl; 1H-pyrazol-5-yl, 1H-1,2,3-triazol-1-yl, 1H-1,2,3-triazol-4-yl, 1H-1,2,3-triazol-5-yl, 2H-1,2,3-triazol-2-yl, 2H-1,2,3-triazol-4-yl, 1H-1,2,4-triazol-1-yl, 1H-1,2,4-triazol-3-yl, 4H-1,2,4-triazol-4-yl, 1,2,4-oxadiazol-3-yl, 1,2,4-oxadiazol-5-yl, 1,3,4-oxadiazol-2-yl, 1,2,3-oxadiazol-4-yl, 1,2,3-oxadiazol-5-yl, 1,2,5-oxadiazol-3-yl, azepinyl, pyridin-2-yl, pyridin-3-yl, pyridin-4-yl, pyrazin-2-yl, pyrazin-3-yl, pyrimidin-2-yl, pyrimidin-4-yl, pyrimidin-5-yl, pyridazin-3-yl, pyridazin-4-yl, 1,3,5-triazin-2-yl, 1,2,4-triazin-3-yl, 1,2,4-triazin-5-yl, 1,2,4-triazin-6-yl, 1,2,3-triazin-4-yl, 1,2,3-triazin-5-yl, 1,2,4-, 1,3,2-, 1,3,6- and 1,2,6-oxazinyl, isoxazol-3-yl, isoxazol-4-yl, isoxazol-5-yl, 1,3-oxazol-2-yl, 1,3-oxazol-4-yl, 1,3-oxazol-5-yl, isothiazol-3-yl, isothiazol-4-yl, isothiazol-5-yl, 1,3-thiazol-2-yl, 1,3-thiazol-4-yl, 1,3-thiazol-5-yl, oxepinyl, thiepinyl, 1,2,4-triazolonyl and 1,2,4-diazepinyl, 2H-1,2,3,4-tetrazol-5-yl, 1H-1,2,3,4-tetrazol-5-yl, 1,2,3,4-oxatriazol-5-yl, 1,2,3,4-thiatriazol-5-yl, 1,2,3,5-oxatriazol-4-yl, 1,2,3,5-thiatriazol-4-yl. The heteroaryl groups according to the invention may also be substituted by one or more identical or different radicals. If two adjacent carbon atoms are part of a further aromatic ring, the systems are fused heteroaromatic systems, such as benzofused or polyannealed heteroaromatics. Preferred examples are quinolines (e.g. quinolin-2-yl, quinolin-3-yl, quinolin-4-yl, quinolin-5-yl, quinolin-6-yl, quinolin-7-yl, quinolin-8-yl); isoquinolines (e.g. isoquinolin-1-yl, isoquinolin-3-yl, isoquinolin-4-yl, isoquinolin-5-yl, isoquinolin-6-yl, isoquinolin-7-yl, isoquinolin-8-yl); quinoxaline; quinazoline; cinnoline; 1,5-naphthyridine; 1,6-naphthyridine; 1,7-naphthyridine; 1,8-naphthyridine; 2,6-naphthyridine; 2,7-naphthyridine; phthalazine; pyridopyrazines; pyridopyrimidines; pyridopyridazines; pteridines; pyrimidopyrimidines. Examples of heteroaryl are also 5- or 6-membered benzofused rings from the group of 1H-indol-1-yl, 1H-indol-2-yl, 1H-indol-3-yl, 1H-indol-4-yl, 1H-indol-5-yl, 1H-indol-6-yl, 1H-indol-7-yl, 1-benzofuran-2-yl, 1-benzofuran-3-yl, 1-benzofuran-4-yl, 1-benzofuran-5-yl, 1-benzofuran-6-yl, 1-benzofuran-7-yl, 1-benzothiophen-2-yl, 1-benzothiophen-3-yl, 1-benzothiophen-4-yl, 1-benzothiophen-5-yl, 1-benzothiophen-6-yl, 1-benzothiophen-7-yl, 1H-indazol-1-yl, 1H-indazol-3-yl, 1H-indazol-4-yl, 1H-indazol-5-yl, 1H-indazol-6-yl, 1H-indazol-7-yl, 2H-indazol-2-yl, 2H-indazol-3-yl, 2H-indazol-4-yl, 2H-indazol-5-yl, 2H-indazol-6-yl, 2H-indazol-7-yl, 2H-isoindol-2-yl, 2H-isoindol-1-yl, 2H-isoindol-3-yl, 2H-isoindol-4-yl, 2H-isoindol-5-yl, 2H-isoindol-6-yl; 2H-isoindol-7-yl, 1H-benzimidazol-1-yl, 1H-benzimidazol-2-yl, 1H-benzimidazol-4-yl, 1H-benzimidazol-5-yl, 1H-benzimidazol-6-yl, 1H-benzimidazol-7-yl, 1,3-benzoxazol-2-yl, 1,3-benzoxazol-4-yl, 1,3-benzoxazol-5-yl, 1,3-benzoxazol-6-yl, 1,3-benzoxazol-7-yl, 1,3-benzothiazol-2-yl, 1,3-benzothiazol-4-yl, 1,3-benzothiazol-5-yl, 1,3-benzothiazol-6-yl, 1,3-benzothiazol-7-yl, 1,2-benzisoxazol-3-yl, 1,2-benzisoxazol-4-yl, 1,2-benzisoxazol-5-yl, 1,2-benzisoxazol-6-yl, 1,2-benzisoxazol-7-yl, 1,2-benzisothiazol-3-yl, 1,2-benzisothiazol-4-yl, 1,2-benzisothiazol-5-yl, 1,2-benzisothiazol-6-yl, 1,2-benzisothiazol-7-yl.

The term "halogen" denotes, for example, fluorine, chlorine, bromine or iodine. If the term is used for a radical, "halogen" denotes, for example, a fluorine, chlorine, bromine or iodine atom.

According to the invention, "alkyl" denotes a straight-chain or branched open-chain, saturated hydrocarbon radical which is optionally mono- or polysubstituted, and in the latter case is referred to as "substituted alkyl". Preferred substituents are halogen atoms, alkoxy, haloalkoxy, cyano, alkylthio, haloalkylthio, amino or nitro groups, particular preference being given to methoxy, methyl, fluoroalkyl, cyano, nitro, fluorine, chlorine, bromine or iodine.

The prefix “di” includes the combination of equal or different alkyl radicals, e.g. dimethyl or methyl(ethyl) or ethyl(methyl).

"Haloalkyl", "-alkenyl" and "-alkynyl" respectively denote alkyl, alkenyl and alkynyl partially or fully substituted by identical or different halogen atoms, for example monohaloalkyl such as CH_2CH_2Cl, CH_2CH_2Br, $CHClCH_3$, CH_2Cl, CH_2F; perhaloalkyl such as CCl_3, $CClF_2$, $CFCl_2$,CF_2CClF_2, $CF_2CClFCF_3$; polyhaloalkyl such as CH_2CHFCl, CF_2CClFH, CF_2CBrFH, CH_2CF_3; the term perhaloalkyl also encompasses the term perfluoroalkyl.

“Haloalkoxy” is, for example, OCF_3, $OCHF_2$, OCH_2F, OCF_2CF_3, OCH_2CF_3 and OCH_2CH_2Cl; this applies correspondingly to haloalkenyl and other halogen-substituted radicals.

The expression "(C_1-C_4)-alkyl" mentioned here by way of example is a brief notation for straight-chain or branched alkyl having one to 4 carbon atoms according to the range stated for carbon atoms, i.e. encompasses the methyl, ethyl, 1-propyl, 2-propyl, 1-butyl, 2-butyl, 2-methylpropyl or tert-butyl radicals. General alkyl radicals with a larger specified range of carbon atoms, e.g. "(C_1-C_6)-alkyl", correspondingly also encompass straight-chain or branched alkyl radicals with a greater number of carbon atoms, i.e. according to the example also the alkyl radicals having 5 and 6 carbon atoms.

Unless stated specifically, preference is given to the lower carbon skeletons, for example having from 1 to 6 carbon atoms, or having from 2 to 6 carbon atoms in the case of unsaturated groups, in the case of the hydrocarbyl radicals such as alkyl, alkenyl and alkynyl radicals, including in composite radicals. Alkyl radicals, including in composite radicals such as alkoxy, haloalkyl, etc., are, for example, methyl, ethyl, n-propyl or i-propyl, n-, i-, t- or 2-butyl, pentyls, hexyls such as n-hexyl, i-hexyl and 1,3-dimethylbutyl, heptyls such as n-heptyl, 1-methylhexyl and 1,4-dimethylpentyl; alkenyl and alkynyl radicals are defined as the possible unsaturated radicals corresponding to the alkyl radicals, where at least one double bond or triple bond is present. Preference is given to radicals having one double bond or triple bond.

The term "alkenyl" also includes, in particular, straight-chain or branched open-chain hydrocarbon radicals having more than one double bond, such as 1,3-butadienyl and 1,4-pentadienyl, but also allenyl or cumulenyl radicals having one or more cumulated double bonds, for example allenyl (1,2-propadienyl), 1,2-butadienyl and 1,2,3-pentatrienyl. Alkenyl denotes, for example, vinyl which may optionally be substituted by further alkyl radicals, for example (but not limited thereto) (C_2-C_6)-alkenyl such as ethenyl, 1-propenyl, 2-propenyl, 1-methylethenyl, 1-butenyl, 2-butenyl, 3-butenyl, 1-methyl-1-propenyl, 2-methyl-1-propenyl, 1-methyl-2-propenyl, 2-methyl-2-propenyl, 1-pentenyl, 2-pentenyl, 3-pentenyl, 4-pentenyl, 1-methyl-1-butenyl, 2-methyl-1-butenyl, 3-methyl-1-butenyl, 1-methyl-2-butenyl, 2-methyl-2-butenyl, 3-methyl-2-butenyl, 1-methyl-3-butenyl, 2-methyl-3-butenyl, 3-methyl-3-butenyl, 1,1-dimethyl-2-propenyl, 1,2-dimethyl-1-propenyl, 1,2-dimethyl-2-propenyl, 1-ethyl-1-propenyl, 1-ethyl-2-propenyl, 1-hexenyl, 2-hexenyl, 3-hexenyl, 4-hexenyl, 5-hexenyl, 1-methyl-1-pentenyl, 2-methyl-1-pentenyl, 3-methyl-1-pentenyl, 4-methyl-1-pentenyl, 1-methyl-2-pentenyl, 2-methyl-2-pentenyl, 3-methyl-2-pentenyl, 4-methyl-2-pentenyl, 1-methyl-3-pentenyl, 2-methyl-3-pentenyl, 3-methyl-3-pentenyl, 4-methyl-3-pentenyl, 1-methyl-4-pentenyl, 2-methyl-4-pentenyl, 3-methyl-4-pentenyl, 4-methyl-4-pentenyl, 1,1-dimethyl-2-butenyl, 1,1-dimethyl-3-butenyl, 1,2-dimethyl-1-butenyl, 1,2-dimethyl-2-butenyl, 1,2-dimethyl-3-butenyl, 1,3-dimethyl-1-butenyl, 1,3-dimethyl-2-butenyl, 1,3-dimethyl-3-butenyl, 2,2-dimethyl-3-butenyl, 2,3-dimethyl-1-butenyl, 2,3-dimethyl-2-butenyl, 2,3-dimethyl-3-butenyl, 3,3-dimethyl-1-butenyl, 3,3-dimethyl-2-butenyl, 1-ethyl-1-butenyl, 1-ethyl-2-butenyl, 1-ethyl-3-butenyl, 2-ethyl-1-butenyl, 2-ethyl-2-butenyl, 2-ethyl-3-butenyl, 1,1,2-trimethyl-2-propenyl, 1-ethyl-1-methyl-2-propenyl, 1-ethyl-2-methyl-1-propenyl and 1-ethyl-2-methyl-2-propenyl.

The term "alkynyl" also includes, in particular, straight-chain or branched open-chain hydrocarbon radicals having more than one triple bond, or else having one or more triple bonds and one or more double bonds, for example 1,3-butatrienyl or 3-penten-1-yn-1-yl. (C_2-C_6)-Alkynyl denotes, for example, ethynyl, 1-propynyl, 2-propynyl, 1-butynyl, 2-butynyl, 3-butynyl, 1-methyl-2-propynyl, 1-pentynyl, 2-pentynyl, 3-pentynyl, 4-pentynyl, 1-methyl-2-butynyl, 1-methyl-3-butynyl, 2-methyl-3-butynyl, 3-methyl-1-butynyl, 1,1-dimethyl-2-propynyl, 1-ethyl-2-propynyl, 1-hexynyl, 2-hexynyl, 3-hexynyl, 4-hexynyl, 5-hexynyl, 1-methyl-2-pentynyl, 1-methyl-3-pentynyl, 1-methyl-4-pentynyl, 2-methyl-3-pentynyl, 2-methyl-4-pentynyl, 3-methyl-1-pentynyl, 3-methyl-4-pentynyl, 4-methyl-1-pentynyl, 4-methyl-2-pentynyl, 1,1-dimethyl-2-butynyl, 1,1-dimethyl-3-butynyl, 1,2-dimethyl-3-butynyl, 2,2-dimethyl-3-butynyl, 3,3-dimethyl-1-butynyl, 1-ethyl-2-butynyl, 1-ethyl-3-butynyl, 2-ethyl-3-butynyl and 1-ethyl-1-methyl-2-propynyl.

The term "cycloalkyl" denotes a carbocyclic saturated ring system having preferably 3-8 ring carbon atoms, for example cyclopropyl, cyclobutyl, cyclopentyl or cyclohexyl, which optionally has further substitution, preferably by hydrogen, alkyl, alkoxy, cyano, nitro, alkylthio, haloalkylthio, halogen,

alkenyl, alkynyl, haloalkyl, amino, alkylamino, dialkylamino, alkoxycarbonyl, hydroxycarbonyl, arylalkoxycarbonyl, aminocarbonyl, alkylaminocarbonyl, cycloalkylaminocarbonyl. In the case of optionally substituted cycloalkyl, cyclic systems with substituents are included, also including substituents with a double bond on the cycloalkyl radical, for example an alkylidene group such as methylidene. In the case of optionally substituted cycloalkyl, polycyclic aliphatic systems are also included, for example bicyclo[1.1.0]butan-1-yl, bicyclo[1.1.0]butan-2-yl, bicyclo[2.1.0]pentan-1-yl, bicyclo[1.1.1]pentan-1-yl, bicyclo[2.1.0]pentan-2-yl, bicyclo[2.1.0]pentan-5-yl, bicyclo[2.1.1]hexyl, bicyclo[2.2.1]hept-2-yl, bicyclo[2.2.2]octan-2-yl, bicyclo[3.2.1]octan-2-yl, bicyclo[3.2.2]nonan-2-yl, adamantan-1-yl and adamantan-2-yl, but also systems such as 1,1'-bi(cyclopropyl)-1-yl, 1,1'-bi(cyclopropyl)-2-yl, for example. The term "(C_3-C_7)-cycloalkyl" is a brief notation for cycloalkyl having three to 7 carbon atoms, corresponding to the range specified for carbon atoms.

In the case of substituted cycloalkyl, spirocyclic aliphatic systems are also included, for example spiro[2.2]pent-1-yl, spiro[2.3]hex-1-yl, spiro[2.3]hex-4-yl, 3-spiro[2.3]hex-5-yl, spiro[3.3]hept-1-yl, spiro[3.3]hept-2-yl.

"Cycloalkenyl" denotes a carbocyclic, nonaromatic, partially unsaturated ring system having preferably 4-8 carbon atoms, e.g. 1-cyclobutenyl, 2-cyclobutenyl, 1-cyclopentenyl, 2-cyclopentenyl, 3-cyclopentenyl, or 1-cyclohexenyl, 2-cyclohexenyl, 3-cyclohexenyl, 1,3-cyclohexadienyl or 1,4-cyclohexadienyl, also including substituents with a double bond on the cycloalkenyl radical, for example an alkylidene group such as methylidene. In the case of optionally substituted cycloalkenyl, the elucidations for substituted cycloalkyl apply correspondingly.

According to the invention, “haloalkylthio” - on its own or as constituent part of a chemical group - represents straight-chain or branched S-haloalkyl, preferably having 1 to 8, or having 1 to 6 carbon atoms, such as (C_1-C_8)-, (C_1-C_6)- or (C_1-C_4)-haloalkylthio, for example (but not limited thereto) trifluoromethylthio, pentafluoroethylthio, difluoromethyl, 2,2-difluoroeth-1-ylthio, 2,2,2-difluoroeth-1-ylthio, 3,3,3-prop-1-ylthio.

“Halocycloalkyl” and “halocycloalkenyl” denote cycloalkyl and cycloalkenyl, respectively, which are partially or fully substituted by identical or different halogen atoms, such as F, Cl and Br, or by haloalkyl, such as trifluoromethyl or difluoromethyl, for example 1-fluorocycloprop-1-yl, 2-fluorocycloprop-1-yl, 2,2-difluorocycloprop-1-yl, 1-fluorocyclobut-1-yl, 1-trifluoromethylcycloprop-1-yl, 2-trifluoromethylcycloprop-1-yl, 1-chlorocycloprop-1-yl, 2-chlorocycloprop-1-yl, 2,2-dichlorocycloprop-1-yl, 3,3-difluorocyclobutyl.

According to the invention, "trialkylsilyl" - on its own or as constituent part of a chemical group - represents straight-chain or branched Si-alkyl, preferably having 1 to 8, or having 1 to 6 carbon atoms, such as tri[(C_1-C_8)-, (C_1-C_6)- or (C_1-C_4)-alkyl]silyl, for example (but not limited thereto) trimethylsilyl, triethylsilyl, tri(n-propyl)silyl, tri(isopropyl)silyl, tri(n-butyl)silyl, tri(1-methylprop-1-yl)silyl, tri(2-methylprop-1-yl)silyl, tri(1,1-dimethyleth-1-yl)silyl, tri(2,2-dimethyleth-1-yl)silyl.

If the compounds can form, through a hydrogen shift, tautomers whose structure is not formally covered by the general formula (I), these tautomers are nevertheless covered by the definition of the inventive compounds of the general formula (I), unless a particular tautomer is under consideration. For example, many carbonyl compounds may be present both in the keto form and in the enol form, both forms being encompassed by the definition of the compound of the general formula (I).

Depending on the nature of the substituents and the manner in which they are attached, the compounds of the general formula (I) may be present as stereoisomers. The general formula (I) embraces all possible stereoisomers defined by the specific three-dimensional form thereof, such as enantiomers, diastereomers, Z and E isomers. If, for example, one or more alkenyl groups are present, diastereomers (Z and E isomers) may occur. If, for example, one or more asymmetric carbon atoms are present, enantiomers and diastereomers may occur. Stereoisomers can be obtained from the mixtures obtained in the preparation by customary separation methods. The chromatographic separation can be affected either on the analytical scale to find the enantiomeric excess or the diastereomeric excess, or else on the preparative scale to produce test specimens for biological testing. It is likewise possible to selectively prepare stereoisomers by using stereoselective reactions with use of optically active starting materials and/or auxiliaries. The invention thus also relates to all stereoisomers which are embraced by the general formula (I) but are not shown in their specific stereomeric form, and to mixtures thereof.

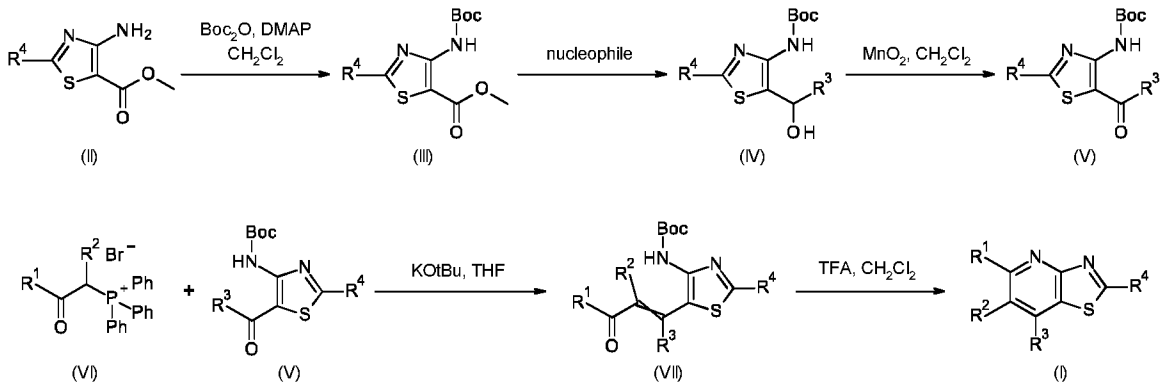
If the compounds are obtained as solids, the purification can also be carried out by recrystallization or digestion. If individual compounds of general formula (I) cannot be obtained in a satisfactory manner by the routes described below, they can be prepared by derivatization of other compounds of general formula (I).

Suitable isolation methods, purification methods and methods for separating stereoisomers of compounds of the general formula (I) are methods generally known to the person skilled in the art from analogous cases, for example by physical processes such as crystallization, chromatographic methods, in particular column chromatography and HPLC (high pressure liquid chromatography), distillation, optionally under reduced pressure, extraction and other methods, any mixtures that remain can generally be separated by chromatographic separation, for example on chiral solid phases. Suitable for preparative amounts or on an industrial scale are processes such as crystallization, for example of diastereomeric

salts which can be obtained from the diastereomer mixtures using optically active acids and, if appropriate, provided that acidic groups are present, using optically active bases.

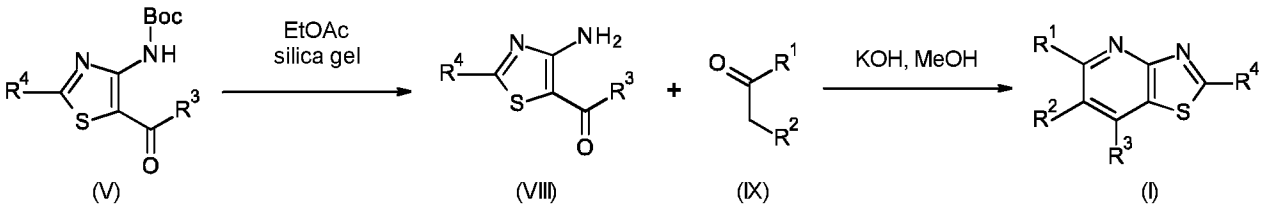
Synthesis of substituted thiazolopyridines of the general formula (I).

The substituted thiazolopyridines of the general formula (I) according to the invention can be prepared using known processes. The synthesis routes used and examined proceed from commercially available or easily synthesised substituted thiazoles or substituted pyridines. In the following schemes, the groups R^1, R^2, R^3 and R^4 of the general formula (I) have the meanings defined above, unless exemplary, but not limiting definitions are given. The first synthesis route for substituted thiazolopyridines of the general formula (I) proceeds via an optionally substituted Boc-protected aminothiazole (II) (Scheme 1). To this end, a substituted methylcarboxylate aminothiazole is protected (e.g. with Boc_2O and DMAP = 4-dimethylaminopyridine, where Boc = *tert*-butyloxycarbonyl) and then reduced to the corresponding alcohol (IV) with a suitable nucleophilic reagent (e.g. lithium aluminium hydride or methylmagnesium chloride). Subsequent oxidation of the alcohol to the corresponding carbonyl group using a suitable oxidizing agent (e.g. manganese dioxide) afforded the optionally substituted Boc-protected aminothiazole (V). To complete the synthesis of compounds of the general formula (I), the optionally substituted Boc-protected aminothiazole (V) is further reacted with an optionally substituted phosphonium salt (cf. *Org. Lett.*, **1999**, *1*, 1579-1581) in the presence of a base (e.g. potassium *tert*-butoxide) followed by acid mediated Boc-deprotection and cyclisation under acidic conditions (e.g. TFA = trifluoroacetic acid) in a suitable polar-aprotic solvent (e.g. dichloromethane) (cf *Org. Lett.*, **2016**, *18*, 1562-1565). During the synthesis of compounds (VII) the corresponding *trans* and *cis*-isomers could be isolated, as well as isomeric mixtures of differing ratios. In Scheme 1 below, R^1 has the meanings defined above. R^2, R^3 and R^4, by way of example, but not by limitation represent hydrogen.



Scheme 1.

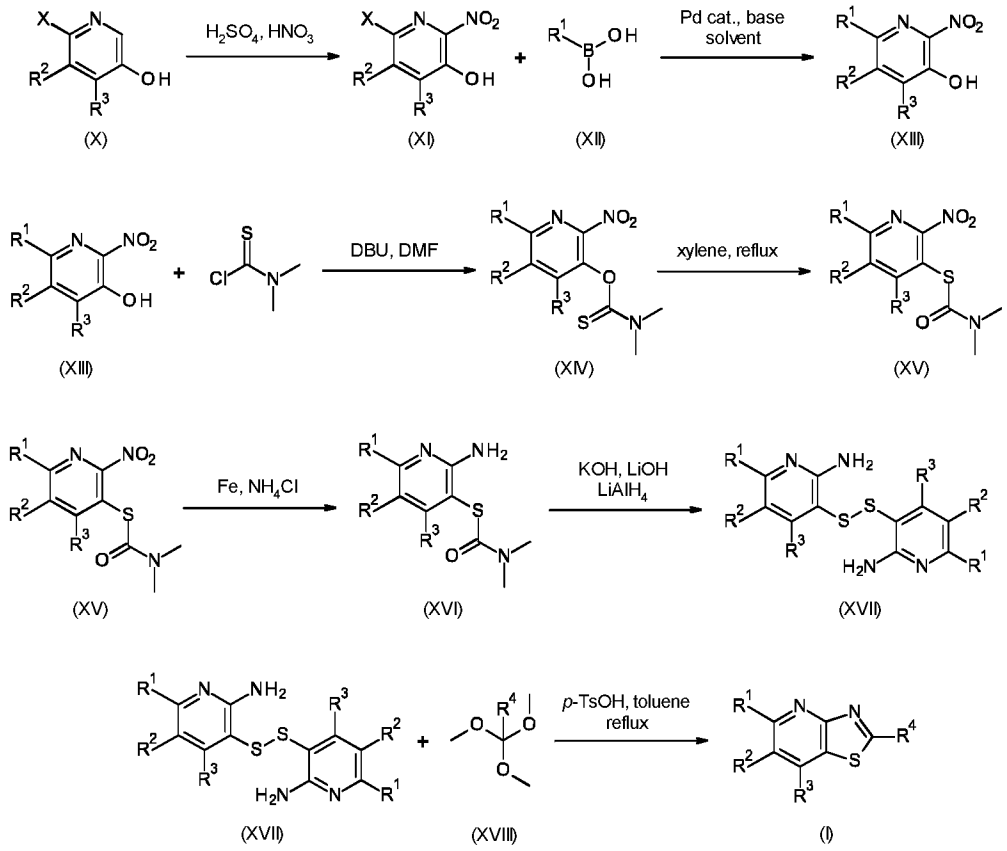
The synthesis of substituted thiazolopyridines of the general formula (I) can, in addition, be completed via a Friedländer style reaction of substituted aminothiazoles (VIII) with substituted ketones (Scheme 2). Following this method, Boc-protected thiazole (V) is deprotected in the presence of a mild acid in a suitable solvent (e.g. silica gel and EtOAc, where Boc = *tert*-butyloxycarbonyl) to a substituted aminothiazole (VIII). This compound then undergoes a cyclisation reaction with a substituted ketone in the presence of a suitable base (e.g. potassium hydroxide) in an appropriate solvent (e.g. methanol) to afford compounds of the general formula (I) (cf. US1998/5723413). In Scheme 2 below, R^1 and R^2 have the meanings defined above. R^3 and R^4, by way of example, but not by limitation represent hydrogen.



(V) (VIII) (IX) (I)

Scheme 2.

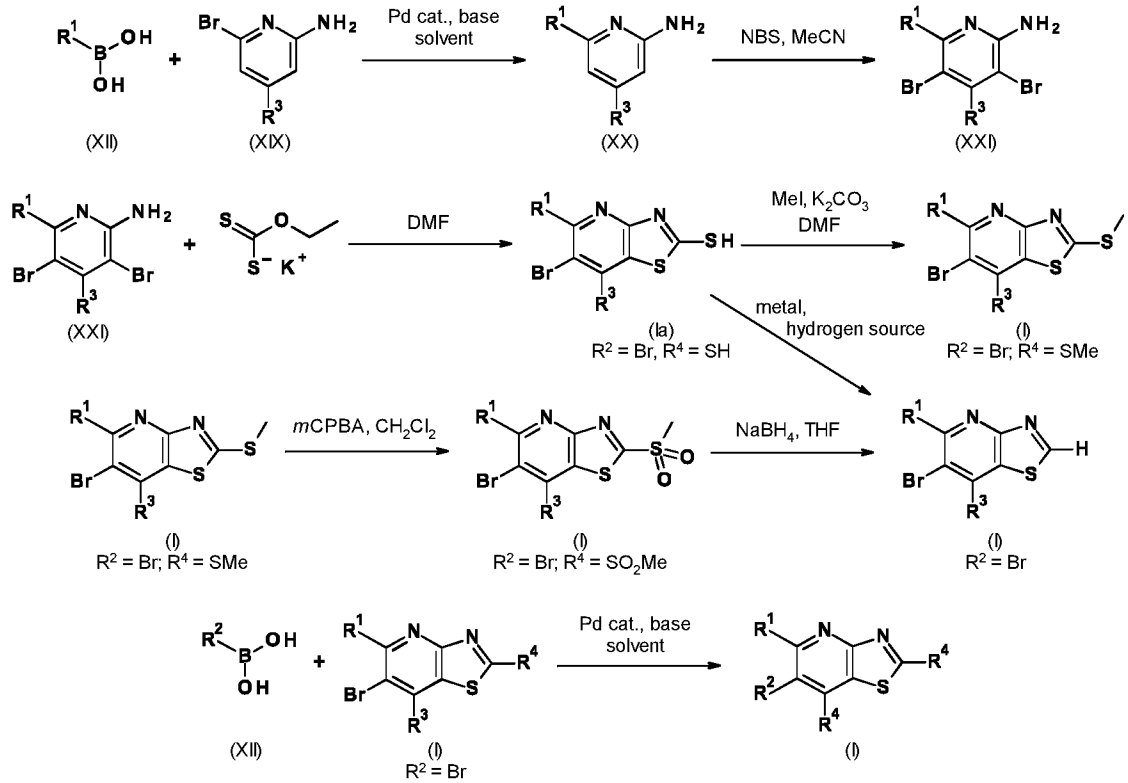
The synthesis of substituted thiazolopyridines of general formula (I) can also be accomplished starting from substituted hydroxypyridines (Scheme 3). To this end, a substituted hydroxypyridine (X) is nitrated (e.g. with sulfuric acid and nitric acid) and then coupled to a boronic acid in a palladium catalysed cross coupling reaction using a suitable palladium complex (e.g. $Pd(dppf)Cl_2$), an appropriate base (e.g. potassium carbonate) and a suitable aprotic solvent (e.g. toluene, 1,4-dioxane or DME = dimethoxyethane) (cf. WO2015/123133). The free hydroxy group of compound (XIII) is then reacted with *N*,*N*-dimethylcarbamothioyl chloride in the presence of a suitable base (e.g. DBU = 1,8-diazabicycloundec-7-ene) followed by a Newmann-quart rearrangement facilitated by heating in an appropriate solvent (e.g. xylene) to afford pyridine (XV) (cf. *Bioorg. Med. Chem.*, **2013**, *21*, 6804-6820). Reduction of the nitro group to an amino group is accomplished in the presence of a suitable reagent system (e.g. iron powder and ammonium chloride) followed by removal of the formamide group to afford disulphide (XVII). Reagents that can accomplish the formamide deprotection include a mixture of potassium hydroxide, lithium hydroxide and lithium aluminium hydride (cf. *Chem. Eur. J.*, **2018**, *24*, 4864-487; WO2016/120403). Lastly, cyclisation using an appropriate reaction partner (e.g. triethyl orthoformate) in the presence of a suitable acid catalyst (e.g. *p*-TsOH = *para*-toluenesulphonic acid) completed the synthesis route to compounds of the general formula (I) (cf. WO2018/203235). In Scheme 3 below, R^1, R^2 and R^3 have the meanings defined above and X = halogen. R^4, by way of example, but not by limitation represents hydrogen.



Scheme 3.

The synthesis of substituted thiazolopyridines of the general formula (I) is furthermore described starting from substituted aminopyridines (Scheme 4). To this end, a halogenated aminopyridine (XIX) is coupled to a boronic acid in a palladium catalysed cross coupling reaction using a suitable palladium complex (e.g. $Pd(dppf)Cl_2$), an appropriate base (e.g. potassium carbonate) and a suitable aprotic solvent (e.g. toluene, 1,4-dioxane or DME = dimethoxyethane). The resulting product (XX) is then dihalogenated using an appropriate reagent (e.g. NBS = *N*-bromosuccinimide or NCS = *N*-chlorosuccinimide) in a polar solvent (e.g. acetonitrile) to afford compound (XXI). A cyclization reaction using potassium ethyl xanthate at high temperature in a suitable solvent (e.g. DMF = *N*,*N*-dimethylformamide) then enables the synthesis of bicycle (I, R^2 = Br, R^4 = SH). Reduction of this compound with a metal, e.g. Zn or Fe, in a protic solvent or in a mixture containing protic reactions, e.g an organic acid like acetic acid, produces the unsubstituted thiazolo moiety (R^4 = H). On the other hand, alkylation of the sulfur atom with an alkylating agent (e.g. methyl iodide) in the presence of an appropriate base (e.g. potassium carbonate) followed by subsequent oxidation using a suitable oxidizing reagent (e.g. *m*-CPBA = *meta*-chloroperbenzoic acid) affords sulfone (I, R^2 = Br, R^4 = SO_2Me) (cf. WO2017/9806; WO2006/53166). Displacement of the sulfone group using a suitable nucleophile (e.g. sodium borohydride) followed by palladium cross coupling reaction of a boronic acid coupling using an appropriate palladium complex (e.g. $Pd(dppf)Cl_2$), a suitable base (e.g. potassium carbonate) and a suitable aprotic solvent (e.g. toluene, 1,4-dioxane or DME = dimethoxyethane) affords compounds of

the general formula (I). In Scheme 4 below, R^1 and R^2 and have the meanings defined above. R^3 and R^4, by way of example, but not by limitation represent hydrogen.

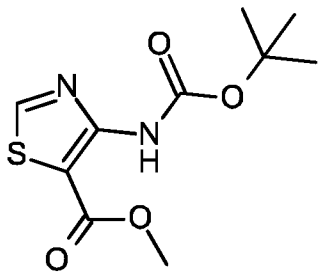


Scheme 4.

Selected detailed synthesis examples for the compounds of the general formula (I) according to the invention are given below. The example numbers mentioned correspond to the numbering scheme in Schemes 1 to 4 and Tables 1 and 2 below. The ^{1}H NMR spectroscopy data reported for the chemical examples described in the sections that follow were obtained on Bruker instruments at 600 MHz, 400 MHz or 300 MHz using $CDCl_3$ or d_6-DMSO as the solvent with tetramethylsilane (δ = 0.00 ppm) as the internal standard. The signals listed have the meanings given below: br = broad; s = singlet, d = doublet, t = triplet, dd = doublet of doublets, ddd = doublet of a doublet of doublets, m = multiplet, q = quartet, qu = quintet, sext = sextet, sept = septet, dq = doublet of quartets, dt = doublet of triplets.

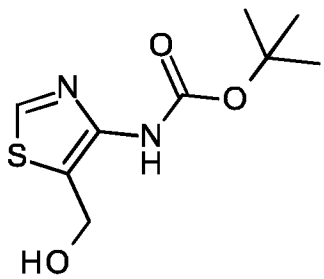
Synthesis examples:

No. IIIa: methyl 4-(*tert*-butoxycarbonylamino)thiazole-5-carboxylate



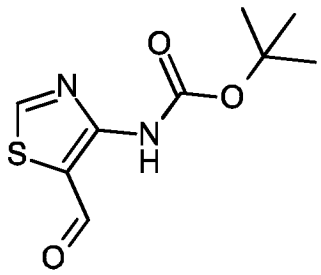
To a stirred solution of methyl 4-aminothiazole-5-carboxylate (55.0 g, 347 mmol, 1.00 eq.) and Boc_2O (163.0 g, 748 mmol, 2.50 eq.) in CH_2Cl_2 (550 mL) at 0 °C was added a solution of DMAP (4.24 g, 34.6 mmol, 0.10 eq.) in CH_2Cl_2 (50 mL) dropwise. The resulting mixture was warmed to RT and stirred for 16 h. The reaction mixture was quenched by the slow addition of ice and then extracted with CH_2Cl_2 (3 × 50 mL). The combined organic extracts were washed with brine (100 mL), dried over anhydrous Na_2SO_4, filtered and concentrated under reduced pressure. The resulting residue was purified by flash column chromatography on silica gel eluting with petroleum ether/EtOAC (10:1 → 5:1) to afford compound IIIa (28.0 g, 22% yield) as a white solid. ^1H NMR (400 MHz, $CDCl_3$): δ_H 8.82 (s, 1H), 3.88 (s, 3H), 1.43 (s, 9H).

No. IVa: *tert*-butyl *N*-[5-(hydroxymethyl)thiazol-4-yl]carbamate



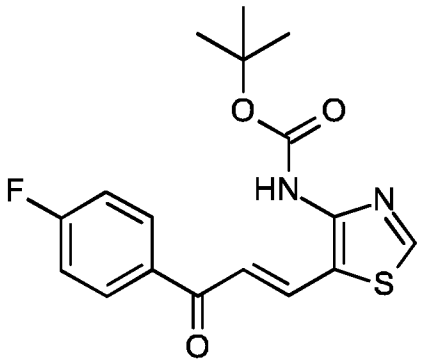
To a stirred suspension of $LiAlH_4$ (11.8 g, 312.0 mmol, 4.0 eq.) in THF (300 mL) at 0 °C was added a solution of compound IIIa (20.2 g, 78.1 mmol, 1.0 eq.) in THF (100 mL) dropwise over a period of 30 mins as the temperature was maintained at 0 °C. The reaction mixture was then allowed to warm to RT and stirred for 4.5 h. The reaction mixture was cooled to 0 °C and then quenched with water (12 mL). After additional stirring a 10% solution of aq. NaOH (12 mL) was added to the reaction mixture. The resulting mixture was filtered, washing with THF and the filtrate was concentrated under reduced pressure to afford compound IVa (15.0 g, 83% yield) as yellow solid which was used in the next step without further purification. ^1H NMR (400 MHz, $CDCl_3$): δ_H 8.51 (s, 1H), 7.09 (br s, 1H), 4.59 (s, 2H), 4.17 (br s, 1H), 1.47 - 1.41 (m, 9H).

No. Va: *tert*-butyl *N*-(5-formylthiazol-4-yl)carbamate



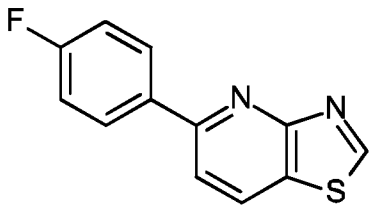
To a stirred mixture of compound IVa (15.0 g, 65.1 mmol, 1.0 eq.) in $CHCl_3$ (30 mL) at RT was added MnO_2 (28.3 g, 325.0 mmol, 5.0 eq.) in one portion. The resulting mixture was stirred at RT for 16 h. The reaction mixture was filtered and the filtrate was concentrated under reduced pressure to afford compound Va (11.9 g, 74% yield) as a yellow solid. The product was used directly in the next step without further purification. ^{1}H NMR (400 MHz, $CDCl_3$): δ_H 9.92 (s, 1H), 9.16 (br s, 1H), 8.84 (s, 1H), 1.48 (s, 9H).

No. VIa: *tert*-butyl *N*-[5-[(E)-3-(4-fluorophenyl)-3-oxo-prop-1-enyl]thiazol-4-yl]carbamate



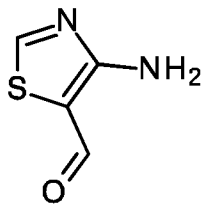
To a stirred mixture of [2-(4-fluorophenyl)-2-oxo-ethyl]-triphenyl-phosphoniumbromide (540 mg, 1.01 mmol, 1.25 eq., 90% purity) in THF (5.0 mL) at RT was added KOtBu (114 mg, 1.01 mmol, 1.25 eq.). The resulting mixture was stirred at RT for 15 mins and then compound Va (185 mg, 0.81 mmol, 1.00 eq.) was added. The reaction mixture was refluxed for 10 h and then cooled to RT. The reaction mixture was diluted with water and extracted with CH_2Cl_2. The organic extract was dried over Na_2SO_4, filtered and concentrated under reduced pressure. The resulting residue was purified by flash column chromatography on silica gel eluting with *n*-heptane/EtOAc (0-100% gradient) to afford compound VIa (218 mg, 68% yield) as a yellow oil. ^{1}H NMR (400 MHz, $CDCl_3$): δ_H 8.69 (s, 1H), 8.06-7.99 (m, 2H), 7.96 (d, J = 16 Hz, 1H), 7.21-7.13 (m, 2H), 7.11 (d, J = 16 Hz, 1H), 7.05 (br s, 1H), 1.52 (s, 9H).

No. I-074: 5-(4-fluorophenyl)thiazolo[4,5-b]pyridine



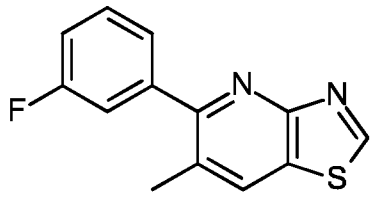
To a stirred solution of compound VIa (218 mg, 0.62 mmol) in CH_2Cl_2 (15 mL) at RT was added TFA (0.24 mL). The resulting mixture was stirred at RT for 5 h. The reaction mixture was diluted with 1.0 M aq. NaOH and extracted with CH_2Cl_2. The organic extract was dried over Na_2SO_4, filtered and concentrated under reduced pressure. The resulting residue was purified by reverse phase chromatography eluting with water/MeCN to afford compound I-074 (36 mg, 25% yield) as an off-white solid. ^{1}H NMR (400 MHz, $CDCl_3$): δ_H 9.33 (s, 1H), 8.42-8.36 (m, 1H), 8.23-8.14 (m, 2H), 7.87-7.81 (m, 1H), 7.25-7.15 (m, 2H).

No. VIIIa: 4-aminothiazole-5-carbaldehyde



To a stirred solution of compound Va (3.68 g, 16.1 mmol) in EtOAc (100 mL) at RT was added silica gel (36.8 g). The resulting mixture was concentrated under reduced pressure and the remaining solid was stirred under vacuum at 80 °C for 11 h. The resulting residue was purified by flash column chromatography on silica gel eluting with heptane/EtOAc (10:0 → 4:6) to afford compound VIIIa (1.26 g, 58% yield) as a colourless oil. ^{1}H NMR ($CDCl_3$): δ_H 9.75 (s, 1H), 8.68 (s, 1H), 6.75-6.30 (br s, 2H).

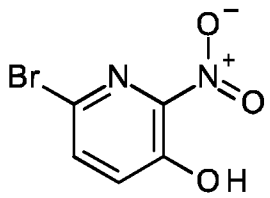
No. I-003: 5-(3-fluorophenyl)-6-methyl-thiazolo[4,5-b]pyridine



To a stirred solution of compound VIIIa (76 mg, 0.59 mmol) and 1-(3-fluorophenyl)propan-1-one (90 mg, 0.59 mmol) in MeOH (5 mL) at RT was added KOH (0.2 mL, 40% aq. solution). The resulting mixture was stirred at 45 °C for 5 h. The reaction mixture was diluted with water (10 mL) and extracted with CH_2Cl_2. The organic extract was washed with brine (5 mL) and concentrated under reduced

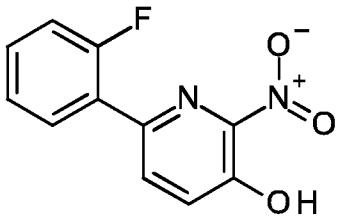
pressure. The resulting residue was purified by column chromatography on silica gel eluting with heptane/EtOAc (10:0 → 1:1) to afford compound I-003 (11 mg, 8% yield) as a colourless oil. ^{1}H NMR ($CDCl_3$): δ_H 9.26 (s, 1H), 8.23 (s, 1H), 7.52-7.30 (br m, 3H), 7.14 (dt, 1H), 2.52 (s, 3H).

No. XIa: 6-bromo-2-nitro-pyridin-3-ol



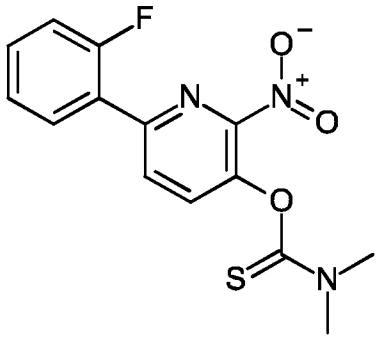
To a stirred solution of compound Xa (9.00 g, 51.7 mmol, 1.0 eq.) in aq. H_2SO_4 (30 mL) at RT was added aq. HNO_3 (10 mL) dropwise. The resulting mixture was stirred at RT for 2 h. The reaction mixture was cooled to 0 °C and quenched by the slow addition of ice cooled water (200 mL). The resulting mixture was filtered washing with water and the filtrate was concentrated under reduced pressure to afford compound XIa (8.8 g, 78%) as a yellow solid. The data was in accordance with that reported in the literature (*J. Med. Chem.*, 2010, *53*, 1222-1237).

No. XIIIa: 6-(2-fluorophenyl)-2-nitro-pyridin-3-ol



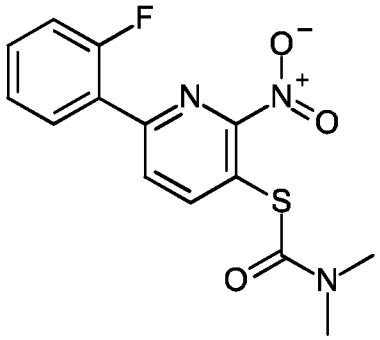
To a stirred mixture of compound XIa (8.00 g, 36.5 mmol, 1.00 eq.) and (2-fluorophenyl)boronic acid (7.67 g, 54.8 mmol, 1.50 eq.) in a mixture of 1,4-dioxane (32 mL) and water (4 mL) at RT was added Pd(dppf)Cl_2 (2.67 g, 3.65 mmol, 0.10 eq.) and Na_2CO_3 (7.74 g, 73.1 mmol, 2.00 eq.) portion wise. The resulting mixture was stirred at 80 °C for 2 h. The resulting mixture was diluted with EtOAc (100 mL) and filtered washing with EtOAc (3 × 40 mL). The filtrate was washed with water (3 × 40 mL), dried over Na_2SO_4, filtered and concentrated under reduced pressure. The residue was purified by flash column chromatography on silica gel eluting with petroleum ether/EtOAc (10:1) to afford compound XIIIa (6.90 g, 81% yield) as a yellow solid. ^{1}H NMR (300 MHz, DMSO-d_6): δ_H 11.79 (br s, 1H), 8.05-7.98 (m, 1H), 7.91-7.80 (m, 1H), 7.79-7.70 (m, 1H), 7.55-7.44 (m, 1H), 7.40-7.30 (m, 2H).

No. XIVa: *O*-[[6-(2-fluorophenyl)-2-nitro-3-pyridyl]] *N*,*N*-dimethylcarbamothioate



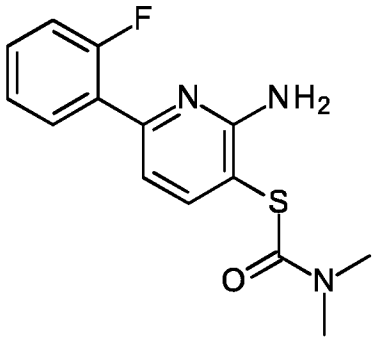
To a stirred mixture of compound XIIIa (2.00 g, 8.54 mmol, 1.0 eq.) and (chloromethanethioyl) dimethylamine (2.11 g, 17.1 mmol, 2.0 eq.) in DMF (12 mL) at RT was added DBU (2.60 g, 17.1 mmol, 2.0 eq.). The resulting mixture was stirred at 80 °C for 2 h. The reaction mixture was quenched by the slow addition of ice cooled water (100 mL) and the resulting mixture was filtered. The filter cake was washed with water (2 × 30 mL) and dried under vacuum to afford compound XIVa (2.20 g, 80% yield) as a brown solid. ^{1}H NMR (300 MHz, DMSO-d_6): δ_H 8.33-8.27 (m, 1H), 8.19-8.15 (m, 1H), 8.01-7.92 (m, 1H), 7.63-7.55 (m 1H), 7.47-7.38 (m, 2H), 3.39 (s, 3H), 3.33 (s, 3H).

No. XVa: *S*-[[6-(2-fluorophenyl)-2-nitro-3-pyridyl]] *N*,*N*-dimethylcarbamothioate



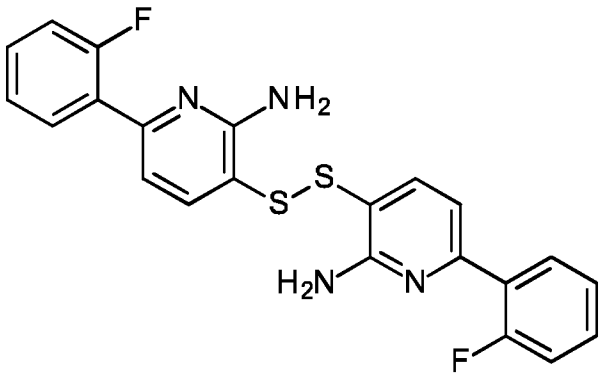
A stirred mixture of compound XIVa (3.10 g, 9.65 mmol, 1.0 eq.) in xylene (15 mL) at RT was heated at 150 °C overnight. The reaction mixture was concentrated under reduced pressure and the resulting residue was purified by flash column chromatography on silica gel column eluting with petroleum ether /EtOAc (8:1) to afford compound XVa (3.0 g, 97% yield) as a yellow oil. ^{1}H NMR (300 MHz, DMSO-d_6): δ_H 8.44-8.39 (m, 1H), 8.24-8.18 (m, 1H), 8.01-7.93 (m, 1H), 7.71-7.56 (m, 1H), 7.49-7.37 (m, 1H), 3.08 (s, 3H), 2.95 (s, 3H).

No. XVIa: *S*-[[2-amino-6-(2-fluorophenyl)-3-pyridyl]] *N*,*N*-dimethylcarbamothioate



To a stirred mixture of compound XVa (1.90 g, 5.91 mmol, 1.0 eq.) and iron powder (1.65 g, 29.57 mmol, 5.0 eq.) in a mixture of THF (10 mL) and water (3 mL) at RT was added NH_4Cl (3.16 g, 59.13 mmol, 10.0 eq.). The resulting mixture was stirred at 70 °C for 30 mins. The reaction mixture was allowed to cool to RT, filtered washing with MeOH/CH_2Cl_2 (10 × 50 mL) and the filtrate was concentrated under reduced pressure. The resulting residue was diluted with EtOAc (200 mL), washed with brine (3 × 100 mL), dried over anhydrous Na_2SO_4, filtered and concentrated under reduced pressure. The residue was purified by flash column chromatography on silica gel eluting with petroleum ether/EtOAc (3:1) to afford compound XVIa (1.1 g, 64% yield) as a pale yellow solid. ^{1}H NMR (300 MHz, DMSO-d_6): δ_H 12.70 (br s, 1H), 8.14 (s, 1H), 7.97-7.78 (m, 1H), 7.62-7.55 (m, 1H), 7.52-7.42 (m, 1H), 7.35-7.26 (m, 2H), 7.01-6.95 (m, 1H), 6.28 (br s, 2H), 3.08 (br s, 3H), 2.94 (br s, 3H).

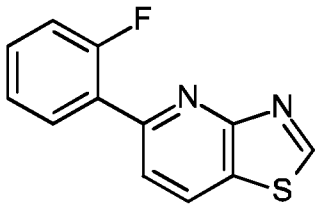
No. XVIIa: 3-[[2-amino-6-(2-fluorophenyl)-3-pyridyl]disulfanyl]-6-(2-fluorophenyl)pyridin-2-amine



To a stirred mixture of compound XVIa (2.90 g, 9.95 mmol, 1.0 eq.), KOH (1.68 g, 29.86 mmol, 3.0 eq.), LiOH (0.72 g, 29.86 mmol, 3.0 eq.) in a mixture of MeOH (20 mL) and water (6 mL) at 0 °C was added $LiAlH_4$ (7.56 g, 199.08 mmol, 20.0 eq.) portion wise. The resulting mixture was allowed to warm to RT and stirred overnight. The reaction mixture was quenched with MeOH (150 mL) and then filtered washing with MeOH (5 × 50 mL). The filtrated was concentrated under reduced pressure and the resulting residue was purified by flash column chromatography on silica gel eluting with petroleum ether/EtOAc (2:1) to afford compound XVIIa (780 mg, 36% yield) as a yellow solid. ^{1}H NMR (400

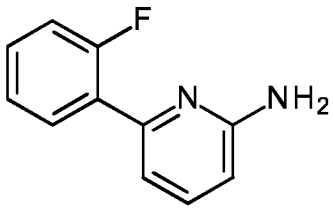
MHz, DMSO-d_6): δ_H 7.96-7.89 (m, 2H), 7.51-7.41 (m, 4H), 7.34-7.25 (m, 4 H), 6.96-6.91 (m, 2H), 6.51 (br s, 4H).

No. I-036: 5-(2-fluorophenyl)thiazolo[4,5-b]pyridine



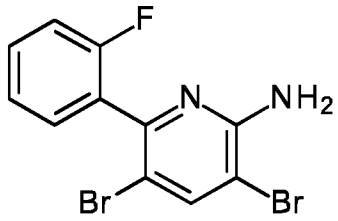
To a stirred mixture of compound XVIIa (1.00 g, 4.54 mmol, 1.0 eq.) and trimethyl orthoformate (4.82 g, 45.40 mmol, 10.0 eq.) in toluene (20 mL) at RT was added *p*-TsOH (782 mg, 4.54 mmol, 1.0 eq.) portion wise. The resulting mixture was stirred at 100 °C overnight. The reaction mixture was diluted with MeOH (50 mL) and then concentrated under reduced pressure. The resulting residue was purified by reverse phase chromatography eluting with water/MeCN to afford compound I-036 (300 mg, 29% yield) as a pale yellow solid.

No. XXa: 6-(2-fluorophenyl)pyridin-2-amine



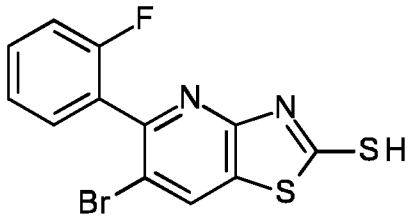
To a stirred mixture of 6-bromopyridin-2-amine (10.0 g, 57.7 mmol, 1.00 eq.), 2-fluorophenyboronic acid (9.70 g, 69.3 mmol, 1.20 eq.) and Na_2CO_3 (12.3 g, 115 mmol, 2.00 eq.) in a mixture of 1,4-dioxane (60 mL) and water (60 mL) at RT was added Pd(dppf)Cl_2 (1.27 g, 1.73 mmol, 0.03 eq.) and the mixture was stirred at 80 °C for 3 h. The reaction mixture was cooled to RT, diluted with water and extracted with EtOAc. The organic extract was washed with brine, dried over Na_2SO_4, filtered and concentrated under reduced pressure to afford compound XXa (13 g). The compound was used in the next step without further purification. ^{1}H NMR (600 MHz, DMSO-d_6): δ_H 7.87 (m, 1H), 7.46 (m, 1H), 7.40 (m, 1H), 7.29-7.24 (m, 2H), 6.90 (d, 1H), 6.45 (d, 1H), 6.02 (bs, 2H).

No. XXIa: 3,5-dibromo-6-(2-fluorophenyl)pyridin-2-amine



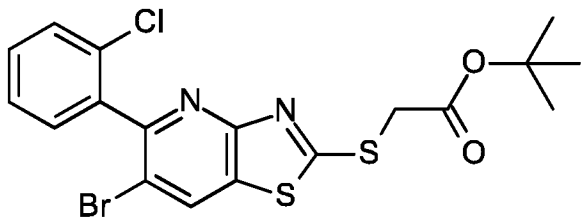
To a stirred solution of XXa (11.4 g, 60.6 mmol, 1.0 eq.) in acetonitrile (150 mL) at 0 °C was added *N*-bromosuccinimide (23.7 g, 133 mmol, 2.2 eq.). The reaction mixture was warmed to RT and stirred for 4 h. The reaction mixture was diluted with water and the resulting solid was filtered off, washing with water to afford compound XXIa (19.8 g, 93% yield) as a beige solid. ^{1}H NMR (600 MHz, $CDCl_3$): δ_H 7.92 (s, 1H), 7.41 (m, 1H), 7.36 (m, 1H), 7.23 (m, 1H), 7.14 (m, 1H), 5.01 (bs, 2H).

No. I-156: 6-bromo-5-(2-fluorophenyl)thiazolo[4,5-b]pyridine-2-thiol



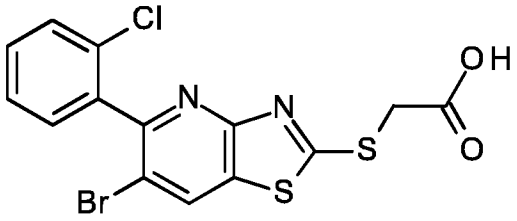
To a stirred solution of compound XXIa (1.29 g, 3.74 mmol, 1.0 eq.) in DMF (10 mL) at RT was added potassium ethyl xanthate (1.32 g, 8.22 mmol, 2.2 eq.). The resulting mixture was heated at reflux for 16 h. The reaction mixture was cooled to RT, diluted with water and acidified with 2 N HCl. The obtained solid was obtained via filtration, washing with water to afford compound I-156 (1.2 g, 94% yield).

No. I-178: *tert*-butyl 2-[6-bromo-5-(2-chlorophenyl)thiazolo[4,5-b]pyridin-2-yl]sulfanylacetate



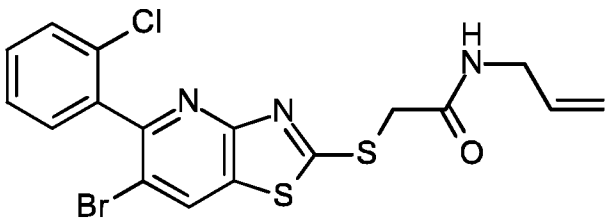
To a stirred solution of compound I-177 (500 mg, 1.39 mmol, 1.1 eq.) and *tert*-butyl-2-bromoacetate (300 mg, 1.53 mml, 1.1 eq.) in DMF (5mL) at RT was added K_2CO_3 (270 mg, 1.95 mmol, 1.4 eq.). The resulting mixture was stirred at RT for 3 h. The reaction mixture was diluted with water and extracted with EtOAc. The organic extract was washed with water and brine, dried over Na_2SO_4, filtered and concentrated under reduced pressure to afford compound I-178. The compound was used in the next step without further purification.

No. I-179: 2-[6-bromo-5-(2-chlorophenyl)thiazolo[4,5-b]pyridin-2-yl]sulfanylacetic acid (TFA salt)



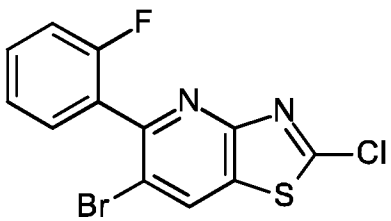
To a stirred solution of compound I-178 (720 mg, 1.52 mmol, 1.0 eq.) in CH_2Cl_2 (5 mL) at RT was added TFA (350 mg, 3.05 mmol, 2.0 eq.). The resulting mixture was stirred at RT for 16 h. The reaction mixture was concentrated under reduced pressure to afford compound I-179. The compound was used in the next step without further purification.

No. I-084: *N*-allyl-2-[6-bromo-5-(2-chlorophenyl)thiazolo[4,5-b]pyridin-2-yl]sulfanyl-acetamide



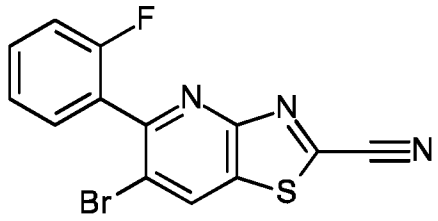
To a stirred mixture of compound I-179 (100 mg, 0.24 mmol, 1.0 eq.), allylamine (21 mg, 0.36 mmol, 1.5 eq.), HOBT (39 mg, 0.28 mmol, 1.2 eq.) and diisopropylethylamine (78 mg, 0.6 mmol, 2.5 eq.) in a mixture of THF/CH_2Cl_2 (1 mL, 1:1) at RT was added EDCI (55 mg, 0.28 mmol, 1.2 eq.). The resulting mixture was stirred at 50 °C for 12 h. The reaction mixture was diluted with water and extracted with EtOAc. The organic extract was concentrated under reduced pressure and the resulting residue was purified by flash column chromatography on silica gel eluting with heptane/EtOAc to afford compound I-084 (15 mg, 13% yield).

No. I-053: 6-bromo-2-chloro-5-(2-fluorophenyl)thiazolo[4,5-b]pyridine



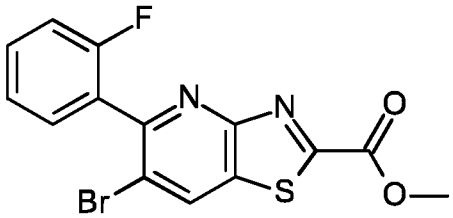
To a stirred mixture of compound I-156 (5.0 g, 14.6 mmol, 1.0 eq.) in CH_2Cl_2 (50 mL) at RT was added sulfuryl chloride (7 mL, 88 mmol, 6.0 eq.). The resulting mixture was stirred at RT for 16 h. The reaction mixture was quenched carefully with water, the organic phase was separated and concentrated under reduced pressure to afford compound I-053. The compound was used in the next step without further purification.

No. I-070: 6-bromo-5-(2-fluorophenyl)thiazolo[4,5-b]pyridine-2-carbonitrile



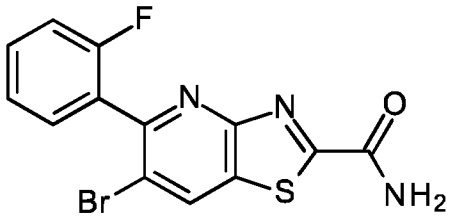
To a stirred mixture of compound I-053 (171 mg, 0.5 mmol, 1.0 eq.) in butyronitrile (4 mL) at RT was added KCN (78 mg, 1.2 mmol, 2.4 eq.). The resulting mixture was stirred at 130 °C for 16 h. The reaction mixture was diluted with water and extracted with EtOAc. The organic extract was washed with water and brine, dried over Na_2SO_4, filtered and concentrated under reduced pressure. The resulting residue was purified by flash column chromatography on silica gel eluting with heptane/EtOAc to afford compound I-070 (84 mg, 51% yield).

No. I-054: methyl 6-bromo-5-(2-fluorophenyl)thiazolo[4,5-b]pyridine-2-carboxylate



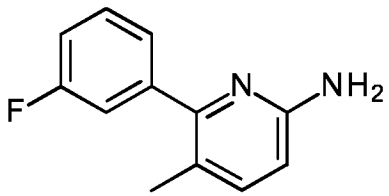
To a stirred solution of compound I-070 (270 mg, 0.8 mmol, 1.0 eq.) in MeOH (10 mL) at RT was added thionyl chloride (1 mL). The resulting mixture was stirred at RT for 2 h. The reaction mixture was diluted with water and washed with sat. aq. $NaHCO_3$ solution. The organic layer was separated and concentrated under reduced pressure to afford compound I-054 (293 mg, quant. yield). The compound was used in the next step without further purification obtained material was used in the next step without further purification.

No. I-154: 6-bromo-5-(2-fluorophenyl)thiazolo[4,5-b]pyridine-2-carboxamide



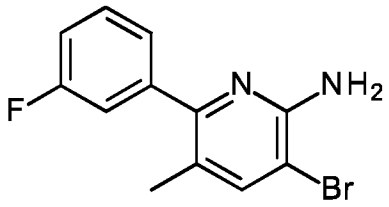
To a stirred solution of compound I-054 (293 mg, 0.8 mmol, 1.0 eq.) in a mixture of MeOH/THF (10 mL, 1:1) at RT was added aq. NH_3 solution (1 mL). The resulting mixture was stirred at RT for 2 h and then concentrated under reduced pressure to afford compound I-154 (281 mg, quant. yield).

No. XXb: 6-(3-fluorophenyl)-5-methyl-pyridin-2-amine



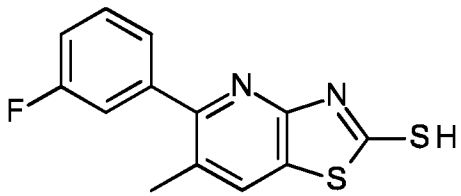
To a stirred mixture of 6-bromo-5-methylpyridin-2-amine (1.00 g, 5.34 mmol), 3-fluorophenylboronic acid (898 mg, 6.41 mmol) and Na_2CO_3 (1.13 g, 10.6 mmol) in a mixture of 1,4-dioxane/water (30 mL, 1:1) was added $Pd(dppf)Cl_2$ (391 mg, 0.53 mmol). The resulting mixture was stirred at 80 °C for 4 h. The reaction mixture was cooled to RT, diluted with water (10 mL) and extracted with CH_2Cl_2. The organic extract was dried over Na_2SO_4, filtered and concentrated under reduced pressure. The resulting residue was purified by flash column chromatography on silica gel eluting with heptane/EtOAc (10:0 → 4:6) to afford compound XXb (930 mg, 85% yield) as a colourless oil. ^1H NMR (400 MHz, $CDCl_3$): δ_H 7.41-7.34 (br m, 2H), 7.27 (m, 1H), 7.22 (dt, 1H), 7.06 (dt, 1H), 6.46 (d, 1H), 4.37 (br s, 2H), 2.19 (s, 3H).

No. XXIb: 3-bromo-6-(3-fluorophenyl)-5-methyl-pyridin-2-amine



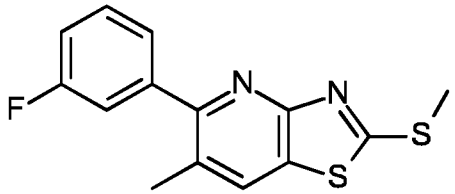
To a stirred mixture of compound XXb (900 mg, 4.45 mmol) and *N*-bromosuccinimide (871 mg, 4.89 mmol) in MeCN (20 mL) at RT was added a catalytic amount of AIBN. The resulting mixture was stirred at reflux for 5 h. The reaction mixture was cooled to RT, diluted with water (10 mL) and extracted with CH_2Cl_2. The organic extract was washed with brine and concentrated under reduced pressure. The resulting residue was purified by flash column chromatography on silica gel eluting with heptane/EtOAc (10:0 → 8:2) to afford compound XXIb (1.06 g, 84% yield) as a colourless oil. ^1H NMR (400 MHz, $CDCl_3$): δ_H 7.59 (s, 1H), 7.38 (pseudo q, 1H), 7.25 (dt, 1H), 7.22 (dt, 1H), 7.18 (dt, 1H), 7.07 (dt, 1H), 4.82 (br s, 2H), 2.20 (s, 3H).

No. I-159: 5-(3-fluorophenyl)-6-methyl-thiazolo[4,5-b]pyridine-2-thiol



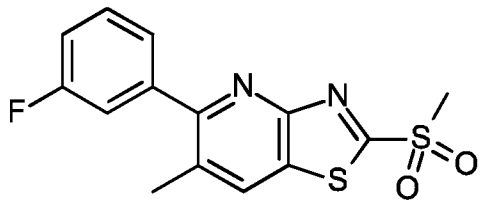
To a stirred mixture of compound XXIb (1.03 g, 3.66 mmol) in DMA (20 mL) at RT was added potassium *O*-ethylxanthate (1.292 g, 8.06 mmol). The resulting mixture was stirred 155 °C for 8 h. The reaction mixture was diluted with ice-water (10 mL) and acidified with HCl (2N aq. solution). The resulting solid was collected by filtered and dried to afford compound I-159 (917 mg, 89% yield) as a colourless solid. The compound was used in the next step without further purification. ^{1}H NMR (400 MHz, $CDCl_3$): δ_H 10.05 (br s, 1H), 7.65 (s, 1H), 7.43 (pseudo q, 1H), 7.28 (dt, 1H), 7.23 (dt, 1H), 7.14 (dt, 1H), 7.07 (dt, 1H), 2.40 (s, 3H).

No. I-076: 5-(3-fluorophenyl)-6-methyl-2-methylsulfanyl-thiazolo[4,5-b]pyridine



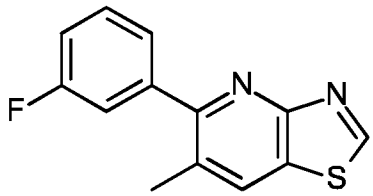
To a stirred mixture of compound I-159 (821 mg, 2.97 mmol) and K_2CO_3 (821 mg, 5.94 mmol) in DMF (15 mL) at RT was added iodomethane (464 mg, 3.26 mmol. The resulting mixture was stirred at RT for 4 h. The reaction mixture was diluted with EtOAc (10 mL) and washed with water (5 mL). The organic layer was washed with brine (2 × 5 mL), dried over Na_2SO_4, filtered and concentrated under reduced pressure to afford compound I-076 (780 mg, 86% yield) as a colourless oil. The compound was used in the next step without further purification. ^{1}H NMR (400 MHz, $CDCl_3$): δ_H 7.98 (s, 1H), 7.42-7.31 (br m, 3H), 7.11 (dt, 1H), 2.86 (s, 3H), 2.45 (s, 3H).

No. I-078: 5-(3-fluorophenyl)-6-methyl-2-methylsulfonyl-thiazolo[4,5-b]pyridine



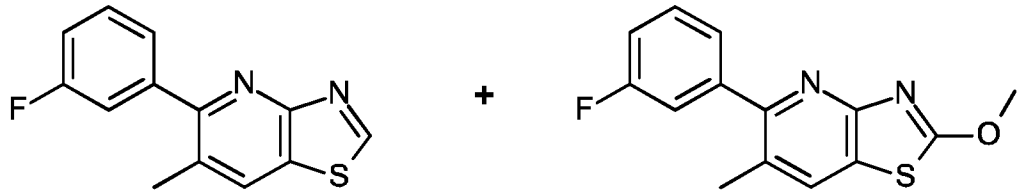
To a stirred solution of compound I-076 (30 mg, 1.03 mmol) in CH_2Cl_2 (10 mL) at RT was added *m*-CPBA (509 mg, 2.27 mmol). The resulting mixture was stirred at RT for 6 h. The reaction mixture was filtered through diatomaceous earth and the filtrate was concentrated under reduced pressure. The resulting residue was purified by flash column chromatography on silica gel eluting with heptane/EtOAc (10:0 → 1:1) to afford compound I-078 (281 mg, 83% yield). ^{1}H NMR (400 MHz, $CDCl_3$): δ_H 8.31 (s, 1H), 7.48-7.33 (br m, 3H), 7.18 (dt, 1H), 3.50 (s, 3H), 2.58 (s, 3H).

No. I-003: 5-(3-fluorophenyl)-6-methyl-thiazolo[4,5-b]pyridine



To a stirred solution of compound I-076 (30 mg, 1.03 mmol) and triethyl silane (505 mg, 4.33 mmol) in THF (10 mL) at RT was added $PdCl_2$ (18 mg, 0.10 mmol). The resulting mixture was stirred at reflux for 5 h. After this time, a catalytic amount of trimethylsilyl chloride (3 droplets) was added together with fresh $PdCl_2$ (50 mg, 0.28 mmol) and the resulting mixture was stirred at reflux for a further 6 h. The reaction mixture was cooled to RT, filtered through diatomaceous earth and the filtrate was concentrated under reduced pressure. The resulting residue was purified by flash column chromatography on silica gel eluting with heptane/EtOAc (10:0 → 1:1) to afford compound I-003 (12 mg, 9% yield) as a colourless oil. ^{1}H NMR (400 MHz, $CDCl_3$): δ_H 9.26 (s, 1H), 8.23 (s, 1H), 7.52-7.30 (br m, 3H), 7.14 (dt, 1H), 2.52 (s, 3H).

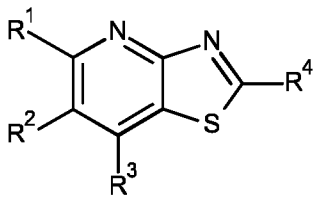
No. I-003: 5-(3-fluorophenyl)-6-methyl-thiazolo[4,5-b]pyridine and No. I-040: 5-(3-fluorophenyl)-2-methoxy-6-methyl-thiazolo[4,5-b]pyridine



To a stirred solution of compound I-078 (20 mg, 0.62 mmol) in MeOH (5 mL) at RT was added $NaBH_4$ (33 mg, 0.86 mmol). The resulting mixture was stirred at RT for 3 h. An additional portion of $NaBH_4$ (15 mg, 0.39 mmol) was added stirring continued at RT for a further 2 h. The reaction mixture was diluted with CH_2Cl_2 (10 mL) and washed with water (5 mL). The organic layer was washed with brine (5 mL) and concentrated under reduced pressure. The resulting residue was purified by flash column chromatography on silica gel eluting with heptane/EtOAc (10:0 → 1:1) to afford compound I-003 (114 mg, 74% yield) as a colourless oil. Compound I-040 (16 mg, 9% yield) was also afforded as a colourless oil. Compound I-003 ^{1}H NMR (400 MHz, $CDCl_3$): δ_H 9.26 (s, 1H), 8.23 (s, 1H), 7.52-7.30 (br m, 3H), 7.14 (dt, 1H), 2.52 (s, 3H). Compound I-040 ^{1}H NMR (400 MHz, $CDCl_3$): δ_H 7.87 (s, 1H), 7.42-7.27 (br m, 3H), 7.08 (dt, 1H), 4.28 (s, 3H), 2.44 (s, 3H).

In analogy to the preparation examples cited above and recited at the appropriate point, and taking account of the general details relating to the preparation of thiazolopyridines, the compounds cited below are obtained.

Table 1: Examples of preferred compounds of the general formula (I)



(I)

Example number	R^1	R^2	R^3	R^4
I-001	2-F-Ph	Me	H	Me
I-002	2-F-Ph	Me	H	H
I-003	3-F-Ph	Me	H	H
I-004	4-Cl-Ph	Me	H	$MeSO_2$
I-005	Ph	Me	H	MeS
I-006	Ph	Me	H	MeO

Example number	R^1	R^2	R^3	R^4
I-007	2-MeO-Ph	Me	H	MeS
I-008	3-F-Ph	Et	H	MeSO
I-009	2,4-F_2-Ph	Et	H	$MeSO_2$
I-010	Ph	H	H	H
I-011	Ph	Et	H	MeS
I-012	2-F-Ph	Br	H	H
I-013	2-F-6-Me-Ph	Cl	H	H
I-014	2-Cl-Ph	Br	H	$Me_2NC(O)CH_2S$
I-015	2-Cl-Ph	Br	H	$MeNHC(O)CH_2S$
I-016	2-F-Ph	Br	H	CH_2=$CHCH_2NHC(O)CH_2O$
I-017	2-F-Ph	Cl	H	H
I-018	2-Me-Ph	Me	H	H
I-019	2-F-Ph	H	H	Me
I-020	3-F-Ph	Me	H	Me
I-021	2-F-Ph	Me	H	$MeSO_2$
I-022	2-Me-Ph	Et	H	MeSO
I-023	2-F-Ph	Et	H	H
I-024	2-Cl-Ph	Me	H	MeSO
I-025	2,4-F_2-Ph	Me	H	MeS
I-026	2-CF_3-Ph	Me	H	MeSO
I-027	2,4-F_2-Ph	Et	H	MeSO
I-028	2-MeO-Ph	Et	H	MeSO
I-029	3-F-Ph	Et	H	H
I-030	2,4-F_2-Ph	Et	H	H
I-031	4-Cl-Ph	Et	H	MeS
I-032	2-CF_3-Ph	Et	H	MeO
I-033	4-Cl-Ph	Et	H	$MeSO_2$
I-034	2-Me-Ph	Et	H	$(EtO_2C)_2CH$
I-035	2,4,6-F_3-Ph	Cl	H	H
I-036	2-F-Ph	H	H	H
I-037	2-F-Ph	Me	H	MeS
I-038	2-F-Ph	Br	H	MeS
I-039	3-F-Ph	Me	H	MeSO
I-040	3-F-Ph	Me	H	MeO
I-041	Ph	Me	H	H
I-042	2-Cl-Ph	Me	H	$MeSO_2$
I-043	2-Me-Ph	Me	H	MeS
I-044	2,4-F_2-Ph	Me	H	$MeSO_2$
I-045	2-Cl-Ph	Me	H	H
I-046	3-F-Ph	Et	H	$MeSO_2$

Example number	R^1	R^2	R^3	R^4
I-047	2-Me-Ph	Br	H	MeS
I-048	2,4-F_2-Ph	Et	H	MeO
I-049	2-CF_3-Ph	Et	H	H
I-050	Ph	Et	H	MeSO
I-051	Ph	Et	H	H
I-052	2-F-Ph	Br	H	HO_2CCH_2NH
I-053	2-F-Ph	Br	H	Cl
I-054	2-F-Ph	Br	H	MeO_2C
I-055	2-Me-Ph	Et	H	EtO
I-056	Ph	Me	H	2-F-$PhCH_2$
I-057	3,5-Cl_2-Ph	Me	H	H
I-058	2-Cl-Ph	Br	H	MeSO
I-059	2-F-Ph	Et	H	$MeSO_2$
I-060	4-Cl-Ph	Me	H	MeO
I-061	2-Me-Ph	Et	H	$MeSO_2$
I-062	2,4-F_2-Ph	Me	H	MeSO
I-063	2-CF_3-Ph	Me	H	MeS
I-064	2-CF_3-Ph	Me	H	H
I-065	2,4-F_2-Ph	Et	H	MeS
I-066	4-Cl-Ph	Et	H	H
I-067	2-F-Ph	Br	H	CH_2=$CHCH_2NHC(O)CH_2NH$
I-068	3-F-Ph	Cl	H	H
I-069	2-Cl-Ph	Cl	H	H
I-070	2-F-Ph	Br	H	CN
I-071	2-F-Ph	Br	H	$NCCH_2$
I-072	2-F-Ph	CH_2=CH	H	H
I-073	2-F-Ph	Me	H	2-F-$PhCH_2$
I-074	4-F-Ph	H	H	H
I-075	2-F-Ph	Cl	H	MeS
I-076	3-F-Ph	Me	H	MeS
I-077	4-Cl-Ph	Me	H	MeSO
I-078	3-F-Ph	Me	H	$MeSO_2$
I-079	4-Cl-Ph	Me	H	H
I-080	Ph	Me	H	$MeSO_2$
I-081	2-CF_3-Ph	Me	H	$MeSO_2$
I-082	4-Cl-Ph	Et	H	MeSO
I-083	2-Me-Ph	Cl	H	H
I-084	2-Cl-Ph	Br	H	CH_2=$CHCH_2NHC(O)CH_2S$
I-085	2-F-Ph	Br	H	CH_2=$CHCH_2NHC(O)$

Example number	R^1	R^2	R^3	R^4
I-086	2-F-Ph	Br	H	$EtO_2CCH(CN)$
I-087	2,6-F_2-Ph	Cl	H	H
I-088	2-F-6-Me-Ph	Br	H	H
I-089	2-F-Ph	H	H	2-F-$PhCH_2$
I-090	4-F-Ph	Me	H	Me
I-091	2-F-Ph	Et	H	MeS
I-092	Ph	Me	H	MeSO
I-093	2-Me-Ph	Et	H	H
I-094	2-Me-Ph	Et	H	MeO
I-095	2-Cl-Ph	Me	H	MeO
I-096	2-MeO-Ph	Me	H	MeO
I-097	2-MeO-Ph	Et	H	MeO
I-098	Ph	Et	H	$MeSO_2$
I-099	2-F-Ph	Br	H	Me
I-100	2-F-Ph	Br	H	HO_2CCH_2O
I-101	2-F-Ph	Br	H	EtO
I-102	2-F-Ph	cPr	H	H
I-103	2-Cl-Ph	Me	H	Me
I-104	2-F-Ph	Me	H	MeSO
I-105	2-Me-Ph	H	H	H
I-106	2-Me-Ph	Et	H	MeS
I-107	2-Cl-Ph	Me	H	MeS
I-108	3-F-Ph	Et	H	MeS
I-109	2-MeO-Ph	Et	H	$MeSO_2$
I-110	2-CF_3-Ph	Et	H	MeS
I-111	2-MeO-Ph	Et	H	H
I-112	2-Cl-Ph	Br	H	CH_2=$CHCH_2N(Me)C(O)CH_2S$
I-113	2-Me-Ph	Et	H	CN
I-114	2,3-F_2-Ph	Cl	H	H
I-115	Ph	Me	H	Me
I-116	2-Cl-Ph	Br	H	MeS
I-117	2-F-Ph	Me	H	MeO
I-118	3-F-Ph	H	H	H
I-119	2-F-Ph	Et	H	MeSO
I-120	4-Cl-Ph	Me	H	MeS
I-121	2-Me-Ph	Me	H	MeSO
I-122	2,4-F_2-Ph	Me	H	H
I-123	2-MeO-Ph	Me	H	$MeSO_2$
I-124	2-MeO-Ph	Me	H	H
I-125	2-MeO-Ph	Et	H	MeS

Example number	R^1	R^2	R^3	R^4
I-126	2-CF_3-Ph	Et	H	$MeSO_2$
I-127	2,4-F_2-Ph	Cl	H	H
I-128	2-Me-pyridin-3-yl	Br	H	HS
I-129	2-Me-pyridin-3-yl	Br	H	H
I-130	2-Me-pyridin-3-yl	Me	H	H
I-131	3-Cl-2-thienyl	Me	H	$MeSO_2$
I-132	3-Me-2-thienyl	Br	H	H
I-133	2-Me-3-thienyl	H	H	H
I-134	4-Me-3-thienyl	H	H	H
I-135	2-Me-3-thienyl	Br	H	H
I-136	2,5-Br_2-4-Me-3-thienyl	Br	H	H
I-137	3-Cl-2-thienyl	Me	H	H
I-138	5-Br-2-Me-3-thienyl	Br	H	H
I-139	5-Br-4-Me-3-thienyl	Br	H	H
I-140	5-Br-3-Me-2-thienyl	Br	H	H
I-141	4-Me-3-thienyl	Br	H	H
I-142	5-Br-2-Me-3-thienyl	Br	H	Me
I-143	3-Me-2-thienyl	Me	H	H
I-144	Cyclohexen-1-yl	Me	H	MeSO
I-145	Cyclohexen-1-yl	Et	H	H
I-146	Cyclohexen-1-yl	Me	H	MeS
I-147	Cyclohexen-1-yl	Et	H	MeSO
I-148	Cyclohexen-1-yl	Et	H	$MeSO_2$
I-149	Cyclohexen-1-yl	Et	H	MeS
I-150	7-Oxabicyclo[4.1.0]heptan-1-yl	Me	H	$MeSO_2$
I-151	7-Oxabicyclo[4.1.0]heptan-1-yl	Me	H	H
I-152	7-Oxabicyclo[4.1.0]heptan-1-yl	Et	H	H
I-153	7-Oxabicyclo[4.1.0]heptan-1-yl	Et	H	$MeSO_2$
I-154	2-F-Ph	Br	H	$H_2NC(O)$
I-155	2-F-Ph	Me	H	HS
I-156	2-F-Ph	Br	H	HS
I-157	3-Cl-Ph	Br	H	HS
I-158	2-Me-Ph	Et	H	HS
I-159	3-F-Ph	Me	H	HS
I-160	2-MeO-Ph	Et	H	HS
I-161	2-CF_3-Ph	Et	H	HS
I-162	Ph	Et	H	HS

Example number	R^1	R^2	R^3	R^4
I-163	4-Cl-Ph	Me	H	HS
I-164	2-MeO-Ph	Me	H	HS
I-165	2-F-Ph	Et	H	HS
I-166	2-Me-Ph	Br	H	HS
I-167	3-F-Ph	Et	H	HS
I-168	2-F-Ph	H	H	HS
I-169	2-Cl-Ph	Me	H	HS
I-170	2,4-F_2-Ph	Me	H	HS
I-171	2-Me-Ph	Me	H	HS
I-172	2,4-F_2-Ph	Et	H	HS
I-173	2-CF_3-Ph	Me	H	HS
I-174	Cyclohexen-1-yl	Me	H	HS
I-175	4-Cl-Ph	Et	H	HS
I-176	Cyclohexen-1-yl	Et	H	HS
I-177	2-Cl-Ph	Br	H	HS
I-178	2-Cl-Ph	Br	H	tBuOC(O)CH_2S
I-179	2-Cl-Ph	Br	H	HOC(O)CH_2S
I-180	2-Cl-Ph	Br	H	H
I-181	2,3-F_2-Ph	Me	H	H
I-182	2,3-F_2-Ph	H	H	H
I-183	2,3-F_2-Ph	Br	H	H
I-184	2-F-Ph	iPr	H	H
I-185	2-F-Ph	nPr	H	H
I-186	2-F-Ph	Br	Me	H
I-187	2-F-Ph	MeS	H	H
I-188	2-F-Ph	I	H	H
I-189	3-Cl-2-thienyl	Cl	H	H
I-190	2-Cl-3-thienyl	Cl	H	H
I-191	3-thienyl	Cl	H	H
I-192	3-Me-2-thienyl	Cl	H	H
I-193	4-Me-3-thienyl	Me	H	H
I-194	2-Me-3-thienyl	Me	H	H
I-195	3,5-Me_2-2-thienyl	Me	H	H
I-196	5-Br-2-Me-3-thienyl	Me	H	H
I-197	2,5-Me_2-3-thienyl	Me	H	H
I-198	5-Br-3-Me-2-thienyl	Me	H	H
I-199	2,4,5-Me_3-3-thienyl	Me	H	H
I-200	2,4,5-Me_3-3-thienyl	H	H	H
I-201	4,5-Me_2-3-thienyl	H	H	H
I-202	4-Me-1,2-thiazol-5-yl	Br	H	H

Example number	R^1	R^2	R^3	R^4
I-203	4-Me-1,3-thiazol-5-yl	Me	H	H
I-204	4-Me-1,3-thiazol-5-yl	Br	H	H
I-205	2-F-Ph	EtO(O)C	H	H
I-206	4-Me-1,2-thiazol-5-yl	Me	H	H
I-207	4-Me-1,2-thiazol-5-yl	H	H	H
I-208	4-Me-1,2-thiazol-5-yl	Br	H	HS
I-209	4-Me-1,3-thiazol-5-yl	Br	H	HS
I-210	2,4-di-F-Ph	Br	H	H
I-211	2-Cl-Ph	Br	H	HS

Spectroscopic data of selected table examples:

The spectroscopic data listed hereinafter for selected table examples were evaluated via conventional ^{1}H-NMR interpretation or via NMR peak list methods.

a) Conventional ^{1}H-NMR interpretation

No. I-006: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 7.86 (s, 1H), 7.60 (d, 2H), 7.46-7.39 (m, 3H), 4.28 (s, 3H), 2.44 (s, 3H).

No. I-007: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 7.97 (s, 1H), 7.41-7.33 (m, 2H), 7.05 (dt, 1H), 6.97 (dd, 1H), 3.76 (s, 3H), 2.84 (s, 3H), 2.25 (s, 3H).

No. I-014: ^{1}H-NMR (400 MHz, DMSO-d_6): δ_H 8.94 (s, 1H), 7.62 (m, 1H), 7.55-7.42 (m, 3H), 4.60 (s, 2H), 3.09 (s, 3H), 2.88 (s, 3H).

No. I-015: ^{1}H-NMR (400 MHz, DMSO-d_6): δ_H 8.96 (s, 1H), 8.28 (q, 1H), 7.62 (m, 1H), 7.55-7.45 (m, 3H), 4.19 (s, 2H), 2.62 (d, 3H).

No. I-016: ^{1}H-NMR (400 MHz, DMSO-d_6): δ_H 8.84 (s, 1H), 8.48 (t, 1H), 7.58-7.52 (m, 1H), 7.48 (m, 1H), 7.37-7.32 (m, 2H), 5.78 (m, 1H), 5.18 (m, 1H), 5.08 (s, 2H), 5.05 (m, 1H), 3.77 (t, 2H).

No. I-021: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 8.31 (s, 1H), 7.52-7.47 (m, 1H), 7.31 (dt, 1H), 7.22-7.19 (m, 1H), 3.50 (s, 3H), 2.47 (s, 3H).

No. I-0032: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 7.91 (s, 1H), 7.76 (d, 1H), 7.62-7.50 (m, 2H), 7.34 (d, 1H), 4.26 (s, 3H), 2.57-2.34 (br m, 2H), 1.12 (t, 3H).

No. I-037: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 7.98 (s, 1H), 7.50 (dt, 1H), 7.43-7.37 (m, 1H), 7.27-7.23 (m, 1H), 7.16-7.14 (m, 1H), 2.86 (s, 3H), 2.34 (s, 3H).

No. I-040: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 7.87 (s, 1H), 7.43-7.29 (m, 3H), 7.13-7.08 (m, 1H), 4.28 (s, 3H), 2.44 (s, 3H).

No. I-048: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 7.92 (s, 1H), 7.47-7.41 (m, 1H), 6.98 (dt, 1H), 6.90 (dt, 1H), 4.27 (s, 3H), 2.62 (q, 2H), 1.15 (t, 3H).

No. I-052: ^{1}H-NMR (400 MHz, DMSO-d_6): δ_H 13.85 (br s, 1H), 8.97 (t, 1H), 8.51 (s, 1H), 7.53 (m, 1H), 7.42 (m,1H), 7.33-7.29 (m, 2H), 4.17 (d, 2H).

No. I-053: ^{1}H-NMR (400 MHz, DMSO-d_6): δ_H 9.06 (s, 1H), 7.58 (m, 1H), 7.52 (m, 1H), 7.40-7.36 (m, 2H).

No. I-054: ^{1}H-NMR (400 MHz, DMSO-d_6): δ_H 9.27 (s, 1H), 7.61 (m, 1H), 7.56 (m, 1H), 7.42-7.38 (m, 2H), 4.03 (s, 3H).

No. I-060: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 7.86 (s, 1H), 7.54 (d, 1H), 7.42 (d, 1H), 4.28 (s, 3H), 2.43 (s, 3H).

No. I-067: ^{1}H-NMR (400 MHz, DMSO-d_6): δ_H 8.92 (br s, 1H), 8.50 (s, 1H), 8.39 (t, 1H), 7.52 (m, 1H), 7.42 (m, 1H), 7.34-7.29 (m, 2H), 5.81 (m, 1H), 5.28 (m, 1H), 5.06 (m, 1H), 4.12 (m, 2H), 3.75 (t, 1H).

No. I-070: ^{1}H-NMR (400 MHz, DMSO-d_6): δ_H 9.30 (s, 1H), 7.63 (m, 1H), 7.56 (m, 1H), 7.44-7.37 (m, 2H).

No. I-072: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 9.31 (s, 1H), 8.57 (s, 1H), 7.55 (m, 1H), 7.46 (m, 1H), 7.29 (m, 1H), 7.17 (m, 1H), 6.70 (m, 1H), 5.83 (dd, 1H), 5.38 (dd, 1H).

No. I-084: ^{1}H-NMR (400 MHz, DMSO-d_6): δ_H 8.95 (s, 1H), 8.52 (t, 1H), 7.62 (m, 1H), 7.55-7.44 (m, 3H), 5.80 (m, 1H), 5.19 (m, 1H), 5.05 (m, 1H), 4.24 (s, 2H), 3.76 (t, 2H).

No. I-085: ^{1}H-NMR (400 MHz, DMSO-d_6): δ_H 9.23 (s, 1H), 8.61 (s, 1H), 7.63-7.52 (m, 2H), 7.43-7.38 (m, 2H), 5.80 (m, 1H), 5.22 (m, 1H), 5.18 (m, 1H), 3.78 (m, 2H).

No. I-086: ^{1}H-NMR (400 MHz, DMSO-d_6): δ_H 8.56 (s, 1H), 7.52 (m, 1H), 7.45 (m, 1H), 7.38-7.32 (m, 2H), 4.25 (m, 2H), 1.23 (t, 3H).

No. I-095: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 7.87 (s, 1H), 7.48-7.43 (m, 1H), 7.37-7.32 (m, 3H), 4.27 (s, 3H), 2.23 (s, 3H).

No. I-096: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 7.82 (s, 1H), 7.40-7.32 (m, 2H), 7.04 (dt, 1H), 6.96 (d, 1H), 4.25 (s, 3H), 3.76 (s, 3H), 2.23 (s, 3H).

No. I-097: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 7.88 (s, 1H), 7.38 (dd, 1H), 7.31 (dd, 1H), 7.03 (dt, 1H), 6.96 (d, 1H), 4.25 (s, 3H), 3.74 (s, 3H), 2.63-2.48 (br m, 2H), 1.11 (t, 3H).

No. I-099: ^{1}H-NMR (400 MHz, DMSO-d_6): δ_H 9.01 (s, 1H), 7.57 (m, 1H), 7.50 (m, 1H), 7.38-7.35 (m, 2H), 2.89 (s, 3H).

No. I-100: ^{1}H-NMR (400 MHz, DMSO-d_6): δ_H 13.40 (br s, 1H), 8.84 (s, 1H), 7.56 (m, 1H), 7.48 (m, 1H), 7.38-7.32 (m, 2H), 5.16 (s, 2H).

No. I-101: ^{1}H-NMR (400 MHz, DMSO-d_6): δ_H 8.80 (s, 1H), 7.55 (m, 1H), 7.48 (m, 1H), 7.37-7.33 (m, 2H), 4.66 (q, 2H), 1.44 (t, 3H).

No. I-102: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 9.24 (s, 1H), 7.95 (d, 1H), 7.56 (m, 1H), 7.44 (m, 1H), 7.28 (m, 1H), 7.18 (m, 1H), 1.98 (m, 1H), 0.93 (m, 2H), 0.69 (m, 2H).

No. I-104: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 8.30 (s, 1H), 7.52-7.47 (m, 1H), 7.31-7.26 (m, 1H), 7.19 (dt, 1H), 3.14 (s, 3H), 2.44 (s, 3H).

No. I-112: ^{1}H-NMR (400 MHz, DMSO-d_6): δ_H 8.96 (s, 1H), 7.62 (m, 1H), 7.55-7.45 (m, 3H), 5.78 (m, 1H), 5.95 (m, 0.5H), 5.74 (m, 0.5H), 5.27-5.13 (m, 3H), 4.09 (m, 1H), 3.96 (m, 1H), 3.06 (s, 1,5H), 2.87 (s, 1.5H).

No. I-116: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 8.36 (s, 1H), 7.50-7.46 (m, 1H), 7.42-7.33 (m, 3H), 2.86 (s, 3H).

No. I-117: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 7.87 (s, 1H), 7.50 (dt, 1H), 7.43-7.38 (m, 1H), 7.26-7.22 (m, 1H), 7.16-7.11 (m, 1H), 4.27 (s, 3H), 2.32 (s, 3H).

No. I-128: ^{1}H-NMR (400 MHz, DMSO-d_6): δ_H 8.78 (dd, 1H), 8.62 (s, 1H), 8.19 (d, 1H), 7.76 (t, 1H), 2.44 (s, 3H).

No. I-130: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 9.29 (s, 1H), 8.61 (dd, 1H), 8.27 (d, 1H), 7.59 (dd, 1H), 7.26 (m, 1H), 2.37 (s, 3H), 2.23 (d, 3H).

No. I-132: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 9.34 (s, 1H), 8.64 (s, 1H), 7.38 (d, 1H), 6.96 (d, 1H), 2.33 (s, 3H).

No. I-133: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 9.37 (s, 1H), 8.38 (d, 1H), 7.64 (d, 1H), 7.43 (d, 1H), 7.15 (d, 1H), 2.79 (s, 3H).

No. I-134: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 9.44 (s, 1H), 8.43 (d, 1H), 7.74 (d, 1H), 7.69 (d, 1H), 7.09 (m, 1H), 2.50 (d, 3H).

No. I-140: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 9.33 (s, 1H), 8.63 (s, 1H), 6.93 (s, 1H), 2.18 (s, 3H).

No. I-142: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 8.44 (s, 1H), 7.11 (s, 1H), 2.91 (s, 3H), 2.38 (s, 3H).

No. I-143: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 9.31 (s, 1H), 8.27 (s, 1H), 7.34 (d, 1H), 6.95 (d, 1H), 2.43 (d, 3H), 2.15 (s, 3H).

No. I-152: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 9.21 (s, 1H), 8.16 (s, 1H), 3.45 (d, 1H), 3.12-2.93 (m, 2H), 2.44-2.03 (m, 4H), 1.64-1.45 (m, 4H), 1.36 (t, 3H).

No. I-153: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 8.24 (s, 1H), 3.49 (s, 3H), 3.18-2.97 (m, 2H), 2.33-2.05 (m, 4H), 1.88-1.72 (m, 1H), 1.69-1.41 (m, 4H), 1.37 (t, 3H).

No. I-154: ^{1}H-NMR (400 MHz, DMSO-d_6): δ_H 9.22 (s, 1H), 8.72 (s, 1H), 8.28 (s, 1H), 7.65-7.54 (m, 2H), 7.40-7.36 (m, 2H).

No. I-166: ^{1}H-NMR (400 MHz, DMSO-d_6): δ_H 14.50 (br s, 1H), 8.53 (s, 1H), 7.40-7.28 (m, 3H), 7.21 (m, 1H), 2.08 (s, 3H).

No. I-181: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 9.27 (s, 1H), 8.25 (s, 1H), 7.35-7.18 (m, 3H), 2.02 (s, 3H).

No. I-183: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 9.36 (s, 1H), 8.66 (s, 1H), 7.34-7.19 (m, 3H).

No. I-184: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 9.27 (s, 1H), 8.34 (s, 1H), 7.52-7.42 (m, 2H), 7.28 (m, 1H), 7.18 (m, 1H), 3.08 (m, 1H), 1.35-1.15 (m, 6H).

No. I-185: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 9.27 (s, 1H), 8.26 (s, 1H), 7.50-7.41 (m, 2H), 7.27 (m, 1H), 7.17 (m, 1H), 2.68 (t, 2H), 1.56 (m, 2H), 0.85 (m, 3H).

No. I-186: ^{1}H-NMR (400 MHz, DMSO-d_6): δ_H 9.79 (s, 1H), 7.55 (m, 1H), 7.49 (m, 1H), 7.38-7.33 (m, 2H), 2.79 (s, 3H).

No. I-187: ^{1}H-NMR (400 MHz, DMSO-d_6): δ_H 9.64 (s, 1H), 8.69 (s, 1H), 7.61 (m, 1H), 7.55 (m, 1H), 7.48 (m, 1H), 7.35 (m, 1H), 2.50 (s, 3H).

No. I-191: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 9.30 (s, 1H), 8.40 (s, 1H), 8.19-8.16 (m, 1H), 7.89-7.86 (m, 1H), 7.43-7.39 (m, 1H).

No. I-194: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 9.39 (s, 1H), 8.26 (s, 1H), 7.16 (d, 1H), 7.03 (d, 1H), 2.39 (2s, 6H).

No. I-195: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 9.32 (s, 1H), 8.27 (s, 1H), 6.62 (d, 1H), 2.29 (d, 3H), 2.46 (d, 3H), 2.07 (s, 3H).

No. I-196: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 9.34 (s, 1H), 8.28 (s, 1H), 6.98 (s, 1H), 2.41 (d, 3H), 2.31 (s, 3H).

No. I-197: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 9.29 (s, 1H), 8.28 (s, 1H), 6.66 (d, 1H), 2.45 (d, 3H), 2.41 (d, 3H), 2.29 (s, 3H).

No. I-198: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 9.32 (s, 1H), 8.26 (s, 1H), 6.92 (d, 1H), 2.45 (d, 3H), 2.10 (s, 3H).

No. I-199: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 9.31 (s, 1H), 8.32 (d, 1H), 2.33 (s, 3H), 2.30 (d, 3H), 2.15 (d, 3H), 1.80 (d, 3H).

No. I-200: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 9.38 (s, 1H), 8.41 (d, 1H), 7.42 (d, 1H), 2.38 (s, 3H), 2.35 (s, 3H), 2.05 (d, 3H).

No. I-201: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 9.32 (s, 1H), 8.31 (d, 1H), 7.10 (s, 3H), 2.41 (d, 3H), 2.38 (d, 3H), 1.96 (s, 3H).

No. I-202: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 9.36 (s, 1H), 8.68 (s, 1H), 8.37 (d, 1H), 2.32 (s, 3H).

No. I-203: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 9.39 (s, 1H), 9.28 (s, 1H), 8.35 (s, 1H), 2.48 (s, 3H), 2.47 (d, 3H).

No. I-204: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 9.36 (s, 1H), 8.97 (s, 1H), 8.68 (s, 1H), 2.49 (s, 3H).

No. I-205: ^{1}H-NMR (400 MHz, DMSO-d_6): δ_H 9.94 (s, 1H), 9.27 (s, 1H), 7.67 (m, 1H), 7.54 (m, 1H), 7.37 (m, 1H), 7.28 (m, 1H), 4.17 (q, 2H), 1.08 (t, 3H).

No. I-206: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 9.38 (s, 1H), 8.44 (d, 1H), 8.36 (s, 1H), 7.72 (d, 1H), 2.64 (s, 3H).

No. I-207: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 9.30 (s, 1H), 8.38 (s, 1H), 8.28 (d, 1H), 7.72 (d, 1H), 2.44 (d, 3H), 2.25 (s, 3H).

No. I-208: ^{1}H-NMR (400 MHz, DMSO-d_6): δ_H 9.88 (br s, 1H), 8.35 (s, 1H), 8.03 (s, 1H), 2.28 (s, 3H).

No. I-209: ^{1}H-NMR (400 MHz, DMSO-d_6): δ_H 13.15 (br s, 1H), 8.82 (s, 1H), 7.98 (s, 1H), 2.44 (s, 3H).

No. I-210: ^{1}H-NMR (400 MHz, $CDCl_3$): δ_H 9.33 (s, 1H), 8.64 (s, 1H), 7.54-7.49 (m, 1H), 7.05-7.00 (m, 1H), 6.97-6.92 (m, 1H).

b) NMR peak list method

^{1}H-NMR data of selected examples are written in form of ^{1}H-NMR-peak lists. To each signal peak are listed the δ-value in ppm and the signal intensity in round brackets. Between the δ-value – signal intensity pairs are semicolons as delimiters.

The peak list of an example has therefore the form:

δ_1 (intensity$_1$); δ_2 (intensity$_2$);……..; δ_i (intensity$_i$);……; δ_n (intensity$_n$)

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.

For calibrating chemical shift for ^{1}H spectra, we use tetramethylsilane and/or the chemical shift of the solvent used, especially in the case of spectra measured in DMSO. Therefore in NMR peak lists, tetramethylsilane peak can occur but not necessarily.

The ^{1}H-NMR peak lists are similar to classical ^{1}H-NMR prints and contains therefore usually all peaks, which are listed at classical NMR-interpretation.

Additionally they can show like classical ^{1}H-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-D_6 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.

Further details of NMR-data description with peak lists you find in the publication “Citation of NMR Peaklist Data within Patent Applications” of the Research Disclosure Database Number 564025.

I-001: ^{1}H-NMR(300.1 MHz, d_6-DMSO): δ= 8.4768 (3.8); 7.5768 (0.4); 7.5527 (0.8); 7.5323 (1.1); 7.5252 (0.8); 7.5136 (0.7); 7.5054 (0.9); 7.4985 (0.7); 7.4789 (1.4); 7.4736 (1.4); 7.4537 (1.0); 7.4484 (0.9); 7.3845 (1.9); 7.3563 (3.2); 7.3283 (1.1); 5.7586 (0.5); 3.4125 (0.5); 3.3883 (0.6); 3.3775 (0.6); 3.3262 (104.9); 2.8615 (16.0); 2.5613 (0.7); 2.5133 (16.4); 2.5076 (32.8); 2.5017 (44.7); 2.4957 (33.6); 2.4900 (17.5); 2.2593 (8.6); 2.0752 (1.2); 0.0106 (1.3); -0.0002 (27.3); -0.0111 (1.5)
I-002: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 9.2544 (13.7); 8.2271 (7.9); 8.2251 (8.0); 7.5529 (1.6); 7.5485 (1.8); 7.5343 (3.3); 7.5297 (3.6); 7.5157 (1.8); 7.5113 (2.1); 7.4672 (1.0); 7.4626 (1.0); 7.4541 (1.1); 7.4488 (1.8); 7.4466 (1.4); 7.4440 (1.4); 7.4420 (1.3); 7.4355 (1.6); 7.4335 (1.4); 7.4309 (1.5); 7.4282 (2.1); 7.4233 (1.4); 7.4149 (1.5); 7.4102 (1.4); 7.3047 (3.2); 7.3019 (3.4); 7.2860 (5.1); 7.2832 (5.2); 7.2673 (2.4); 7.2643 (2.7); 7.2616 (20.8); 7.1933 (2.1); 7.1908 (2.0); 7.1727 (1.8); 7.1691 (2.8); 7.1658 (2.1); 7.1477 (1.8); 7.1451 (1.7); 2.4092 (14.9); 2.4074 (16.0); 2.4048 (16.0); 2.4030 (14.9); 1.5959 (3.1); 0.0080 (0.8); -0.0002 (29.0); -0.0085 (0.8)
I-003: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 9.2594 (7.4); 8.2325 (4.3); 8.2307 (4.3); 7.4761 (0.6); 7.4569 (1.6); 7.4432 (1.6); 7.4370 (1.5); 7.4241 (1.6); 7.4184 (1.6); 7.4145 (2.8); 7.3954 (1.1); 7.3695 (1.0); 7.3635 (1.2); 7.3453 (1.0); 7.3388 (1.1); 7.2600 (74.3); 7.1629 (0.7); 7.1597 (0.7); 7.1564 (0.7); 7.1532 (0.6); 7.1370 (1.1); 7.1220 (0.6); 7.1182 (0.6); 7.1117 (0.5); 2.5195 (16.0); 2.5180 (16.0); 1.5431 (6.1); 1.2555 (0.8); 0.0079 (2.5); -0.0002 (75.2); -0.0085 (2.1)
I-004: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 8.3020 (1.5); 7.5886 (1.5); 7.5678 (2.4); 7.5189 (0.8); 7.4918 (2.6); 7.4703 (1.6); 7.2600 (138.2); 6.9958 (1.0); 3.5008 (9.7); 2.5659 (5.7); 1.5342 (16.0); 0.1460 (0.7); 0.0080 (3.9); -0.0002 (138.5); -0.0084 (4.3)
I-005: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 7.9728 (2.0); 7.9710 (2.0); 7.6079 (1.1); 7.6039 (1.5); 7.5913 (0.8); 7.5873 (1.9); 7.5838 (1.5); 7.4747 (0.5); 7.4704 (0.7); 7.4550 (1.2); 7.4531 (2.0); 7.4492 (0.8); 7.4384 (0.6); 7.4352 (1.2); 7.4333 (0.9); 7.4228 (0.6); 7.4189 (1.1); 7.4152 (0.6); 7.4012 (0.9); 7.2602 (25.6); 2.8622 (16.0); 2.4530 (7.4); 2.4512 (7.4); 1.5421 (7.8); 0.0079 (1.0); -0.0002 (34.6); -0.0028 (1.5); -0.0085 (1.0)
I-008: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 8.3388 (3.6); 7.4576 (0.9); 7.4431 (0.9); 7.4376 (0.8); 7.4231 (0.7); 7.3544 (0.9); 7.3513 (1.4); 7.3484 (1.0); 7.3321 (1.0); 7.3294 (0.7); 7.3067 (0.6); 7.3007 (0.8); 7.2966 (0.6); 7.2829 (0.6); 7.2767 (0.8); 7.2727 (0.7); 7.2611 (14.9); 7.1586 (0.8); 7.1541 (0.7); 3.1412 (16.0); 2.8985 (0.8); 2.8795 (2.5); 2.8607 (2.5); 2.8420 (0.8); 1.2662 (3.7); 1.2474 (7.6); 1.2286 (3.5); 0.0079 (0.5); -0.0002 (19.3); -0.0085 (0.6)
I-009: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 8.3589 (1.5); 8.3572 (2.8); 8.3555 (1.5); 7.4786 (0.8); 7.4627 (0.8); 7.4577 (0.5); 7.4420 (0.6); 7.2654 (3.5); 7.0387 (0.6); 6.9557 (0.5); 6.9533 (0.6); 3.4967 (16.0); 2.7774 (1.1); 2.7586 (1.2); 1.2435 (2.2); 1.2245 (4.3); 1.2060 (2.0); -0.0002 (4.7)
I-010: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 9.3265 (16.0); 8.4001 (12.0); 8.3791 (13.1); 8.2121 (7.3); 8.2084 (10.8); 8.2031 (2.4); 8.1949 (4.6); 8.1909 (9.0); 8.1879 (7.5); 8.1820 (0.9); 7.9018 (10.0); 7.8808 (9.2); 7.5409 (2.6); 7.5373 (4.6); 7.5330 (1.7); 7.5198 (10.8); 7.5158 (4.7); 7.5046 (3.6); 7.5011 (7.7); 7.4952 (1.1); 7.4808 (2.9); 7.4772 (5.6); 7.4737 (2.9); 7.4653 (1.7); 7.4592 (5.4); 7.4523 (1.0); 7.4444 (1.0); 7.4411 (1.6); 7.4377 (0.8); 7.2603 (41.7); 1.5671 (2.5); 1.5234 (1.5); 1.2547 (1.8); 0.0079 (1.5); -0.0002 (54.8); -0.0085 (1.6)
I-011: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 8.0126 (3.2); 7.5521 (1.3); 7.5478 (1.5); 7.5427 (0.5); 7.5359 (1.0); 7.5316 (2.0); 7.5281 (2.0); 7.4655 (0.7); 7.4599 (0.7); 7.4436 (2.3); 7.4397 (0.8); 7.4293 (0.8); 7.4253 (1.6); 7.4224 (1.0); 7.4177 (1.5); 7.4137 (0.7); 7.4004 (0.8); 7.2624 (6.4); 2.9529 (0.6); 2.8817 (0.5); 2.8569 (16.0); 2.8027 (0.7); 2.7839 (2.2); 2.7651 (2.2); 2.7464 (0.8); 1.2029 (3.3); 1.1841 (7.0); 1.1653 (3.2); -0.0002 (3.9)
I-012: ^{1}H-NMR(599.6 MHz, d_6-DMSO): δ= 9.7773 (2.7); 9.1700 (2.8); 7.5887 (1.2); 7.5791 (1.1); 7.5312 (1.4); 7.5193 (0.8); 7.3920 (1.7); 7.3782 (3.0); 7.3647 (1.3); 3.3159 (13.5); 2.6151 (0.3); 2.5032 (50.0); -0.0001 (6.2)
I-013: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 9.3348 (4.0); 8.4730 (4.6); 7.3479 (0.7); 7.3335 (0.7); 7.3280 (0.5); 7.3135 (0.5); 7.2603 (57.3); 7.1283 (1.0); 7.1095 (0.9); 7.0213 (0.9); 6.9964 (0.6); 2.1559 (8.2); 1.5423 (16.0); 0.0080 (1.3); -0.0002 (48.4); -0.0085 (1.4)
I-017: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 9.3311 (13.7); 8.4527 (16.0); 7.5848 (1.5); 7.5803 (1.7); 7.5661 (2.9); 7.5616 (3.2); 7.5478 (1.7); 7.5434 (1.9); 7.5087 (0.9); 7.5042 (0.9); 7.4957 (1.0); 7.4901 (1.6); 7.4880 (1.3); 7.4855 (1.3); 7.4835 (1.2); 7.4770 (1.5); 7.4750 (1.3); 7.4725 (1.4); 7.4701 (1.7); 7.4648 (1.2); 7.4563 (1.4); 7.4518 (1.2); 7.3158 (2.8); 7.3130 (2.9); 7.2970 (4.5); 7.2943 (4.6); 7.2782 (2.1); 7.2754 (2.1); 7.2608 (24.8); 7.2180 (1.9); 7.2154 (1.9); 7.1969 (1.8); 7.1937 (3.0); 7.1907 (2.0); 7.1724 (1.7); 7.1699 (1.6); 5.2996 (2.9); 2.1990 (0.8); 1.4227 (0.5); 1.3365 (0.7); 1.3335 (0.6); 1.2842 (1.1); 1.2551 (5.4); 0.8802 (0.7); 0.8527 (0.6); 0.0080 (1.1); -0.0002 (39.6); -0.0085 (1.2)
I-018: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 9.2464 (7.0); 8.2190 (4.0); 8.2171 (4.2); 7.3349 (0.5); 7.3319 (1.2); 7.3282 (1.2); 7.3160 (2.5); 7.3120 (3.7); 7.3061 (2.6); 7.2960 (1.3); 7.2945 (1.0); 7.2924 (1.2); 7.2909 (1.2); 7.2788 (1.4); 7.2778 (1.4); 7.2732 (1.2); 7.2626 (16.3); 7.2574 (0.9); 7.2333 (1.7); 7.2311 (1.8); 7.2128 (1.0); 5.2981 (5.8); 2.8847 (0.7); 2.2579 (15.1); 2.2560 (15.8); 2.1174 (16.0); -0.0002 (9.5)
I-019: ^{1}H-NMR(400.2 MHz, d_6-DMSO): δ= 8.6466 (2.8); 8.6258 (2.9); 8.0164 (0.6); 8.0116 (0.8); 7.9956 (1.4); 7.9917 (1.4); 7.9764 (0.8); 7.9719 (0.8); 7.8337 (1.6); 7.8284 (1.5); 7.8129 (1.5); 7.8076 (1.4); 7.5653 (0.4); 7.5609 (0.3); 7.5521 (0.4); 7.5461 (0.8); 7.5426 (0.6); 7.5335 (0.7); 7.5274 (0.9); 7.5220 (0.5); 7.5136 (0.5); 7.5092 (0.5); 7.4103 (2.4); 7.3911 (2.3); 7.3806 (1.3); 7.3752 (1.1); 7.3602 (0.8); 3.4190 (0.4); 2.9017 (16.0); 2.5123 (4.8); 2.5081 (6.2); 2.5038 (4.5); 0.0012 (2.6)

I-020: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 8.0674 (2.8); 8.0655 (2.8); 7.4343 (0.9); 7.4207 (0.8); 7.4152 (1.5); 7.4107 (1.5); 7.4061 (2.0); 7.4036 (1.5); 7.3676 (0.6); 7.3619 (0.6); 7.3584 (0.5); 7.3426 (0.6); 7.3374 (0.6); 7.3349 (0.8); 7.2604 (41.5); 7.1170 (0.5); 7.1094 (0.7); 7.0940 (0.7); 2.8920 (16.0); 2.4873 (9.0); 2.4859 (9.3); 1.5504 (5.7); 0.0080 (1.6); -0.0002 (56.2); -0.0085 (1.5)
I-022: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 8.3185 (5.2); 7.3427 (1.2); 7.3289 (1.7); 7.3251 (1.8); 7.3090 (2.1); 7.2937 (1.5); 7.2754 (1.4); 7.2606 (44.6); 7.2212 (1.6); 7.2036 (0.9); 4.1311 (1.4); 4.1132 (1.4); 3.1396 (16.0); 2.6041 (0.9); 2.1719 (0.6); 2.1102 (14.1); 2.0453 (6.7); 1.5482 (1.4); 1.2774 (2.4); 1.2596 (4.8); 1.2417 (2.0); 1.1772 (5.7); 1.1583 (12.4); 1.1395 (5.6); 0.8986 (1.0); 0.8820 (3.5); 0.8642 (1.4); 0.0079 (1.4); -0.0002 (55.3); -0.0086 (1.8)
I-023: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 9.2647 (5.6); 8.2752 (5.7); 7.5106 (1.3); 7.5061 (1.6); 7.4920 (2.8); 7.4875 (3.3); 7.4736 (1.6); 7.4691 (1.9); 7.4644 (1.0); 7.4598 (0.9); 7.4513 (1.0); 7.4460 (1.7); 7.4438 (1.3); 7.4412 (1.2); 7.4392 (1.2); 7.4326 (1.5); 7.4307 (1.3); 7.4280 (1.3); 7.4254 (1.9); 7.4205 (1.2); 7.4120 (1.4); 7.4074 (1.2); 7.2951 (2.8); 7.2923 (3.0); 7.2764 (4.5); 7.2736 (4.8); 7.2689 (0.5); 7.2615 (75.8); 7.2579 (3.3); 7.2549 (2.6); 7.1915 (1.9); 7.1890 (1.8); 7.1707 (1.7); 7.1675 (2.9); 7.1645 (1.9); 7.1462 (1.6); 7.1438 (1.5); 3.4957 (0.7); 2.7588 (1.3); 2.7399 (3.9); 2.7211 (4.0); 2.7024 (1.4); 1.6047 (1.5); 1.2087 (7.9); 1.1903 (16.0); 1.1898 (15.7); 1.1713 (7.6); 0.0080 (1.3); -0.0002 (45.5); -0.0085 (1.3)
I-024: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 8.2959 (2.7); 8.2940 (2.7); 7.5197 (0.7); 7.5148 (0.6); 7.5042 (0.9); 7.4924 (0.8); 7.4142 (0.9); 7.4064 (1.6); 7.3965 (1.6); 7.3903 (2.9); 7.2608 (112.3); 6.9967 (0.6); 3.1436 (16.0); 2.3550 (9.4); 2.3536 (9.2); 1.5466 (9.2); 0.0079 (2.1); -0.0002 (69.6); -0.0086 (2.0)
I-025: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 7.9869 (1.9); 7.9852 (2.0); 7.5062 (0.8); 7.4900 (0.8); 7.2649 (0.7); 7.2642 (0.8); 7.2607 (61.6); 7.2559 (1.0); 6.9972 (0.7); 2.8598 (16.0); 2.3343 (3.3); 2.3326 (3.6); 2.3296 (3.6); 2.3279 (3.4); 1.5749 (1.0); 0.0080 (1.0); -0.0002 (37.4); -0.0053 (0.6); -0.0085 (1.1)
I-026: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 8.2857 (4.9); 7.8232 (2.1); 7.8041 (2.4); 7.6690 (0.8); 7.6520 (1.9); 7.6329 (1.4); 7.6053 (2.0); 7.5858 (2.7); 7.5667 (1.2); 7.5192 (0.5); 7.3526 (2.1); 7.3340 (1.9); 7.2605 (105.1); 6.9966 (0.6); 4.1314 (1.4); 4.1136 (1.3); 4.0962 (0.5); 3.1536 (4.7); 3.1399 (5.1); 2.2620 (16.0); 2.1722 (2.3); 2.0456 (6.6); 1.5487 (2.6); 1.2777 (1.8); 1.2599 (4.1); 1.2421 (1.6); 0.0080 (2.9); -0.0002 (102.1); -0.0085 (3.2)
I-027: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 8.3419 (3.2); 7.4720 (0.9); 7.4560 (0.9); 7.4511 (0.5); 7.4351 (0.5); 7.2653 (0.6); 7.2605 (66.9); 7.2564 (1.1); 7.2556 (0.8); 7.0304 (0.6); 7.0236 (0.6); 6.9665 (0.5); 6.9441 (0.6); 6.9419 (0.6); 6.9381 (0.5); 6.9359 (0.6); 6.9198 (0.5); 3.1382 (16.0); 2.7514 (1.3); 2.7326 (1.3); 1.5416 (7.4); 1.2326 (2.4); 1.2141 (4.9); 1.1952 (2.3); 0.0080 (2.4); -0.0002 (101.1); -0.0085 (2.9)
I-028: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 8.2796 (1.9); 8.2779 (3.7); 8.2762 (1.9); 7.4479 (0.7); 7.4435 (0.7); 7.4293 (0.8); 7.4271 (0.8); 7.4249 (0.9); 7.4227 (0.9); 7.4085 (0.8); 7.4041 (0.9); 7.2631 (6.7); 7.0745 (0.5); 7.0033 (0.8); 6.9826 (0.7); 3.7532 (16.0); 3.1320 (1.5); 3.1137 (1.7); 1.1925 (3.8); 1.1737 (8.1); 1.1549 (3.6); -0.0002 (10.1)
I-029: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 9.2687 (8.7); 8.2731 (5.9); 7.4680 (0.7); 7.4537 (0.7); 7.4485 (1.5); 7.4340 (1.6); 7.4287 (1.3); 7.4141 (1.2); 7.3637 (1.5); 7.3600 (2.3); 7.3572 (1.9); 7.3446 (1.0); 7.3409 (1.6); 7.3381 (1.2); 7.3148 (1.0); 7.3108 (1.0); 7.3084 (1.2); 7.3049 (1.0); 7.2909 (1.0); 7.2869 (1.0); 7.2847 (1.2); 7.2808 (1.0); 7.2618 (14.1); 7.1650 (0.8); 7.1624 (0.8); 7.1585 (0.7); 7.1559 (0.8); 7.1435 (1.1); 7.1409 (1.1); 7.1370 (1.1); 7.1352 (1.0); 7.1229 (0.7); 7.1202 (0.7); 7.1163 (0.7); 7.1136 (0.6); 2.8680 (1.3); 2.8668 (1.3); 2.8493 (4.0); 2.8479 (4.1); 2.8304 (4.1); 2.8291 (4.1); 2.8116 (1.4); 2.8104 (1.4); 2.1669 (0.6); 1.5876 (0.6); 1.2458 (7.4); 1.2270 (16.0); 1.2082 (7.3); -0.0002 (19.5); -0.0085 (0.6)
I-030: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 9.2707 (12.4); 8.2778 (8.8); 7.5090 (1.5); 7.4928 (1.6); 7.4880 (3.0); 7.4718 (3.0); 7.4670 (1.7); 7.4509 (1.6); 7.2622 (40.2); 7.0462 (1.0); 7.0438 (1.1); 7.0399 (1.2); 7.0376 (1.2); 7.0236 (1.8); 7.0184 (2.0); 7.0046 (1.0); 7.0023 (1.0); 6.9983 (1.3); 6.9961 (1.1); 6.9549 (1.7); 6.9487 (1.4); 6.9324 (2.0); 6.9306 (2.0); 6.9263 (1.7); 6.9245 (1.8); 6.9081 (1.7); 6.9020 (1.4); 2.7439 (1.4); 2.7251 (4.4); 2.7062 (4.5); 2.6874 (1.5); 2.1712 (0.5); 2.0452 (1.2); 1.6316 (1.0); 1.2592 (0.8); 1.2127 (8.0); 1.1938 (16.0); 1.1750 (7.6); 0.0079 (0.7); -0.0002 (24.7); -0.0085 (0.8)
I-031: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 8.0154 (3.5); 7.5041 (2.0); 7.4990 (0.8); 7.4879 (1.0); 7.4826 (4.2); 7.4771 (0.6); 7.4386 (0.6); 7.4331 (4.1); 7.4278 (1.1); 7.4167 (0.8); 7.4116 (2.3); 7.2615 (18.4); 2.9558 (3.0); 2.8834 (2.6); 2.8604 (16.0); 2.7855 (0.7); 2.7667 (2.2); 2.7478 (2.3); 2.7291 (0.8); 1.5648 (3.0); 1.2058 (3.2); 1.1870 (6.9); 1.1682 (3.2); -0.0002 (12.4)
I-033: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 8.3398 (3.1); 7.5324 (1.7); 7.5270 (0.7); 7.5163 (1.0); 7.5107 (4.6); 7.5058 (0.8); 7.4882 (0.8); 7.4833 (4.6); 7.4777 (1.0); 7.4670 (0.7); 7.4616 (1.8); 7.2628 (10.8); 3.5062 (0.6); 3.4973 (16.0); 2.9087 (0.6); 2.8908 (2.0); 2.8896 (2.0); 2.8720 (2.0); 2.8709 (2.0); 2.8523 (0.7); 1.2655 (3.6); 1.2599 (0.6); 1.2468 (7.1); 1.2280 (3.3); 0.8817 (0.6); -0.0002 (8.5)
I-034: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 13.0356 (1.4); 7.8706 (5.1); 7.3383 (1.7); 7.3203 (2.6); 7.3099 (3.1); 7.2941 (2.2); 7.2708 (2.4); 7.2601 (40.8); 7.1890 (2.2); 7.1723 (1.4); 4.3551 (1.7); 4.3370 (5.2); 4.3195 (6.3); 4.3025 (6.1); 4.2850 (4.9); 4.2674 (1.7); 2.4978 (1.1); 2.0979 (15.7); 1.5403 (16.0); 1.3965 (5.6); 1.3787 (11.3); 1.3707 (6.0); 1.3609 (5.9); 1.3529 (11.0); 1.3351 (5.3); 1.1182 (4.9); 1.0994 (10.1); 1.0804 (4.6); -0.0002 (61.1); -0.0080 (2.8)
I-035: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 9.3549 (13.6); 8.4877 (16.0); 7.2620 (14.8); 6.8435 (0.8); 6.8395 (1.3); 6.8365 (4.2); 6.8298 (0.6); 6.8214 (1.2); 6.8183 (5.0); 6.8147 (5.1); 6.8116 (1.3); 6.8032 (0.6); 6.7965 (4.3); 6.7936 (1.4); 6.7896 (1.0); 6.7815 (0.5); 5.2999 (0.8); 2.2075 (1.3); 1.3338 (1.7); 1.2839 (2.6); 1.2549 (5.6); 0.8798 (1.0); 0.0080 (0.6); -0.0002 (22.0); -0.0084 (0.7)

I-036: ^{1}H-NMR(300.1 MHz, d_6-DMSO): δ= 9.7798 (16.0); 8.8007 (8.9); 8.7728 (9.5); 8.0492 (1.3); 8.0427 (2.2); 8.0220 (3.2); 8.0160 (3.9); 7.9961 (2.0); 7.9898 (2.1); 7.9320 (4.2); 7.9245 (4.3); 7.9041 (4.1); 7.8966 (3.9); 7.5906 (0.9); 7.5845 (0.9); 7.5734 (1.0); 7.5671 (1.8); 7.5606 (1.8); 7.5568 (1.5); 7.5488 (1.7); 7.5393 (2.6); 7.5327 (1.7); 7.5217 (1.6); 7.5154 (1.6); 7.4272 (6.1); 7.4009 (6.5); 7.3908 (3.1); 7.3794 (2.4); 7.3753 (2.4); 7.3640 (2.1); 7.3604 (1.8); 3.3239 (109.2); 3.2991 (0.5); 2.7284 (0.3); 2.5144 (19.9); 2.5084 (39.6); 2.5024 (52.8); 2.4964 (36.0); 2.4905 (16.1); 2.2716 (0.3); 2.0758 (0.5); 0.0106 (1.5); -0.0004 (40.6); -0.0115 (1.2)
I-038: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 8.3627 (5.4); 7.5077 (0.5); 7.4936 (0.8); 7.4891 (1.0); 7.4750 (0.5); 7.4708 (0.7); 7.4543 (0.5); 7.4338 (0.6); 7.2773 (0.8); 7.2746 (0.9); 7.2605 (29.2); 7.2558 (1.6); 7.2397 (0.6); 7.2369 (0.6); 7.1886 (0.6); 7.1862 (0.6); 7.1646 (0.9); 7.1431 (0.5); 2.8675 (16.0); 0.0080 (0.5); -0.0002 (18.2); -0.0085 (0.5)
I-039: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 8.3021 (2.6); 8.3003 (2.5); 7.4658 (0.9); 7.4519 (0.9); 7.4462 (0.8); 7.4318 (0.8); 7.4096 (0.9); 7.4061 (1.5); 7.4029 (1.0); 7.3869 (0.8); 7.3621 (0.6); 7.3557 (0.7); 7.3519 (0.5); 7.3383 (0.6); 7.3315 (0.7); 7.3280 (0.6); 7.2606 (28.0); 7.1598 (0.6); 7.1536 (0.6); 3.1439 (16.0); 2.5517 (9.3); 2.5502 (9.1); 1.5417 (2.0); 0.0080 (0.9); -0.0002 (37.0); -0.0085 (1.1)
I-041: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 9.2425 (7.0); 8.2171 (4.2); 8.2152 (4.2); 7.6389 (2.6); 7.6349 (3.6); 7.6298 (1.2); 7.6259 (0.5); 7.6223 (2.0); 7.6183 (4.2); 7.6149 (3.7); 7.6096 (0.8); 7.6064 (0.5); 7.5042 (1.4); 7.5000 (1.7); 7.4954 (0.8); 7.4881 (0.9); 7.4844 (3.1); 7.4826 (4.9); 7.4784 (1.9); 7.4679 (1.4); 7.4645 (2.9); 7.4630 (2.3); 7.4525 (1.3); 7.4487 (2.6); 7.4450 (1.4); 7.4376 (0.8); 7.4310 (2.1); 7.4127 (0.6); 7.2610 (64.3); 3.4999 (3.6); 2.5719 (1.7); 2.5699 (1.8); 2.5154 (15.9); 2.5136 (16.0); 1.5782 (6.5); 0.0080 (1.0); -0.0002 (36.9); -0.0085 (1.1)
I-042: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 8.3074 (2.3); 8.3054 (2.2); 7.5236 (0.7); 7.5197 (0.5); 7.5168 (0.6); 7.5108 (0.6); 7.5052 (0.7); 7.5005 (1.1); 7.4291 (1.2); 7.4260 (0.9); 7.4225 (1.4); 7.4161 (1.4); 7.4087 (1.6); 7.4052 (1.6); 7.4030 (1.7); 7.3909 (0.6); 7.3858 (1.6); 7.3803 (0.8); 7.3748 (0.6); 7.2608 (78.4); 3.4996 (16.0); 2.3829 (8.2); 2.3810 (8.0); 1.5445 (6.3); 0.0080 (1.3); -0.0002 (48.7); -0.0085 (1.4)
I-043: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 7.9763 (2.2); 7.9745 (2.4); 7.3061 (0.6); 7.3024 (0.7); 7.2901 (1.3); 7.2860 (1.7); 7.2788 (1.5); 7.2609 (64.5); 7.2519 (1.0); 7.2461 (0.8); 7.2293 (0.5); 7.2050 (1.1); 7.1894 (0.6); 2.8516 (16.0); 2.6471 (0.8); 2.1944 (8.4); 2.1928 (9.1); 2.1103 (8.9); 1.5582 (4.8); 0.0080 (1.2); -0.0002 (42.6); -0.0085 (1.2)
I-044: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 8.3145 (2.1); 8.3124 (2.1); 7.5234 (0.8); 7.5075 (0.8); 7.2611 (17.1); 7.0471 (0.6); 6.9554 (0.5); 3.4981 (16.0); 2.4618 (3.5); 2.4598 (3.8); 2.4571 (3.8); 2.4551 (3.5); 1.5434 (5.0); 0.0079 (0.6); -0.0002 (23.8); -0.0028 (1.0); -0.0085 (0.7)
I-045: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 9.2656 (3.7); 8.2344 (2.4); 8.2325 (2.4); 7.5189 (0.5); 7.5072 (0.7); 7.5025 (0.6); 7.4974 (1.0); 7.4947 (0.6); 7.4891 (1.4); 7.4828 (0.9); 7.4005 (1.2); 7.3957 (6.3); 7.3904 (2.6); 7.3876 (3.5); 7.3851 (2.0); 7.3727 (0.5); 7.2604 (99.7); 6.9969 (0.5); 2.3297 (9.6); 2.3279 (9.4); 1.5963 (16.0); 0.0080 (3.8); -0.0002 (129.4); -0.0085 (3.6)
I-046: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 8.3519 (1.4); 8.3502 (2.7); 8.3486 (1.4); 7.4726 (0.6); 7.4581 (0.6); 7.4529 (0.5); 7.4386 (0.5); 7.3564 (0.7); 7.3538 (0.9); 7.3526 (0.9); 7.3499 (0.8); 7.3374 (0.5); 7.3347 (0.6); 7.3335 (0.7); 7.3309 (0.6); 7.3009 (0.5); 7.2772 (0.5); 7.2766 (0.5); 7.2612 (15.1); 7.1797 (0.5); 7.1773 (0.5); 3.5009 (16.0); 2.9229 (0.5); 2.9213 (0.5); 2.9041 (1.7); 2.9024 (1.6); 2.8853 (1.7); 2.8837 (1.6); 2.8666 (0.6); 2.8650 (0.5); 1.5470 (1.3); 1.2746 (3.0); 1.2559 (6.8); 1.2371 (3.0); 0.0080 (0.6); 0.0023 (0.9); -0.0002 (20.1); -0.0026 (0.8); -0.0034 (0.7); -0.0084 (0.6)
I-047: ^{1}H-NMR(599.6 MHz, d_6-DMSO): δ= 8.9283 (8.7); 7.3845 (0.6); 7.3824 (0.6); 7.3718 (1.6); 7.3702 (1.7); 7.3600 (1.8); 7.3579 (1.8); 7.3455 (2.5); 7.3343 (1.0); 7.3174 (1.0); 7.3049 (1.7); 7.2930 (0.9); 7.2281 (2.2); 7.2163 (1.6); 3.3318 (0.4); 3.3168 (50.0); 2.8310 (22.5); 2.5230 (1.0); 2.5199 (1.2); 2.5168 (1.4); 2.5079 (16.7); 2.5050 (33.8); 2.5019 (45.9); 2.4989 (34.1); 2.4960 (16.5); 2.0825 (0.5); 2.0687 (15.2); 1.2645 (0.4); 1.2444 (0.8); 0.8695 (0.7); 0.8580 (1.9); 0.8461 (0.9); -0.0001 (6.2)
I-049: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 9.2681 (10.1); 8.2669 (6.8); 7.8089 (1.8); 7.7908 (2.0); 7.6491 (0.7); 7.6321 (1.9); 7.6303 (1.8); 7.6135 (1.5); 7.5855 (1.4); 7.5665 (1.7); 7.5485 (0.6); 7.3880 (2.0); 7.3693 (1.8); 7.2613 (20.0); 3.5022 (0.6); 2.6073 (0.8); 2.5881 (1.4); 2.5692 (1.3); 2.5492 (0.5); 2.5262 (1.3); 2.5075 (1.4); 2.4884 (0.9); 1.5689 (6.6); 1.1925 (7.8); 1.1736 (16.0); 1.1547 (7.5); 0.0080 (0.7); -0.0002 (27.3); -0.0085 (0.8)
I-050: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 8.3234 (3.5); 7.5760 (1.4); 7.5715 (1.5); 7.5663 (0.6); 7.5558 (2.4); 7.5521 (2.5); 7.5034 (0.6); 7.4962 (0.7); 7.4812 (2.3); 7.4773 (1.0); 7.4672 (1.8); 7.4624 (3.4); 7.4577 (1.0); 7.4545 (0.5); 7.4475 (0.7); 7.4449 (0.6); 7.2632 (11.8); 3.1385 (16.0); 2.9016 (0.8); 2.8830 (2.4); 2.8642 (2.5); 2.8454 (0.8); 1.2529 (3.8); 1.2341 (7.8); 1.2153 (3.6); -0.0002 (7.4)
I-051: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 9.2505 (8.1); 8.2563 (5.6); 7.5837 (2.8); 7.5795 (3.3); 7.5742 (1.2); 7.5676 (2.0); 7.5633 (4.2); 7.5597 (4.1); 7.5537 (0.6); 7.4949 (1.6); 7.4892 (1.6); 7.4850 (0.9); 7.4791 (1.0); 7.4750 (3.0); 7.4730 (5.0); 7.4692 (1.9); 7.4673 (1.2); 7.4587 (1.9); 7.4549 (3.1); 7.4536 (2.8); 7.4513 (2.0); 7.4470 (3.4); 7.4430 (1.8); 7.4372 (1.1); 7.4307 (1.8); 7.4294 (2.0); 7.4205 (0.9); 7.4176 (0.6); 7.4155 (0.6); 7.4117 (0.8); 7.4082 (0.6); 7.2615 (9.1); 5.2978 (9.4); 2.8687 (1.4); 2.8673 (1.4); 2.8498 (4.1); 2.8484 (4.0); 2.8311 (4.2); 2.8297 (4.0); 2.8122 (1.4); 2.8110 (1.3); 1.2552 (0.6); 1.2319 (7.5); 1.2131 (16.0); 1.2075 (0.5); 1.1943 (7.4); -0.0002 (13.7)
I-055: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 7.8947 (5.5); 7.2933 (0.5); 7.2901 (1.1); 7.2860 (1.1); 7.2749 (1.3); 7.2699 (2.3); 7.2609 (12.2); 7.2469 (1.4); 7.2286 (1.3); 7.2238 (1.2); 7.2136 (0.6); 7.2113 (0.9); 7.2074 (1.0); 7.2033 (2.0); 7.1984 (1.9); 7.1850 (0.8); 7.1812 (0.6); 4.7336 (1.7); 4.7159 (5.5); 4.6981 (5.6); 4.6804 (1.8); 2.4825 (0.6); 2.1037 (16.0); 1.5060 (6.6); 1.4883 (13.6); 1.4705 (6.4); 1.1079 (5.9); 1.0891 (12.7); 1.0703 (5.7); -0.0002 (15.6)

I-056: ^{1}H-NMR(400.2 MHz, d_6-DMSO): δ= 8.4260 (5.3); 7.5902 (2.4); 7.5864 (3.2); 7.5695 (4.8); 7.5601 (1.4); 7.5552 (1.2); 7.5396 (1.7); 7.5356 (2.0); 7.5174 (2.3); 7.5142 (2.4); 7.4966 (4.6); 7.4781 (3.2); 7.4700 (1.7); 7.4662 (2.4); 7.4558 (0.8); 7.4488 (2.0); 7.4405 (0.5); 7.4311 (0.9); 7.4279 (0.8); 7.4131 (1.1); 7.3985 (1.1); 7.3932 (1.4); 7.3791 (0.7); 7.3750 (0.7); 7.2819 (1.4); 7.2597 (3.5); 7.2404 (2.8); 7.2244 (1.2); 4.5674 (8.5); 3.3283 (4.3); 2.5069 (9.6); 2.5027 (13.0); 2.4986 (10.0); 2.3963 (16.0); -0.0020 (1.2)
I-057: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 9.2784 (6.8); 8.2467 (4.1); 8.2449 (4.0); 7.5350 (8.9); 7.5303 (9.8); 7.5197 (0.9); 7.4467 (2.7); 7.4419 (4.5); 7.4371 (2.1); 7.2608 (147.4); 6.9968 (0.8); 2.5249 (16.0); 2.5235 (15.8); 2.0453 (0.6); 1.5469 (11.1); 1.3851 (0.7); 1.3680 (0.8); 1.2845 (0.8); 1.2550 (2.3); 0.8805 (0.5); 0.0079 (3.1); -0.0002 (92.3); -0.0085 (2.8)
I-058: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 8.7076 (6.4); 8.4732 (1.0); 8.4522 (1.0); 8.2960 (2.3); 8.2940 (2.4); 7.8948 (1.0); 7.8738 (1.0); 7.5251 (0.7); 7.5191 (2.1); 7.5109 (1.3); 7.5065 (1.6); 7.5040 (1.6); 7.4911 (0.8); 7.4571 (0.5); 7.4475 (0.8); 7.4435 (0.8); 7.4339 (1.5); 7.4220 (1.1); 7.4152 (2.4); 7.4065 (3.5); 7.3968 (2.2); 7.3903 (2.7); 7.2931 (0.7); 7.2664 (0.6); 7.2647 (1.5); 7.2606 (278.0); 7.2534 (3.0); 7.2525 (2.4); 7.2517 (2.4); 7.2438 (0.7); 7.2422 (0.7); 7.2406 (0.7); 7.2375 (0.7); 7.2335 (0.7); 6.9970 (1.6); 3.2033 (0.8); 3.1655 (5.1); 3.1565 (16.0); 3.1437 (14.8); 2.8974 (0.9); 2.3553 (7.6); 2.3534 (7.9); 2.0456 (1.1); 1.5427 (3.4); 1.2596 (1.1); 1.2555 (0.9); 0.1456 (0.6); 0.0323 (0.6); 0.0079 (6.1); 0.0055 (1.2); -0.0002 (218.3); -0.0051 (3.7); -0.0068 (2.3); -0.0085 (6.7); -0.0115 (1.2); -0.0123 (1.0); -0.0139 (0.7); -0.1495 (0.6)
I-059: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 8.3489 (1.4); 8.3474 (2.8); 7.4950 (1.0); 7.4771 (1.3); 7.4719 (0.9); 7.4638 (0.6); 7.4593 (0.7); 7.4579 (0.8); 7.4535 (0.7); 7.4460 (0.5); 7.3138 (0.8); 7.3110 (0.9); 7.2956 (0.8); 7.2944 (0.8); 7.2923 (1.3); 7.2764 (0.6); 7.2735 (0.6); 7.2610 (31.5); 7.2130 (0.6); 7.1914 (0.6); 7.1883 (1.0); 7.1859 (0.6); 7.1669 (0.5); 3.4959 (16.0); 2.7914 (1.1); 2.7726 (1.1); 1.5463 (1.0); 1.2382 (2.3); 1.2193 (4.5); 1.2006 (2.1); 0.0080 (0.7); -0.0002 (25.5); -0.0085 (0.8)
I-061: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 8.3280 (3.1); 7.3566 (0.8); 7.3420 (1.0); 7.3383 (1.0); 7.3183 (1.3); 7.3033 (1.0); 7.2849 (0.9); 7.2610 (30.4); 7.2161 (1.1); 7.2005 (0.7); 3.4955 (16.0); 2.6445 (0.5); 2.6276 (0.5); 2.1014 (8.8); 1.1887 (3.3); 1.1699 (7.1); 1.1510 (3.2); 0.8819 (0.6); -0.0002 (18.0); -0.0085 (0.6)
I-062: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 8.3012 (2.4); 8.2993 (2.4); 7.5231 (0.5); 7.5183 (1.0); 7.5021 (0.9); 7.4971 (0.6); 7.4811 (0.5); 7.2606 (25.2); 7.0384 (0.6); 7.0324 (0.7); 6.9686 (0.5); 6.9464 (0.6); 6.9436 (0.6); 6.9404 (0.6); 6.9375 (0.5); 6.9215 (0.5); 3.1395 (16.0); 2.4325 (4.2); 2.4308 (4.5); 2.4279 (4.6); 2.4262 (4.2); 1.5482 (2.4); 0.0079 (1.0); -0.0002 (32.6); -0.0085 (1.0)
I-063: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 7.9705 (2.1); 7.9687 (2.1); 7.7860 (0.6); 7.7844 (0.6); 7.7663 (0.7); 7.7648 (0.7); 7.6153 (0.7); 7.6136 (0.7); 7.5966 (0.5); 7.5383 (0.6); 7.3428 (0.7); 7.3257 (0.6); 7.3240 (0.6); 7.2607 (18.1); 2.9564 (1.1); 2.8853 (0.9); 2.8839 (1.0); 2.8486 (16.0); 2.1688 (6.8); 2.1674 (7.0); 1.5462 (4.8); 0.0080 (0.7); -0.0002 (24.6); -0.0085 (0.8)
I-064: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 9.2613 (6.7); 8.2189 (3.9); 8.2170 (3.8); 7.8155 (1.2); 7.8139 (1.2); 7.8123 (1.2); 7.7943 (1.4); 7.7928 (1.3); 7.6603 (0.5); 7.6432 (1.4); 7.6415 (1.3); 7.6245 (1.0); 7.6227 (0.9); 7.5899 (0.7); 7.5877 (0.9); 7.5864 (0.9); 7.5678 (1.2); 7.3722 (1.3); 7.3706 (1.4); 7.3535 (1.2); 7.3518 (1.2); 7.3502 (1.1); 7.2606 (45.9); 2.2352 (13.4); 2.2335 (12.8); 2.0455 (0.6); 1.5506 (13.8); 1.5494 (16.0); 0.0276 (0.5); 0.0079 (2.0); 0.0062 (0.6); 0.0053 (0.6); 0.0045 (0.9); -0.0002 (67.2); -0.0028 (2.4); -0.0044 (0.9); -0.0053 (0.6); -0.0060 (0.6); -0.0069 (0.6); -0.0085 (1.8)
I-065: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 8.0303 (2.7); 7.4550 (0.8); 7.4388 (0.8); 7.2610 (12.6); 6.9859 (0.5); 6.9846 (0.5); 6.9079 (0.5); 6.9061 (0.6); 2.8574 (16.0); 2.6545 (1.1); 2.6470 (0.6); 2.6357 (1.1); 1.5507 (1.3); 1.1781 (2.0); 1.1592 (4.1); 1.1407 (2.0); -0.0002 (17.8); -0.0085 (0.5)
I-066: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 9.2616 (8.2); 8.2629 (6.4); 7.5436 (0.5); 7.5379 (4.7); 7.5327 (1.8); 7.5216 (2.5); 7.5163 (9.0); 7.5107 (1.3); 7.4684 (1.2); 7.4628 (8.8); 7.4575 (2.4); 7.4464 (1.8); 7.4412 (4.9); 7.4355 (0.6); 7.2626 (20.4); 2.8540 (1.5); 2.8360 (4.5); 2.8350 (4.6); 2.8163 (4.7); 2.7976 (1.6); 1.2363 (7.6); 1.2175 (16.0); 1.1987 (7.4); -0.0002 (12.8)
I-068: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 9.3323 (14.2); 8.4559 (16.0); 7.6407 (1.7); 7.6373 (2.3); 7.6344 (1.9); 7.6214 (2.1); 7.6180 (2.9); 7.6152 (2.4); 7.5773 (1.7); 7.5733 (1.6); 7.5709 (1.8); 7.5669 (1.5); 7.5530 (1.7); 7.5489 (1.7); 7.5465 (1.8); 7.5425 (1.5); 7.5149 (0.5); 7.4924 (2.0); 7.4777 (1.8); 7.4721 (2.7); 7.4575 (2.6); 7.4522 (1.6); 7.4377 (1.6); 7.2624 (13.6); 7.2006 (1.2); 7.1982 (1.2); 7.1941 (1.1); 7.1917 (1.1); 7.1795 (2.0); 7.1771 (2.0); 7.1730 (1.9); 7.1706 (1.9); 7.1585 (1.1); 7.1561 (1.1); 7.1520 (1.0); 7.1496 (1.0); 6.4819 (0.7); 6.4603 (0.6); 1.6075 (1.0); 0.0079 (0.5); -0.0002 (17.9)
I-069: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 9.3383 (1.3); 8.4536 (1.4); 7.4296 (0.6); 7.4125 (0.6); 7.2603 (39.8); 1.5398 (16.0); 0.0080 (0.9); -0.0002 (33.7); -0.0085 (1.0)
I-071: ^{1}H-NMR(599.6 MHz, d_6-DMSO): δ= 9.1065 (0.7); 7.5227 (0.4); 7.3931 (0.5); 7.3794 (0.8); 7.3665 (0.3); 4.8632 (1.5); 3.3159 (28.1); 2.5017 (50.0); 2.3854 (0.3); 1.9883 (0.4); -0.0001 (3.5)
I-073: ^{1}H-NMR(400.2 MHz, d_6-DMSO): δ= 8.4687 (7.1); 7.5681 (0.7); 7.5615 (1.4); 7.5560 (1.6); 7.5499 (1.7); 7.5425 (3.3); 7.5374 (3.4); 7.5298 (2.1); 7.5240 (1.9); 7.5183 (1.8); 7.5111 (1.1); 7.4914 (1.2); 7.4872 (1.2); 7.4728 (2.5); 7.4683 (2.6); 7.4530 (1.6); 7.4496 (1.5); 7.4338 (0.6); 7.4294 (0.6); 7.4200 (0.7); 7.4153 (1.5); 7.4006 (1.5); 7.3950 (1.9); 7.3904 (1.1); 7.3763 (3.1); 7.3702 (2.7); 7.3504 (6.2); 7.3308 (3.5); 7.2837 (2.0); 7.2611 (4.8); 7.2443 (3.6); 7.2416 (4.0); 7.2259 (1.6); 7.2234 (1.4); 4.5771 (11.2); 3.3333 (6.0); 2.5070 (11.4); 2.5026 (15.6); 2.4982 (11.5); 2.2497 (16.0); 2.0771 (1.0); 0.0066 (0.5); -0.0014 (12.8); -0.0096 (0.6)

I-074: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 9.3294 (16.0); 8.3965 (11.2); 8.3754 (12.1); 8.2151 (0.7); 8.2074 (7.2); 8.2019 (2.8); 8.1940 (7.6); 8.1887 (3.2); 8.1851 (8.0); 8.1771 (3.0); 8.1716 (7.7); 8.1640 (0.8); 7.8488 (9.9); 7.8277 (9.3); 7.2608 (93.6); 7.2262 (0.8); 7.2186 (7.6); 7.2132 (2.3); 7.2016 (2.5); 7.1968 (12.7); 7.1920 (2.6); 7.1804 (2.2); 7.1750 (7.4); 7.1676 (0.7); 6.9968 (0.5); 1.5608 (12.8); 0.0081 (1.9); -0.0002 (69.0); -0.0085 (2.0)
I-075: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 8.1873 (5.4); 7.5374 (0.8); 7.5329 (0.9); 7.5192 (0.6); 7.5144 (0.6); 7.4389 (0.5); 7.2835 (0.8); 7.2808 (0.8); 7.2646 (1.7); 7.2606 (24.5); 7.2459 (0.6); 7.2431 (0.6); 7.1940 (0.6); 7.1916 (0.5); 7.1732 (0.5); 7.1699 (0.8); 7.1667 (0.6); 2.8706 (16.0); -0.0002 (14.9)
I-076: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 7.9815 (2.3); 7.9798 (2.3); 7.4248 (0.8); 7.4109 (0.8); 7.4051 (0.7); 7.3915 (0.7); 7.3844 (0.8); 7.3807 (1.4); 7.3776 (0.8); 7.3616 (0.6); 7.3415 (0.5); 7.3352 (0.6); 7.3130 (0.5); 7.3108 (0.5); 7.2627 (8.4); 7.1060 (0.5); 2.8641 (16.0); 2.4536 (8.5); 2.4521 (8.2); -0.0002 (4.9)
I-077: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 8.2919 (2.6); 8.2899 (2.5); 7.5872 (2.8); 7.5821 (0.9); 7.5708 (1.1); 7.5655 (4.0); 7.5597 (0.6); 7.4835 (0.5); 7.4777 (4.1); 7.4724 (1.1); 7.4611 (0.9); 7.4569 (2.1); 7.4559 (2.7); 7.2626 (10.1); 3.1423 (16.0); 2.5415 (9.2); 2.5396 (8.6); -0.0002 (10.2)
I-078: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 8.3144 (2.3); 8.3124 (2.3); 7.4803 (0.8); 7.4661 (0.8); 7.4605 (0.7); 7.4463 (0.7); 7.4107 (0.8); 7.4074 (1.3); 7.4042 (0.9); 7.3880 (0.8); 7.3850 (0.5); 7.3608 (0.6); 7.3545 (0.7); 7.3508 (0.5); 7.3370 (0.5); 7.3311 (0.6); 7.2605 (21.0); 7.1792 (0.6); 7.1768 (0.6); 7.1730 (0.6); 3.5039 (16.0); 2.5763 (8.3); 2.5745 (8.4); 1.5387 (0.6); 0.0080 (0.8); -0.0002 (27.8); -0.0085 (0.8)
I-079: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 9.2515 (2.2); 8.2203 (1.3); 7.5954 (1.3); 7.5793 (0.5); 7.5742 (2.0); 7.4702 (2.0); 7.4652 (0.5); 7.4488 (1.4); 7.2598 (22.6); 2.5087 (4.8); 1.5418 (16.0); 0.0080 (0.7); -0.0002 (27.9); -0.0085 (0.9)
I-080: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 8.2957 (2.1); 8.2937 (2.2); 7.6308 (1.3); 7.6265 (1.3); 7.6212 (0.5); 7.6105 (2.0); 7.6069 (2.0); 7.5247 (0.5); 7.5190 (1.0); 7.5024 (1.8); 7.4986 (0.8); 7.4886 (0.9); 7.4862 (1.5); 7.4837 (1.7); 7.4818 (1.8); 7.4775 (1.0); 7.4668 (0.6); 7.4643 (0.6); 7.2682 (0.5); 7.2606 (118.0); 7.2325 (0.7); 6.9970 (0.6); 3.5004 (16.0); 2.5732 (7.7); 2.5713 (8.0); 0.0080 (2.0); -0.0002 (71.7); -0.0085 (2.1)
I-081: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 8.2995 (2.3); 8.2975 (2.3); 7.8335 (0.7); 7.8147 (0.9); 7.6658 (0.8); 7.6492 (0.6); 7.6217 (0.6); 7.6033 (0.8); 7.3500 (0.8); 7.3312 (0.8); 7.2606 (44.6); 3.5033 (16.0); 2.2889 (7.4); 2.2873 (7.5); 1.5411 (5.0); 0.0079 (1.3); -0.0002 (46.0); -0.0085 (1.4)
I-082: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 8.3288 (3.4); 7.5304 (2.1); 7.5251 (0.8); 7.5141 (1.2); 7.5087 (4.8); 7.5035 (0.7); 7.4769 (0.8); 7.4717 (4.8); 7.4662 (1.2); 7.4553 (0.8); 7.4500 (2.1); 7.2613 (52.9); 3.1388 (16.0); 2.8865 (0.7); 2.8677 (2.3); 2.8489 (2.3); 2.8302 (0.8); 2.0456 (1.0); 1.5516 (3.8); 1.2575 (3.8); 1.2387 (7.8); 1.2199 (3.6); 0.0080 (1.4); -0.0002 (46.9); -0.0085 (1.3)
I-083: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 9.3066 (6.5); 8.4302 (7.4); 7.6361 (2.5); 7.6140 (1.2); 7.3995 (1.0); 7.3801 (2.1); 7.3610 (1.2); 7.2947 (1.3); 7.2758 (1.0); 7.2603 (71.2); 5.2999 (2.3); 2.4463 (11.2); 1.5439 (16.0); 0.0080 (1.6); -0.0002 (60.7); -0.0085 (1.8)
I-087: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 9.3467 (13.5); 8.4854 (16.0); 7.4833 (0.9); 7.4674 (1.8); 7.4620 (1.5); 7.4515 (1.1); 7.4462 (3.6); 7.4411 (1.2); 7.4302 (1.5); 7.4251 (2.1); 7.4092 (1.0); 7.2609 (27.8); 7.0747 (0.5); 7.0709 (0.8); 7.0623 (5.0); 7.0533 (0.7); 7.0500 (1.0); 7.0441 (5.4); 7.0413 (5.1); 7.0357 (1.1); 7.0318 (0.8); 7.0230 (4.6); 7.0143 (0.8); 7.0110 (0.6); 4.1308 (1.0); 4.1130 (1.0); 2.0453 (4.7); 1.5556 (1.6); 1.3028 (0.5); 1.2771 (1.9); 1.2640 (2.0); 1.2593 (3.9); 1.2414 (1.5); 0.8987 (1.1); 0.8819 (3.9); 0.8641 (1.4); 0.0080 (1.3); -0.0002 (42.6); -0.0057 (0.7); -0.0085 (1.2)
I-088: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 9.3274 (8.3); 8.6547 (9.8); 7.3640 (0.8); 7.3494 (1.0); 7.3441 (1.4); 7.3295 (1.5); 7.3242 (1.2); 7.3095 (1.2); 7.2612 (14.6); 7.1236 (2.0); 7.1044 (1.8); 7.0403 (1.0); 7.0392 (1.0); 7.0174 (1.7); 6.9966 (1.0); 6.9955 (1.0); 5.2991 (2.8); 3.6773 (1.3); 3.6707 (1.2); 2.9129 (1.1); 2.1624 (1.7); 2.1529 (1.0); 2.1362 (16.0); 2.1289 (1.3); 2.1224 (0.5); 2.0810 (1.4); 1.3336 (1.0); 1.2997 (0.5); 1.2929 (0.5); 1.2842 (1.6); 1.2547 (6.6); 0.9170 (0.7); 0.8982 (0.5); 0.8796 (1.4); 0.8621 (0.6); 0.0080 (0.6); 0.0024 (0.9); -0.0002 (23.7); -0.0025 (1.3); -0.0034 (0.9); -0.0042 (0.7); -0.0084 (0.8)
I-089: ^{1}H-NMR(300.1 MHz, d_6-DMSO): δ= 8.6399 (7.8); 8.6121 (8.5); 8.0176 (1.8); 8.0124 (2.0); 7.9919 (3.4); 7.9860 (3.9); 7.9657 (1.9); 7.9596 (2.1); 7.8475 (4.2); 7.8403 (4.5); 7.8196 (4.2); 7.8124 (4.0); 7.5932 (1.7); 7.5882 (1.8); 7.5688 (4.0); 7.5632 (4.3); 7.5534 (1.6); 7.5411 (3.9); 7.5372 (3.8); 7.5283 (2.1); 7.5199 (2.7); 7.5126 (1.8); 7.5016 (1.7); 7.4954 (1.5); 7.4584 (0.9); 7.4526 (0.9); 7.4400 (1.2); 7.4339 (2.2); 7.4066 (6.9); 7.3799 (7.3); 7.3760 (6.6); 7.3543 (2.3); 7.3505 (2.6); 7.3447 (2.4); 7.3050 (3.2); 7.2813 (5.4); 7.2748 (4.3); 7.2708 (3.5); 7.2597 (5.3); 7.2565 (4.7); 7.2468 (2.3); 7.2433 (2.3); 7.2353 (2.4); 7.2314 (2.0); 4.6186 (16.0); 3.3428 (12.5); 2.5148 (13.1); 2.5091 (16.8); 2.5034 (11.9); 2.0835 (1.3); 1.2254 (0.6); -0.0005 (1.4)
I-090: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 8.0552 (2.7); 8.0533 (2.7); 7.6336 (2.0); 7.6280 (0.7); 7.6200 (2.0); 7.6169 (0.8); 7.6146 (0.8); 7.6114 (2.2); 7.6034 (0.8); 7.5978 (2.1); 7.2606 (71.7); 7.1713 (2.1); 7.1658 (0.6); 7.1545 (0.7); 7.1493 (3.9); 7.1441 (0.7); 7.1327 (0.6); 7.1273 (2.0); 2.8877 (16.0); 2.4770 (9.2); 2.4756 (9.3); 1.2550 (1.4); 0.0080 (1.4); -0.0002 (45.1); -0.0085 (1.2)
I-091: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 8.0296 (2.7); 7.4626 (0.7); 7.4581 (0.9); 7.4396 (0.5); 7.2608 (12.8); 7.2432 (1.2); 7.2404 (1.3); 7.2245 (0.5); 7.2217 (0.5); 7.1426 (0.8); 2.9564 (1.5); 2.8850 (1.3); 2.8836 (1.3); 2.8564 (16.0); 2.6717 (1.0); 2.6529 (1.1); 1.5509 (1.0); 1.1755 (2.1); 1.1569 (4.2); 1.1379 (2.0); -0.0002 (17.5)

I-092: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 8.2849 (4.1); 7.6270 (3.1); 7.6102 (4.0); 7.5070 (1.7); 7.4906 (4.0); 7.4717 (3.9); 7.4482 (1.8); 7.2608 (41.8); 3.1407 (16.0); 2.5484 (14.4); 1.5604 (1.9); -0.0002 (24.4)
I-093: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 9.2547 (7.3); 8.2573 (5.1); 7.3337 (1.1); 7.3298 (1.1); 7.3174 (1.5); 7.3134 (2.1); 7.3041 (1.8); 7.3019 (2.3); 7.2895 (1.3); 7.2718 (1.4); 7.2668 (1.4); 7.2617 (20.7); 7.2565 (0.8); 7.2542 (0.8); 7.2508 (0.9); 7.2431 (2.0); 7.2386 (1.9); 7.2250 (0.8); 7.2211 (0.6); 2.5981 (0.8); 2.5805 (0.8); 2.1071 (16.0); 1.6478 (0.5); 1.1601 (6.0); 1.1412 (12.6); 1.1224 (5.8); -0.0002 (12.1)
I-094: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 7.9020 (2.7); 7.2908 (0.6); 7.2782 (0.8); 7.2744 (1.0); 7.2702 (0.6); 7.2686 (0.8); 7.2654 (1.2); 7.2596 (45.6); 7.2499 (0.8); 7.2326 (0.6); 7.2030 (0.9); 7.1985 (0.9); 4.2619 (16.0); 2.1044 (7.2); 1.5403 (8.9); 1.1115 (2.9); 1.0926 (6.3); 1.0738 (2.8); 0.0080 (1.9); -0.0002 (70.3); -0.0085 (1.9)
I-098: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 8.3313 (3.2); 7.5756 (1.2); 7.5707 (1.1); 7.5603 (0.9); 7.5558 (2.2); 7.5517 (2.2); 7.5077 (0.7); 7.4940 (2.0); 7.4897 (0.9); 7.4840 (1.3); 7.4784 (2.6); 7.4760 (2.4); 7.4654 (0.5); 7.2607 (59.6); 3.4968 (16.0); 2.9246 (0.7); 2.9059 (2.2); 2.8871 (2.2); 2.8684 (0.7); 1.2608 (3.4); 1.2420 (7.2); 1.2232 (3.4); 0.0080 (0.9); -0.0002 (34.4); -0.0085 (1.0)
I-103: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 8.0642 (2.8); 8.0622 (2.8); 7.4870 (0.8); 7.4831 (0.7); 7.4756 (1.1); 7.4694 (0.9); 7.4676 (0.9); 7.4626 (1.0); 7.3786 (1.3); 7.3771 (1.4); 7.3718 (6.6); 7.3674 (2.3); 7.3634 (3.4); 7.3599 (2.0); 7.3483 (0.8); 7.2606 (66.7); 2.8879 (16.0); 2.2797 (9.1); 2.2781 (9.2); 1.5541 (3.6); 0.0080 (1.4); -0.0002 (42.9); -0.0085 (1.1)
I-105: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 9.3389 (6.1); 8.3982 (4.4); 8.3776 (4.7); 7.5551 (3.8); 7.5344 (3.8); 7.5293 (0.9); 7.5257 (1.5); 7.5128 (0.8); 7.5090 (1.4); 7.5053 (1.2); 7.3451 (1.5); 7.3338 (3.1); 7.3291 (4.1); 7.3259 (4.4); 7.3153 (0.8); 7.3134 (0.9); 7.3093 (1.4); 7.3028 (1.1); 7.2605 (24.2); 5.2990 (1.3); 2.4584 (16.0); 0.0080 (0.5); -0.0002 (17.8)
I-106: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 8.0129 (2.8); 7.3017 (0.6); 7.2892 (0.7); 7.2853 (1.0); 7.2775 (0.7); 7.2750 (0.8); 7.2728 (1.2); 7.2605 (15.9); 7.2419 (0.7); 7.2383 (0.6); 7.2131 (0.9); 7.2087 (0.9); 2.8507 (16.0); 2.1011 (7.5); 1.5556 (1.8); 1.1263 (3.0); 1.1075 (6.8); 1.0886 (3.0); 0.8820 (0.9); 0.0080 (0.5); -0.0002 (19.2); -0.0084 (0.6)
I-107: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 7.9860 (2.4); 7.9843 (2.3); 7.4833 (0.6); 7.4799 (0.5); 7.4727 (1.2); 7.4653 (0.8); 7.4590 (0.8); 7.3752 (1.5); 7.3685 (4.6); 7.3649 (1.8); 7.3593 (2.2); 7.3563 (1.5); 7.3447 (0.7); 7.2627 (49.8); 2.8544 (16.0); 2.2622 (8.6); 2.2608 (8.5); 1.5717 (14.5); 0.0079 (1.0); -0.0002 (29.8); -0.0085 (0.8)
I-108: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 8.0253 (2.8); 7.4173 (0.7); 7.4028 (0.7); 7.3977 (0.6); 7.3831 (0.6); 7.3309 (0.7); 7.3274 (1.0); 7.3245 (0.8); 7.3083 (0.7); 7.3054 (0.6); 7.2810 (0.5); 7.2617 (6.6); 7.2572 (0.6); 7.1138 (0.5); 2.8745 (0.7); 2.8621 (16.0); 2.8018 (0.6); 2.7840 (1.8); 2.7828 (1.9); 2.7651 (1.9); 2.7641 (1.9); 2.7463 (0.6); 1.5628 (0.9); 1.2160 (3.1); 1.1973 (6.7); 1.1784 (3.1); -0.0002 (8.6)
I-109: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 8.2830 (1.6); 8.2815 (2.8); 7.4616 (0.6); 7.4571 (0.6); 7.4429 (0.7); 7.4407 (0.8); 7.4386 (0.9); 7.4364 (0.7); 7.4222 (0.7); 7.4178 (0.8); 7.3326 (1.0); 7.3283 (0.9); 7.3141 (1.2); 7.3097 (1.0); 7.2616 (8.0); 7.1031 (0.8); 7.1007 (0.8); 7.0845 (1.4); 7.0821 (1.4); 7.0659 (0.6); 7.0635 (0.6); 7.0105 (1.1); 6.9897 (1.0); 3.7501 (13.2); 3.4816 (16.0); 1.2024 (3.3); 1.1836 (7.1); 1.1648 (3.2); -0.0002 (11.8)
I-110: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 8.0205 (2.8); 7.7813 (0.6); 7.7797 (0.6); 7.7618 (0.7); 7.7603 (0.7); 7.6043 (0.7); 7.6025 (0.6); 7.5857 (0.5); 7.5378 (0.6); 7.3601 (0.6); 7.3585 (0.7); 7.3416 (0.6); 7.3399 (0.6); 7.3383 (0.6); 7.2621 (8.5); 2.9561 (2.1); 2.8849 (1.8); 2.8835 (1.8); 2.8484 (16.0); 2.5225 (0.6); 2.5035 (0.5); 2.4622 (0.6); 2.4434 (0.6); 1.5722 (3.4); 1.1539 (2.7); 1.1351 (5.8); 1.1162 (2.7); -0.0002 (12.0)
I-111: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 9.2248 (4.4); 8.2196 (3.2); 7.4366 (0.7); 7.4321 (0.7); 7.4179 (0.8); 7.4158 (0.8); 7.4135 (0.9); 7.4114 (0.9); 7.3973 (0.8); 7.3928 (0.9); 7.3500 (1.1); 7.3458 (1.0); 7.3316 (1.3); 7.3273 (1.2); 7.2654 (0.5); 7.2613 (55.4); 7.2573 (1.0); 7.2565 (0.8); 7.0939 (0.9); 7.0914 (1.0); 7.0753 (1.6); 7.0728 (1.7); 7.0568 (0.8); 7.0542 (0.8); 7.0014 (1.2); 6.9992 (1.2); 6.9806 (1.1); 3.7498 (16.0); 2.1721 (0.9); 1.5826 (8.8); 1.1771 (4.2); 1.1582 (9.1); 1.1394 (4.1); 0.0079 (0.9); -0.0002 (35.8); -0.0028 (1.6); -0.0044 (0.7); -0.0052 (0.6); -0.0085 (1.1)
I-113: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 8.2874 (2.1); 8.2857 (4.0); 8.2840 (2.1); 7.3665 (0.8); 7.3635 (0.9); 7.3491 (1.2); 7.3454 (1.3); 7.3235 (1.6); 7.3102 (1.0); 7.3083 (1.0); 7.2928 (1.0); 7.2889 (1.0); 7.2743 (0.5); 7.2713 (0.6); 7.2601 (44.9); 7.2186 (1.2); 7.2154 (1.3); 7.2002 (0.8); 7.1967 (0.8); 2.6425 (0.9); 2.6239 (1.0); 2.0952 (10.7); 1.5378 (16.0); 1.1853 (4.8); 1.1665 (10.3); 1.1477 (4.7); 0.0080 (1.8); -0.0002 (70.5); -0.0062 (0.6); -0.0085 (2.0)
I-114: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 9.3494 (13.3); 8.4736 (16.0); 7.3428 (0.9); 7.3383 (2.2); 7.3346 (0.6); 7.3287 (0.8); 7.3238 (2.7); 7.3193 (4.3); 7.3177 (3.4); 7.3126 (1.0); 7.3100 (1.1); 7.3049 (1.7); 7.3033 (2.6); 7.3012 (2.7); 7.2962 (1.7); 7.2942 (1.0); 7.2917 (1.0); 7.2781 (1.5); 7.2733 (1.0); 7.2615 (22.0); 7.2564 (0.5); 7.2540 (1.8); 7.2509 (1.6); 7.2422 (1.6); 7.2392 (1.6); 7.2368 (1.2); 7.2320 (1.4); 7.2295 (1.1); 7.2235 (1.2); 7.2204 (1.4); 7.2184 (1.1); 7.2144 (0.8); 7.2110 (0.8); 7.2027 (0.7); 7.1993 (0.7); 2.0455 (0.7); 1.3336 (0.8); 1.2840 (1.2); 1.2593 (1.1); 1.2561 (1.1); 0.8817 (0.6); 0.0079 (0.9); -0.0002 (32.7); -0.0085 (0.9)
I-115: ^{1}H-NMR(400.2 MHz, d_6-DMSO): δ= 8.4412 (3.7); 8.4396 (3.6); 7.6019 (1.8); 7.5979 (2.5); 7.5928 (0.9); 7.5849 (1.8); 7.5811 (3.6); 7.5779 (3.0); 7.5724 (0.6); 7.5289 (1.1); 7.5249 (1.5); 7.5202 (0.7); 7.5075 (3.5); 7.5035 (1.6); 7.4925 (1.2); 7.4893 (2.2); 7.4775 (1.1); 7.4737 (1.8); 7.4700 (1.0); 7.4629 (0.6); 7.4561 (1.6); 7.4482 (0.4); 7.4381 (0.4); 3.3278 (6.2); 2.8559 (16.0); 2.5126 (3.3); 2.5082 (6.7); 2.5037 (9.1); 2.4992 (6.6); 2.4948 (3.3); 2.4102 (11.8); 2.0775 (0.4); 0.0006 (7.3); -0.0076 (0.3)

I-118: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 9.3476 (16.0); 8.4220 (11.9); 8.4010 (12.8); 7.9702 (4.7); 7.9676 (7.3); 7.9633 (3.3); 7.9613 (3.5); 7.9570 (3.6); 7.9542 (3.8); 7.9515 (4.5); 7.9478 (3.1); 7.9414 (2.8); 7.9354 (3.0); 7.9313 (2.0); 7.8797 (10.2); 7.8587 (9.4); 7.5197 (0.6); 7.5044 (2.7); 7.4893 (2.4); 7.4837 (5.5); 7.4690 (4.1); 7.4633 (2.9); 7.4493 (2.3); 7.2607 (116.6); 7.1788 (1.7); 7.1762 (1.8); 7.1725 (1.7); 7.1699 (1.6); 7.1580 (3.3); 7.1556 (3.3); 7.1515 (3.1); 7.1491 (3.1); 7.1372 (1.6); 7.1348 (1.6); 7.1307 (1.6); 7.1284 (1.4); 6.9967 (0.6); 1.5589 (8.7); 0.0080 (2.3); -0.0002 (85.2); -0.0085 (2.4)
I-119: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 8.3378 (3.4); 7.4884 (0.6); 7.4745 (0.9); 7.4700 (1.3); 7.4619 (0.7); 7.4557 (0.8); 7.4525 (0.8); 7.4483 (0.8); 7.4417 (0.7); 7.2999 (0.9); 7.2972 (1.0); 7.2810 (1.4); 7.2784 (1.6); 7.2610 (44.9); 7.2021 (0.6); 7.1782 (0.9); 7.1558 (0.6); 3.7049 (0.5); 3.1379 (16.0); 2.7653 (1.5); 2.7464 (1.6); 2.7275 (0.5); 1.5471 (1.1); 1.2273 (2.9); 1.2084 (6.0); 1.1896 (2.8); 0.0080 (0.9); -0.0002 (36.4); -0.0085 (1.1)
I-120: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 7.9748 (2.4); 7.9732 (2.4); 7.5621 (2.5); 7.5571 (0.9); 7.5458 (1.0); 7.5406 (3.8); 7.5347 (0.5); 7.4463 (0.5); 7.4403 (3.8); 7.4352 (1.0); 7.4238 (0.9); 7.4189 (2.6); 7.2608 (42.0); 2.9567 (1.0); 2.8842 (0.9); 2.8638 (16.0); 2.4431 (8.6); 2.4418 (8.7); 2.0454 (0.7); 1.5494 (2.8); 0.0079 (0.6); -0.0002 (24.9); -0.0085 (0.7)
I-121: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 8.2856 (2.7); 8.2839 (2.7); 7.3422 (0.8); 7.3287 (1.3); 7.3249 (1.4); 7.3143 (1.6); 7.3010 (1.0); 7.2839 (1.0); 7.2604 (76.6); 7.2131 (1.2); 7.1972 (0.8); 3.1415 (16.0); 2.7761 (0.6); 2.2871 (9.6); 2.2856 (9.7); 2.1210 (10.3); 0.0079 (1.2); -0.0002 (44.3); -0.0085 (1.4)
I-122: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 9.2611 (14.1); 9.2500 (0.6); 8.2320 (7.8); 8.2302 (8.0); 7.5559 (1.7); 7.5397 (1.8); 7.5349 (3.4); 7.5187 (3.8); 7.5139 (2.0); 7.4976 (1.8); 7.2603 (64.3); 7.0549 (1.2); 7.0526 (1.3); 7.0486 (1.4); 7.0463 (1.3); 7.0326 (2.0); 7.0265 (2.3); 7.0133 (1.2); 7.0111 (1.2); 7.0071 (1.3); 7.0049 (1.3); 6.9558 (1.9); 6.9496 (1.7); 6.9335 (2.2); 6.9309 (2.3); 6.9274 (2.0); 6.9247 (1.9); 6.9087 (1.9); 6.9025 (1.7); 3.2487 (0.7); 2.4035 (14.5); 2.4018 (16.0); 2.3989 (15.6); 2.3972 (15.0); 1.5509 (7.5); 1.3850 (0.8); 1.2551 (0.7); 0.8821 (0.7); 0.0079 (2.8); -0.0002 (92.6); -0.0085 (2.9)
I-123: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 8.2368 (2.2); 8.2347 (2.2); 7.4667 (0.5); 7.4623 (0.6); 7.4480 (0.6); 7.4459 (0.7); 7.4437 (0.8); 7.4415 (0.8); 7.4273 (0.6); 7.4229 (0.7); 7.3589 (0.9); 7.3546 (0.9); 7.3403 (1.1); 7.3360 (1.0); 7.2606 (31.5); 7.1127 (0.7); 7.1103 (0.8); 7.0941 (1.3); 7.0917 (1.4); 7.0755 (0.6); 7.0731 (0.6); 7.0147 (1.0); 6.9958 (1.0); 3.7741 (13.0); 3.4834 (16.0); 2.3701 (7.6); 2.3681 (7.9); 1.5430 (13.2); 0.0080 (1.2); -0.0002 (42.4); -0.0085 (1.3)
I-124: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 9.2144 (4.5); 8.1673 (2.6); 8.1655 (2.6); 7.4389 (0.6); 7.4345 (0.7); 7.4202 (0.8); 7.4181 (0.9); 7.4159 (1.0); 7.4138 (0.9); 7.3996 (0.7); 7.3952 (0.9); 7.3767 (1.2); 7.3723 (1.1); 7.3581 (1.5); 7.3537 (1.2); 7.2605 (16.6); 7.1030 (0.9); 7.1006 (0.9); 7.0844 (1.6); 7.0820 (1.6); 7.0658 (0.7); 7.0634 (0.7); 7.0052 (1.4); 6.9843 (1.2); 3.7724 (16.0); 2.3176 (9.6); 2.3160 (9.8); 1.5652 (8.1); 0.0080 (0.5); -0.0002 (20.4); -0.0085 (0.6)
I-125: ^{1}H-NMR(599.6 MHz, CDCl3): δ= 8.0168 (1.0); 7.9794 (11.5); 7.5870 (0.4); 7.3978 (2.0); 7.3949 (2.1); 7.3852 (2.8); 7.3839 (3.2); 7.3824 (3.4); 7.3812 (3.0); 7.3715 (2.2); 7.3686 (2.4); 7.3171 (3.9); 7.3144 (3.7); 7.3048 (4.3); 7.3020 (3.9); 7.2617 (14.5); 7.0537 (2.7); 7.0522 (2.8); 7.0413 (5.0); 7.0398 (5.1); 7.0290 (2.4); 7.0274 (2.4); 7.0133 (0.3); 6.9692 (4.8); 6.9554 (4.5); 3.8719 (1.2); 3.7970 (0.4); 3.7738 (1.2); 3.7570 (1.9); 3.7346 (44.0); 3.7178 (0.7); 3.6955 (0.4); 2.9540 (8.2); 2.8828 (7.2); 2.8823 (7.2); 2.8460 (1.8); 2.8407 (50.0); 2.6482 (0.9); 2.6461 (0.9); 2.6374 (0.5); 2.6255 (1.0); 2.6129 (1.5); 2.6004 (1.4); 2.5880 (0.6); 2.5737 (0.6); 2.5611 (1.4); 2.5486 (1.6); 2.5362 (1.0); 2.5262 (0.7); 1.5981 (10.5); 1.2558 (0.8); 1.1431 (0.6); 1.1354 (11.1); 1.1228 (22.8); 1.1102 (11.1); 1.0984 (0.6); 1.0858 (0.3); 1.0317 (0.5); 1.0191 (1.0); 1.0065 (0.5); 0.0053 (0.5); -0.0001 (12.9); -0.0056 (0.4)
I-126: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 8.3416 (3.0); 7.8282 (0.7); 7.8098 (0.9); 7.6566 (0.8); 7.6385 (0.7); 7.6202 (0.6); 7.6014 (0.7); 7.3649 (0.9); 7.3463 (0.8); 7.2616 (24.3); 3.5019 (16.0); 2.6299 (0.7); 2.6113 (0.6); 2.5744 (0.6); 2.5555 (0.7); 1.2253 (3.1); 1.2064 (6.5); 1.1876 (3.0); -0.0002 (14.7)
I-127: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 9.3417 (10.6); 8.4576 (16.0); 7.5838 (1.5); 7.5678 (1.6); 7.5629 (2.7); 7.5470 (2.7); 7.5421 (1.8); 7.5262 (1.6); 7.2610 (31.9); 7.0594 (1.0); 7.0570 (1.1); 7.0531 (1.2); 7.0508 (1.3); 7.0372 (1.8); 7.0313 (2.2); 7.0179 (1.0); 7.0156 (1.0); 7.0117 (1.2); 7.0095 (1.2); 6.9754 (1.8); 6.9692 (1.5); 6.9531 (2.0); 6.9508 (2.1); 6.9470 (1.8); 6.9447 (1.8); 6.9285 (1.8); 6.9224 (1.5); 5.3001 (1.6); 2.2102 (1.0); 1.2540 (1.6); 0.0080 (1.3); -0.0002 (47.0); -0.0084 (1.6)
I-129: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 9.3513 (7.0); 8.6687 (7.9); 8.6358 (1.6); 8.6314 (1.7); 8.6235 (1.7); 8.6192 (1.8); 8.4922 (0.6); 7.6425 (1.4); 7.6382 (1.5); 7.6234 (1.7); 7.6191 (1.7); 7.2846 (1.2); 7.2722 (1.4); 7.2625 (15.3); 7.2532 (1.5); 5.3003 (1.2); 3.0136 (1.0); 2.9424 (0.7); 2.9247 (1.6); 2.4287 (16.0); 2.4037 (0.8); 2.0841 (0.8); 2.0456 (1.2); 1.2596 (0.7); 0.0079 (0.6); -0.0002 (22.1); -0.0084 (1.0)
I-131: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 8.3336 (2.2); 8.3316 (2.3); 7.4741 (2.8); 7.4609 (2.9); 7.2606 (33.6); 7.0517 (2.9); 7.0384 (2.8); 3.4980 (16.0); 2.5504 (7.9); 2.5485 (8.1); 2.0458 (0.8); 1.5433 (1.5); 0.0080 (1.3); -0.0002 (45.4); -0.0085 (1.5)
I-135: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 9.3118 (5.0); 9.3019 (5.5); 8.6170 (6.6); 8.6144 (5.9); 7.2630 (6.7); 7.1763 (1.2); 7.1632 (3.2); 7.1475 (4.7); 7.1448 (0.7); 7.1344 (1.8); 7.1313 (0.5); 7.1191 (3.9); 5.2993 (1.1); 2.8171 (1.9); 2.6482 (0.6); 2.4668 (16.0); 2.3885 (14.3); 2.2271 (0.5); -0.0002 (10.5)
I-136: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 9.3515 (4.1); 8.6587 (4.8); 7.2615 (5.9); 2.0083 (0.6); 1.9982 (16.0); -0.0002 (8.9)

I-137: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 9.2710 (6.9); 8.2521 (4.2); 8.2502 (4.0); 7.4340 (5.5); 7.4206 (6.0); 7.2627 (7.8); 7.0289 (6.0); 7.0156 (5.5); 5.2997 (1.9); 2.4883 (16.0); 2.4865 (15.2); 1.2546 (0.7); -0.0002 (10.9)
I-138: ^{1}H-NMR(400.6 MHz, d_6-DMSO): δ= 9.7533 (15.0); 9.1376 (16.0); 7.2643 (11.0); 3.3227 (36.9); 2.5426 (1.6); 2.5259 (1.0); 2.5212 (1.3); 2.5125 (17.8); 2.5079 (39.0); 2.5033 (54.4); 2.4988 (37.2); 2.4942 (16.4); 2.3515 (0.6); 2.2926 (33.3); 0.0080 (0.6); -0.0002 (20.6); -0.0085 (0.6)
I-139: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 9.3240 (5.5); 8.6301 (6.2); 7.4388 (4.2); 7.2613 (7.3); 2.1240 (16.0); 2.0081 (0.6); -0.0002 (10.8)
I-141: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 9.3110 (10.1); 8.6246 (11.6); 7.4875 (3.6); 7.4796 (3.8); 7.2611 (12.7); 7.0576 (0.9); 7.0552 (2.4); 7.0526 (2.5); 7.0499 (1.7); 7.0472 (2.5); 7.0446 (2.4); 7.0422 (0.9); 2.2167 (16.0); 2.2143 (16.0); 2.0074 (0.6); 0.0079 (0.6); -0.0002 (19.1); -0.0085 (0.6)
I-144: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 8.1646 (2.2); 8.1626 (2.2); 7.2608 (60.4); 5.8762 (0.7); 5.8716 (1.0); 5.8670 (0.7); 3.1165 (16.0); 2.5125 (8.2); 2.5106 (8.5); 2.4659 (0.5); 2.4610 (0.6); 2.4457 (0.6); 2.4409 (0.5); 2.2530 (0.8); 2.2466 (0.9); 2.2375 (1.0); 2.2312 (0.7); 1.8419 (0.6); 1.8337 (0.7); 1.8283 (0.8); 1.8188 (0.8); 1.8136 (0.9); 1.7509 (0.9); 1.7459 (0.7); 1.7362 (0.8); 1.7310 (0.6); 1.7224 (0.6); 1.5442 (3.2); 0.0079 (2.3); 0.0046 (0.8); -0.0002 (86.1); -0.0059 (1.0); -0.0068 (0.9); -0.0085 (2.5)
I-145: ^{1}H-NMR(599.6 MHz, CDCl3): δ= 9.1838 (24.1); 8.1342 (22.6); 7.2645 (16.1); 5.8148 (9.4); 4.1279 (0.8); 4.1159 (0.8); 3.4770 (0.3); 2.8630 (5.9); 2.8505 (17.6); 2.8379 (17.9); 2.8253 (6.1); 2.4437 (12.3); 2.4407 (12.4); 2.2354 (9.0); 2.2311 (11.5); 2.2256 (11.6); 2.2213 (9.1); 2.1708 (1.4); 2.0446 (3.4); 2.0065 (2.4); 1.8541 (2.9); 1.8442 (8.0); 1.8347 (11.7); 1.8249 (10.5); 1.8148 (4.0); 1.7982 (0.4); 1.7889 (0.4); 1.7645 (4.3); 1.7545 (10.9); 1.7446 (11.6); 1.7352 (7.6); 1.7251 (2.6); 1.6541 (50.0); 1.3128 (0.7); 1.3005 (1.6); 1.2878 (21.4); 1.2752 (40.6); 1.2627 (22.5); 1.2474 (1.9); 1.1674 (0.3); 0.8932 (2.2); 0.8819 (4.6); 0.8700 (2.3); -0.0001 (0.9)
I-146: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 7.8554 (2.0); 7.8537 (2.0); 7.2632 (5.3); 5.8040 (0.6); 5.7994 (0.9); 5.7947 (0.6); 2.9567 (1.4); 2.8849 (1.2); 2.8835 (1.1); 2.8426 (16.0); 2.4303 (0.7); 2.4235 (0.9); 2.4181 (1.2); 2.4132 (8.5); 2.4115 (7.9); 2.4035 (0.7); 2.2224 (0.8); 2.2160 (0.9); 2.2068 (0.9); 2.2004 (0.7); 1.8187 (0.6); 1.8104 (0.6); 1.8049 (0.8); 1.7955 (0.7); 1.7905 (0.8); 1.7294 (0.8); 1.7244 (0.7); 1.7150 (0.8); 1.7095 (0.6); 1.5846 (0.8); -0.0002 (7.6)
I-147: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 8.1988 (3.3); 7.2618 (33.5); 5.8382 (0.5); 5.8335 (0.8); 5.8288 (1.1); 5.8241 (0.8); 5.8192 (0.5); 3.4781 (0.6); 3.3154 (0.7); 3.1164 (16.0); 2.8984 (0.7); 2.8796 (2.2); 2.8610 (2.2); 2.8413 (0.8); 2.7105 (0.7); 2.4491 (0.7); 2.4436 (0.7); 2.4333 (0.7); 2.4276 (0.8); 2.2404 (0.9); 2.2338 (1.0); 2.2249 (1.1); 2.2187 (0.8); 1.8453 (0.7); 1.8367 (0.8); 1.8315 (1.0); 1.8220 (0.9); 1.8165 (1.0); 1.7531 (1.1); 1.7480 (0.9); 1.7383 (1.0); 1.7330 (0.8); 1.7251 (0.7); 1.3102 (3.6); 1.2914 (7.7); 1.2726 (3.6); 0.0080 (0.7); -0.0002 (28.2); -0.0085 (0.8)
I-148: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 8.1998 (3.5); 7.4211 (0.5); 7.2608 (81.1); 5.8387 (0.6); 5.8343 (0.8); 5.8296 (1.2); 5.8248 (0.9); 5.8200 (0.6); 3.1166 (16.0); 2.8987 (0.8); 2.8797 (2.3); 2.8609 (2.5); 2.8424 (0.8); 2.4340 (0.8); 2.4281 (0.8); 2.2409 (1.0); 2.2343 (1.2); 2.2252 (1.2); 2.2188 (0.9); 1.8458 (0.8); 1.8371 (0.9); 1.8316 (1.1); 1.8223 (1.0); 1.8170 (1.1); 1.8025 (0.5); 1.7683 (0.6); 1.7535 (1.2); 1.7483 (1.0); 1.7387 (1.2); 1.7255 (0.8); 1.3107 (3.6); 1.2919 (7.6); 1.2731 (3.6); 1.2549 (1.0); 0.0079 (1.2); -0.0002 (46.9); -0.0085 (1.5)
I-149: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 7.8926 (3.2); 7.2606 (17.1); 5.7763 (0.5); 5.7715 (0.7); 5.7670 (1.0); 5.7623 (0.7); 2.9561 (1.0); 2.8839 (0.8); 2.8435 (16.0); 2.7996 (0.7); 2.7808 (2.3); 2.7621 (2.3); 2.7432 (0.8); 2.6471 (1.0); 2.4118 (1.0); 2.4063 (1.1); 2.3915 (0.6); 2.2110 (0.9); 2.2046 (1.0); 2.1955 (1.1); 2.1891 (0.8); 1.8215 (0.6); 1.8132 (0.7); 1.8077 (1.0); 1.7983 (0.8); 1.7931 (1.0); 1.7312 (1.0); 1.7264 (0.8); 1.7172 (1.0); 1.7114 (0.7); 1.7031 (0.6); 1.5481 (2.2); 1.2561 (3.4); 1.2373 (7.0); 1.2184 (3.4); 0.0080 (0.5); -0.0002 (21.7); -0.0085 (0.7)
I-150: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 8.1721 (2.1); 8.1700 (2.1); 7.2623 (12.2); 3.4879 (16.0); 3.4558 (0.7); 3.4537 (0.7); 3.4481 (0.7); 2.6747 (7.3); 2.6726 (7.5); 2.1101 (0.8); 2.1052 (0.7); 2.0928 (0.7); 1.5538 (0.5); -0.0002 (17.3); -0.0085 (0.6)
I-151: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 9.1987 (7.1); 8.0845 (4.4); 8.0828 (4.3); 7.2616 (41.2); 3.4801 (2.0); 3.4718 (2.0); 2.6225 (16.0); 2.6212 (15.9); 2.3084 (0.7); 2.2947 (0.5); 2.2870 (0.6); 2.2714 (1.0); 2.2579 (0.6); 2.1428 (1.3); 2.1285 (1.6); 2.1174 (1.1); 2.1106 (1.4); 2.1054 (0.9); 2.0919 (0.9); 2.0812 (1.1); 2.0631 (0.8); 1.6099 (0.7); 1.5966 (0.8); 1.5839 (1.0); 1.5722 (15.6); 1.5494 (1.0); 1.5321 (1.0); 1.5128 (0.9); 1.5052 (0.7); 1.4946 (0.8); 1.4843 (0.8); 1.4692 (0.7); 1.2550 (0.5); 0.0079 (1.0); -0.0002 (27.7); -0.0085 (0.9)
I-155: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 9.7914 (0.6); 7.6565 (8.0); 7.6551 (8.0); 7.5188 (0.7); 7.4781 (1.0); 7.4736 (1.0); 7.4652 (1.1); 7.4600 (1.9); 7.4393 (1.9); 7.4345 (1.4); 7.4260 (1.2); 7.4213 (1.4); 7.4068 (1.6); 7.4022 (1.4); 7.3879 (3.2); 7.3836 (2.9); 7.3696 (2.2); 7.3649 (1.7); 7.2986 (2.9); 7.2959 (3.0); 7.2799 (4.0); 7.2772 (4.2); 7.2600 (125.9); 7.1963 (2.0); 7.1719 (2.8); 7.1482 (1.7); 6.9960 (0.7); 2.2839 (16.0); 2.2808 (15.5); 2.1721 (1.1); 1.5475 (9.5); 0.1460 (0.6); 0.0079 (4.6); -0.0002 (160.9); -0.0085 (4.7); -0.1496 (0.6)

I-156: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 8.1661 (0.9); 8.0103 (16.0); 7.5189 (1.6); 7.5067 (0.8); 7.5021 (0.9); 7.4937 (0.9); 7.4888 (1.6); 7.4858 (1.2); 7.4836 (1.4); 7.4813 (1.3); 7.4751 (1.2); 7.4727 (1.2); 7.4705 (1.4); 7.4679 (1.8); 7.4628 (1.4); 7.4544 (1.2); 7.4498 (1.2); 7.4187 (1.3); 7.4142 (1.3); 7.3998 (2.7); 7.3953 (2.4); 7.3817 (1.9); 7.3772 (1.6); 7.2970 (2.7); 7.2943 (3.1); 7.2784 (3.5); 7.2756 (3.8); 7.2708 (0.6); 7.2674 (0.6); 7.2659 (1.4); 7.2604 (304.3); 7.2570 (9.4); 7.2554 (4.9); 7.2545 (3.9); 7.2537 (3.4); 7.2529 (3.1); 7.2521 (2.6); 7.2506 (1.7); 7.2497 (1.6); 7.2489 (1.7); 7.2482 (1.6); 7.2465 (1.0); 7.2457 (1.0); 7.2449 (1.0); 7.2441 (1.1); 7.2426 (1.0); 7.2410 (0.6); 7.2370 (0.6); 7.2355 (0.6); 7.2338 (1.0); 7.2326 (1.2); 7.2091 (2.0); 7.2067 (1.8); 7.1878 (1.9); 7.1847 (3.0); 7.1819 (1.9); 7.1633 (1.7); 7.1611 (1.5); 6.9968 (1.6); 2.9580 (3.0); 2.8879 (2.6); 2.8865 (2.3); 2.1727 (2.5); 1.5704 (2.5); 0.1460 (0.5); 0.0109 (0.6); 0.0102 (1.0); 0.0079 (5.1); 0.0063 (1.2); 0.0055 (1.6); 0.0046 (2.0); -0.0002 (182.0); -0.0027 (9.0); -0.0044 (4.2); -0.0052 (3.0); -0.0060 (2.8); -0.0069 (3.0); -0.0085 (5.9); -0.0108 (1.1); -0.0116 (1.1); -0.0124 (1.1); -0.0131 (0.9); -0.0139 (0.6); -0.0148 (0.6); -0.0156 (0.6); -0.0164 (0.7); -0.0171 (0.6); -0.0179 (0.5); -0.0281 (0.8); -0.1493 (0.6)
I-157: ^{1}H-NMR(400.0 MHz, d_6-DMSO): δ= 8.5543 (2.1); 7.9526 (1.7); 7.6544 (0.7); 7.6506 (0.5); 7.5819 (0.7); 7.5780 (0.8); 7.5640 (1.0); 7.5584 (1.6); 3.3620 (0.7); 3.2968 (1.8); 3.1728 (1.3); 3.1710 (1.4); 2.8902 (16.0); 2.7302 (12.7); 2.5103 (10.4); 2.5059 (21.5); 2.5014 (29.2); 2.4969 (21.4); 2.4925 (10.5); 0.0079 (1.1); -0.0002 (24.9); -0.0085 (1.1)
I-158: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 7.6928 (6.3); 7.3631 (0.5); 7.3445 (1.3); 7.3301 (1.9); 7.3265 (2.0); 7.3083 (2.4); 7.2952 (1.7); 7.2936 (1.6); 7.2879 (1.0); 7.2780 (1.5); 7.2739 (1.4); 7.2603 (62.9); 7.1708 (1.8); 7.1554 (1.3); 7.1520 (1.3); 2.4775 (0.9); 2.4614 (0.9); 2.1724 (2.6); 2.1591 (0.6); 2.0866 (16.0); 1.5590 (1.9); 1.1074 (6.8); 1.0885 (14.8); 1.0697 (6.6); 0.0080 (1.7); -0.0002 (65.6); -0.0085 (1.9)
I-159: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 7.6531 (4.4); 7.6516 (4.4); 7.4655 (0.7); 7.4508 (0.8); 7.4455 (1.3); 7.4311 (1.4); 7.4255 (1.0); 7.4110 (1.0); 7.3005 (1.3); 7.2968 (1.8); 7.2941 (1.5); 7.2813 (1.1); 7.2776 (1.5); 7.2749 (1.2); 7.2602 (20.9); 7.2369 (0.9); 7.2307 (1.2); 7.2266 (0.9); 7.2129 (0.9); 7.2068 (1.1); 7.2028 (0.9); 7.1628 (0.7); 7.1604 (0.7); 7.1563 (0.6); 7.1540 (0.6); 7.1415 (1.2); 7.1393 (1.2); 7.1351 (1.0); 7.1206 (0.6); 7.1183 (0.6); 2.4018 (15.9); 2.4007 (16.0); 1.5746 (1.1); 0.0080 (0.8); -0.0002 (27.1); -0.0085 (0.8)
I-160: ^{1}H-NMR(599.6 MHz, CDCl3): δ= 7.6627 (5.6); 7.4393 (0.9); 7.4364 (1.0); 7.4321 (0.4); 7.4254 (1.6); 7.4240 (1.6); 7.4129 (1.1); 7.4100 (1.1); 7.2603 (42.9); 7.2241 (1.7); 7.2213 (1.7); 7.2117 (2.1); 7.2090 (2.0); 7.0804 (1.4); 7.0790 (1.4); 7.0680 (2.4); 7.0666 (2.4); 7.0556 (1.1); 7.0541 (1.1); 7.0046 (2.4); 6.9908 (2.2); 3.8632 (0.6); 3.7668 (21.4); 3.7500 (0.4); 2.9563 (1.7); 2.8851 (1.5); 2.5077 (0.8); 1.5611 (5.5); 1.2553 (0.7); 1.2427 (0.6); 1.1138 (5.4); 1.1012 (11.2); 1.0886 (5.3); 0.0053 (2.1); -0.0001 (50.0); -0.0056 (1.6)
I-161: ^{1}H-NMR(599.6 MHz, CDCl3): δ= 9.7707 (0.5); 7.8132 (1.9); 7.8000 (2.2); 7.6967 (5.8); 7.6538 (0.8); 7.6413 (2.0); 7.6291 (1.3); 7.5991 (1.4); 7.5863 (1.8); 7.5736 (0.7); 7.3242 (2.1); 7.3117 (1.9); 7.2604 (48.4); 2.4755 (0.5); 2.4631 (0.7); 2.4503 (0.6); 2.3935 (0.6); 2.3809 (0.7); 2.3686 (0.5); 2.1714 (1.3); 1.5576 (50.0); 1.2796 (0.3); 1.2657 (0.4); 1.2547 (1.2); 1.1251 (5.3); 1.1125 (10.7); 1.0998 (5.2); 0.0053 (2.0); -0.0001 (48.8)
I-162: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 7.6925 (7.7); 7.5196 (0.5); 7.4958 (0.7); 7.4752 (2.8); 7.4712 (1.9); 7.4635 (11.8); 7.4589 (16.0); 7.4513 (2.4); 7.4489 (2.3); 7.4411 (2.0); 7.2606 (93.7); 2.7395 (1.7); 2.7207 (5.4); 2.7018 (5.6); 2.6832 (1.9); 1.1904 (7.6); 1.1715 (16.0); 1.1527 (7.4); 0.0080 (1.9); -0.0002 (74.3); -0.0085 (2.4)
I-163: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 7.6423 (3.2); 7.4457 (16.0); 7.2601 (25.3); 2.3890 (11.4); 2.1726 (1.1); 0.0080 (0.8); -0.0002 (33.1); -0.0084 (1.0)
I-164: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 7.5530 (2.8); 7.4647 (1.3); 7.4583 (1.4); 7.4428 (1.4); 7.4364 (1.6); 7.3471 (2.7); 7.3408 (2.4); 7.2605 (13.2); 6.8378 (2.4); 6.8158 (2.2); 4.8079 (1.2); 3.7587 (16.0); 1.9894 (11.9); 1.2544 (1.6); 0.0081 (0.6); -0.0002 (21.6); -0.0081 (0.8)
I-165: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 7.7048 (10.0); 7.5189 (0.7); 7.4740 (0.8); 7.4694 (0.9); 7.4610 (1.0); 7.4559 (1.7); 7.4534 (1.2); 7.4510 (1.3); 7.4487 (1.2); 7.4426 (1.1); 7.4402 (1.1); 7.4379 (1.4); 7.4352 (1.9); 7.4303 (1.3); 7.4219 (1.1); 7.4172 (1.2); 7.3804 (1.2); 7.3758 (1.2); 7.3618 (2.8); 7.3573 (2.7); 7.3435 (2.0); 7.3388 (1.7); 7.2876 (3.3); 7.2848 (3.2); 7.2688 (3.8); 7.2660 (4.6); 7.2605 (125.2); 7.2503 (2.5); 7.2475 (2.2); 7.1908 (1.8); 7.1883 (1.8); 7.1700 (1.7); 7.1669 (2.8); 7.1640 (1.9); 7.1455 (1.5); 7.1429 (1.5); 6.9968 (0.7); 2.6196 (1.5); 2.6008 (4.6); 2.5820 (4.7); 2.5633 (1.6); 1.1548 (8.0); 1.1360 (16.0); 1.1171 (7.6); 0.0277 (0.7); 0.0080 (2.6); 0.0056 (1.0); 0.0047 (1.1); -0.0002 (90.4); -0.0084 (3.2); -0.0122 (0.6)
I-167: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 7.6968 (7.5); 7.4683 (0.8); 7.4534 (1.0); 7.4485 (1.9); 7.4339 (1.9); 7.4289 (1.2); 7.4144 (1.1); 7.2605 (47.8); 7.2534 (2.1); 7.2508 (2.5); 7.2471 (2.1); 7.2343 (1.5); 7.2306 (2.0); 7.2280 (1.6); 7.1928 (1.0); 7.1874 (1.6); 7.1833 (1.3); 7.1728 (1.2); 7.1704 (1.8); 7.1639 (2.1); 7.1598 (1.4); 7.1515 (1.7); 7.1453 (1.1); 7.1309 (0.9); 7.1285 (0.9); 7.1244 (0.6); 7.1220 (0.6); 2.7363 (1.6); 2.7174 (5.0); 2.6987 (5.2); 2.6799 (1.7); 2.1730 (1.6); 1.5627 (4.8); 1.2009 (7.5); 1.1821 (16.0); 1.1633 (7.4); 0.0079 (1.9); -0.0002 (63.0); -0.0085 (2.0)
I-168: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 7.9331 (2.8); 7.9285 (2.9); 7.9134 (5.6); 7.9089 (5.6); 7.8937 (3.0); 7.8893 (3.0); 7.8066 (9.0); 7.7860 (16.0); 7.7365 (9.0); 7.7324 (9.0); 7.7158 (5.2); 7.7118 (5.0); 7.4293 (1.4); 7.4246 (1.6); 7.4167 (1.6); 7.4112 (3.0); 7.4065 (2.5); 7.3967 (2.5); 7.3908 (3.2); 7.3856 (2.2); 7.3778 (2.1); 7.3732 (1.9); 7.2809 (4.2); 7.2781 (4.6); 7.2600 (25.0); 7.2430 (3.2); 7.2402 (3.2); 7.1789 (3.6); 7.1764 (3.5); 7.1582 (3.2); 7.1558 (3.2); 7.1502 (3.7); 7.1477 (3.5); 7.1295 (2.9); 7.1270 (2.8); 5.2990 (1.0); 1.2554 (0.9); 0.0076 (1.4); -0.0002 (29.6); -0.0086 (1.0)
I-169: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 7.6581 (4.3); 7.5120 (1.3); 7.5002 (1.2); 7.4944 (1.3); 7.4888 (2.1); 7.4201 (0.6); 7.4079 (2.2); 7.4053 (2.3); 7.4017 (2.4); 7.3948 (3.0); 7.3882 (2.4); 7.3827 (3.1); 7.3677 (1.2); 7.3076 (2.1); 7.3020 (1.4); 7.2950 (1.6); 7.2844 (1.4); 7.2603 (37.0); 2.2706 (1.5); 2.1997 (16.0); 2.1722 (1.6); 1.5531 (4.8); 0.0075 (5.2); -0.0002 (59.0); -0.0084 (3.6)

I-170: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 8.0327 (3.8); 8.0309 (3.8); 7.6582 (7.8); 7.6566 (7.9); 7.5191 (3.4); 7.4987 (1.5); 7.4825 (1.5); 7.4775 (0.9); 7.4618 (0.8); 7.4094 (1.6); 7.3935 (1.8); 7.3884 (3.2); 7.3725 (3.0); 7.3675 (2.0); 7.3516 (1.8); 7.2992 (0.6); 7.2939 (1.0); 7.2833 (0.9); 7.2761 (0.6); 7.2706 (1.0); 7.2606 (471.6); 7.2429 (0.7); 7.2328 (1.7); 7.2290 (1.0); 7.0468 (1.2); 7.0406 (1.8); 7.0358 (0.8); 7.0274 (2.2); 7.0210 (3.2); 7.0139 (1.5); 7.0079 (1.3); 7.0056 (1.2); 6.9970 (3.0); 6.9586 (1.8); 6.9526 (1.6); 6.9432 (1.0); 6.9368 (2.6); 6.9338 (2.3); 6.9305 (2.0); 6.9276 (1.8); 6.9119 (2.6); 6.9056 (1.8); 6.8963 (1.0); 6.8901 (0.8); 3.4929 (0.6); 2.9574 (0.6); 2.3457 (7.3); 2.3424 (7.5); 2.2764 (15.0); 2.2750 (16.0); 2.2717 (15.9); 2.2703 (15.4); 2.1725 (0.8); 1.5656 (4.7); 1.2562 (0.5); 0.1457 (1.1); 0.0383 (0.6); 0.0330 (0.8); 0.0224 (0.8); 0.0114 (0.9); 0.0080 (8.7); -0.0002 (357.2); -0.0085 (10.2); -0.0282 (1.2); -0.0319 (0.8); -0.1493 (1.1)
I-171: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 7.6562 (4.3); 7.6545 (4.2); 7.5189 (0.6); 7.3429 (1.1); 7.3292 (1.9); 7.3255 (2.0); 7.3129 (2.4); 7.3027 (1.2); 7.2984 (1.3); 7.2933 (0.8); 7.2854 (1.4); 7.2806 (1.2); 7.2685 (0.9); 7.2670 (1.2); 7.2662 (1.1); 7.2605 (99.2); 7.2531 (1.4); 7.2507 (1.2); 7.1611 (1.6); 7.1417 (1.2); 6.9968 (0.6); 2.1724 (1.2); 2.1509 (16.0); 2.1494 (15.5); 2.0984 (14.2); 0.0080 (2.2); -0.0002 (74.5); -0.0085 (2.4)
I-172: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 9.8458 (0.8); 7.7020 (10.0); 7.5192 (0.5); 7.3764 (1.3); 7.3607 (1.6); 7.3556 (2.8); 7.3395 (2.9); 7.3347 (1.8); 7.3185 (1.6); 7.2603 (110.5); 7.0362 (1.1); 7.0321 (1.2); 7.0166 (1.8); 7.0102 (2.0); 6.9966 (1.4); 6.9886 (1.0); 6.9536 (1.7); 6.9472 (1.5); 6.9314 (2.0); 6.9251 (1.7); 6.9070 (1.8); 6.9009 (1.4); 2.6030 (1.6); 2.5836 (4.8); 2.5645 (5.0); 2.5462 (1.7); 1.5526 (12.5); 1.1576 (8.0); 1.1388 (16.0); 1.1200 (7.6); 0.0079 (4.1); -0.0002 (136.6); -0.0085 (3.9)
I-173: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 7.8202 (1.4); 7.8187 (1.3); 7.8007 (1.6); 7.6710 (0.6); 7.6504 (5.9); 7.6487 (5.3); 7.6352 (1.1); 7.6032 (1.1); 7.5842 (1.3); 7.5661 (0.6); 7.3142 (1.6); 7.2972 (1.3); 7.2955 (1.5); 7.2939 (1.4); 7.2603 (65.3); 2.1181 (15.5); 2.1170 (16.0); 1.5554 (3.6); 0.0080 (2.3); -0.0002 (87.9); -0.0085 (2.8)
I-174: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 7.5448 (4.2); 7.5432 (4.2); 7.2614 (20.9); 5.8409 (0.8); 5.8359 (1.2); 5.8313 (1.8); 5.8267 (1.2); 5.8218 (0.9); 2.3623 (15.8); 2.3608 (16.0); 2.3295 (0.7); 2.3142 (1.6); 2.3091 (1.6); 2.3033 (1.1); 2.2991 (1.0); 2.2942 (1.0); 2.2882 (0.5); 2.2461 (0.7); 2.2433 (0.6); 2.2370 (1.4); 2.2307 (1.6); 2.2279 (1.4); 2.2214 (1.8); 2.2152 (1.3); 2.2060 (0.7); 1.8154 (1.0); 1.8071 (1.2); 1.8016 (1.6); 1.7923 (1.4); 1.7870 (1.4); 1.7775 (0.7); 1.7717 (0.6); 1.7467 (0.6); 1.7413 (0.7); 1.7319 (1.4); 1.7267 (1.4); 1.7171 (1.5); 1.7119 (1.2); 1.7035 (0.9); 0.0079 (0.8); -0.0002 (29.6); -0.0028 (1.5); -0.0044 (0.7); -0.0052 (0.5); -0.0085 (1.0)
I-175: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 7.6863 (7.3); 7.4565 (3.6); 7.4550 (2.3); 7.4509 (1.4); 7.4404 (2.1); 7.4348 (9.2); 7.4300 (1.9); 7.4158 (1.7); 7.4112 (9.2); 7.4054 (2.2); 7.3949 (1.4); 7.3907 (2.5); 7.3892 (3.7); 7.3844 (0.5); 7.2645 (0.5); 7.2637 (0.8); 7.2604 (62.3); 7.2564 (1.2); 7.2555 (1.0); 7.2547 (0.8); 7.2539 (0.7); 7.2531 (0.6); 2.7227 (1.4); 2.7041 (4.5); 2.6853 (4.6); 2.6663 (1.5); 2.1728 (0.6); 1.5597 (0.7); 1.1918 (7.1); 1.1730 (16.0); 1.1542 (7.0); 0.0080 (2.3); 0.0040 (0.8); -0.0002 (89.4); -0.0049 (1.3); -0.0057 (1.1); -0.0067 (1.0); -0.0085 (2.6)
I-176: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 7.8920 (0.5); 7.5890 (6.3); 7.2618 (69.6); 5.8137 (1.0); 5.8088 (1.5); 5.8042 (2.1); 5.7996 (1.5); 5.7948 (1.0); 2.8075 (0.9); 2.7326 (1.6); 2.7137 (5.1); 2.6949 (5.2); 2.6760 (1.8); 2.3224 (1.0); 2.3071 (2.2); 2.3020 (2.2); 2.2870 (1.3); 2.2457 (0.6); 2.2392 (1.0); 2.2302 (1.9); 2.2238 (2.2); 2.2146 (2.4); 2.2082 (1.8); 2.1993 (1.0); 2.1730 (2.1); 1.8372 (0.7); 1.8288 (0.8); 1.8225 (1.6); 1.8140 (1.8); 1.8084 (2.3); 1.7990 (1.9); 1.7939 (1.9); 1.7843 (1.1); 1.7783 (0.8); 1.7514 (0.9); 1.7467 (1.2); 1.7370 (2.2); 1.7320 (2.0); 1.7226 (2.2); 1.7172 (1.7); 1.7086 (1.4); 1.6942 (0.5); 1.2388 (7.6); 1.2200 (16.0); 1.2070 (0.8); 1.2011 (7.4); 1.1885 (1.1); 0.0080 (1.1); -0.0002 (41.1); -0.0085 (1.2)
I-177: ^{1}H-NMR(400.0 MHz, CDCl3): δ= 9.6736 (1.1); 8.0103 (16.0); 7.5234 (2.3); 7.5189 (4.7); 7.5037 (3.3); 7.5002 (4.3); 7.4447 (1.4); 7.4314 (3.8); 7.4264 (3.9); 7.4168 (3.2); 7.4134 (4.1); 7.4072 (3.5); 7.3984 (4.6); 7.3944 (4.5); 7.3802 (2.0); 7.3366 (4.1); 7.3318 (3.0); 7.3295 (2.6); 7.3185 (3.2); 7.3130 (2.4); 7.2600 (251.9); 6.9960 (1.4); 3.4937 (1.4); 2.1721 (15.3); 1.5434 (8.8); 0.0080 (8.2); -0.0002 (337.4); -0.0085 (10.4); -0.1492 (1.2)
I-178: ^{1}H-NMR(599.6 MHz, d_6-DMSO): δ= 8.9553 (2.3); 7.6172 (0.9); 7.6043 (1.2); 7.5357 (0.4); 7.5233 (1.0); 7.5069 (0.8); 7.4926 (1.1); 7.4805 (0.5); 7.4541 (1.2); 7.4418 (0.7); 4.2748 (4.1); 4.0180 (0.7); 3.3138 (21.3); 2.5011 (50.0); 2.3850 (0.3); 1.4366 (0.7); 1.4244 (3.7); 1.4035 (20.5); -0.0001 (8.3)
I-179: ^{1}H-NMR(599.6 MHz, d_6-DMSO): δ= 8.9486 (1.8); 7.6175 (0.9); 7.6048 (1.1); 7.5246 (1.0); 7.5094 (0.8); 7.4914 (1.0); 7.4797 (0.5); 7.4611 (1.2); 7.4490 (0.6); 5.7543 (1.0); 4.2945 (3.4); 4.0378 (0.6); 2.6142 (0.3); 2.5026 (50.0); 1.5349 (2.2); -0.0001 (4.6)
I-180: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 9.3304 (13.7); 8.6386 (16.0); 7.5206 (2.7); 7.5151 (1.6); 7.5111 (1.4); 7.5071 (1.2); 7.5055 (1.4); 7.5002 (3.0); 7.4961 (2.8); 7.4931 (1.5); 7.4445 (1.1); 7.4363 (1.3); 7.4298 (1.3); 7.4263 (2.2); 7.4216 (5.5); 7.4157 (8.4); 7.4120 (6.9); 7.4106 (6.7); 7.4076 (10.4); 7.4015 (2.3); 7.3975 (1.7); 7.3920 (0.7); 7.2605 (45.6); 1.5493 (6.0); 0.0080 (1.8); 0.0047 (0.5); -0.0002 (66.4); -0.0067 (1.0); -0.0085 (2.1)
I-182: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 9.3646 (1.4); 8.4421 (1.0); 8.4211 (1.1); 8.0062 (0.6); 7.9686 (0.5); 7.9634 (0.5); 7.2602 (47.5); 7.2552 (1.2); 7.2480 (0.6); 7.2435 (0.7); 7.2306 (0.6); 1.5383 (16.0); 0.0080 (1.7); -0.0002 (63.7); -0.0085 (1.9)

I-188: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 9.3460 (1.7); 9.2856 (13.7); 8.8818 (16.0); 8.4074 (1.1); 8.3864 (1.2); 8.2588 (0.5); 8.2541 (0.5); 8.1922 (0.6); 8.1703 (0.7); 8.1693 (0.7); 7.9822 (0.5); 7.9771 (0.6); 7.9612 (0.5); 7.9561 (0.5); 7.5198 (0.6); 7.4989 (0.9); 7.4943 (1.1); 7.4858 (0.8); 7.4810 (1.5); 7.4757 (2.8); 7.4743 (3.6); 7.4714 (1.2); 7.4674 (1.2); 7.4653 (0.9); 7.4628 (1.5); 7.4607 (1.8); 7.4566 (5.0); 7.4547 (3.2); 7.4524 (2.2); 7.4473 (0.9); 7.4426 (2.0); 7.4386 (2.2); 7.4373 (2.3); 7.4341 (1.6); 7.3173 (0.6); 7.3142 (0.6); 7.3062 (2.9); 7.3034 (3.0); 7.2957 (0.5); 7.2874 (3.9); 7.2854 (3.0); 7.2839 (2.4); 7.2710 (0.5); 7.2686 (2.2); 7.2658 (2.1); 7.2613 (77.3); 7.2555 (1.1); 7.2547 (1.0); 7.2539 (1.0); 7.2531 (1.0); 7.2501 (0.8); 7.2101 (1.5); 7.2084 (1.6); 7.2076 (1.5); 7.2052 (1.0); 7.1990 (0.5); 7.1935 (0.8); 7.1900 (1.6); 7.1882 (2.0); 7.1856 (2.7); 7.1829 (1.7); 7.1817 (1.5); 7.1728 (0.6); 7.1697 (0.9); 7.1651 (1.6); 7.1641 (1.6); 7.1630 (1.4); 7.1615 (1.2); 2.9296 (0.6); 2.2484 (1.5); 2.1894 (4.6); 2.0873 (15.5); 2.0455 (0.8); 1.2591 (0.6); 0.0080 (1.2); -0.0002 (47.9); -0.0085 (1.3)
I-189: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 9.3428 (13.4); 8.4675 (16.0); 7.4813 (9.3); 7.4680 (9.6); 7.2604 (74.9); 7.0548 (9.8); 7.0415 (9.3); 1.5440 (5.8); 0.0079 (3.3); -0.0002 (112.9); -0.0085 (3.2)
I-190: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 9.3355 (5.4); 8.4530 (16.0); 8.4097 (0.6); 7.5197 (0.6); 7.2695 (0.5); 7.2612 (115.9); 7.2188 (5.3); 7.2045 (9.8); 7.1940 (0.6); 7.1756 (9.1); 7.1612 (5.2); 6.9976 (0.7); 5.3001 (1.1); 1.5653 (1.5); 1.2546 (3.3); 0.8797 (0.7); 0.0080 (2.0); -0.0002 (68.7); -0.0085 (2.1)
I-192: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 9.3313 (1.4); 9.2975 (13.5); 8.4505 (1.6); 8.4068 (16.0); 8.4009 (0.7); 8.1797 (4.2); 8.1764 (4.4); 8.1722 (4.4); 8.1690 (4.4); 7.8814 (4.8); 7.8782 (4.7); 7.8687 (5.1); 7.8655 (4.9); 7.4168 (5.0); 7.4094 (5.0); 7.4042 (4.7); 7.3967 (4.6); 7.2611 (74.0); 7.2562 (0.7); 7.2184 (0.7); 7.2041 (1.2); 7.1753 (1.3); 7.1609 (0.7); 5.2998 (2.0); 1.5613 (1.1); 0.0080 (1.4); -0.0002 (48.0); -0.0050 (0.5); -0.0084 (1.3)
I-193: ^{1}H-NMR(400.6 MHz, CDCl3): δ= 9.3465 (1.9); 8.4456 (5.7); 7.4022 (2.3); 7.3896 (2.4); 7.2642 (4.3); 6.9728 (2.4); 6.9601 (2.3); 5.2972 (2.5); 2.2669 (16.0); -0.0002 (2.6)

The present invention furthermore provides the use of one or more compounds of the general formula (I) and/or salts thereof, as defined above, preferably in one of the embodiments identified as preferred or particularly preferred, in particular one or more compounds of the formulae (I-001) to (I-211) and/or salts thereof, in each case as defined above, as herbicide and/or plant growth regulator, preferably in crops of useful plants and/or ornamental plants.

The present invention furthermore provides a method for controlling harmful plants and/or for regulating the growth of plants, characterized in that an effective amount

- of one or more compounds of the general formula (I) and/or salts thereof, as defined above, preferably in one of the embodiments identified as preferred or particularly preferred, in particular one or more compounds of the formulae (I-001) to (I-211) and/or salts thereof, in each case as defined above, or

- of a composition according to the invention, as defined below,

is applied to the (harmful) plants, seeds of (harmful) plants, the soil in which or on which the (harmful) plants grow or the area under cultivation.

The present invention also provides a method for controlling unwanted plants, preferably in crops of useful plants, characterized in that an effective amount

- of one or more compounds of the general formula (I) and/or salts thereof, as defined above, preferably in one of the embodiments identified as preferred or particularly preferred, in particular one

or more compounds of the formulae (I-001) to (I-211) and/or salts thereof, in each case as defined above, or

- of a composition according to the invention, as defined below,

is applied to unwanted plants (for example harmful plants such as mono- or dicotyledonous weeds or unwanted crop plants), the seed of the unwanted plants (i.e. plant seeds, for example grains, seeds or vegetative propagation organs such as tubers or shoot parts with buds), the soil in which or on which the unwanted plants grow (for example the soil of crop land or non-crop land) or the area under cultivation (i.e. the area on which the unwanted plants will grow).

The present invention furthermore also provides methods for regulating the growth of plants, preferably of useful plants, characterized in that an effective amount

- of one or more compounds of the general formula (I) and/or salts thereof, as defined above, preferably in one of the embodiments identified as preferred or particularly preferred, in particular one or more compounds of the formulae (I-001) to (I-211) and/or salts thereof, in each case as defined above, or

- of a composition according to the invention, as defined below,

is applied to the plant, the seed of the plant (i.e. plant seed, for example grains, seeds or vegetative propagation organs such as tubers or shoot parts with buds), the soil in which or on which the plants grow (for example the soil of crop land or non-crop land) or the area under cultivation (i.e. the area on which the plants will grow).

In this context, the compounds according to the invention or the compositions according to the invention can be applied for example by pre-sowing (if appropriate also by incorporation into the soil), pre-emergence and/or post-emergence processes. Specific examples of some representatives of the monocotyledonous and dicotyledonous weed flora which can be controlled by the compounds according to the invention are as follows, though there is no intention to restrict the enumeration to particular species.

In a method according to the invention for controlling harmful plants or for regulating the growth of plants, one or more compounds of the general formula (I) and/or salts thereof are preferably employed for controlling harmful plants or for regulating growth in crops of useful plants or ornamental plants, where in a preferred embodiment the useful plants or ornamental plants are transgenic plants.

The compounds of the general formula (I) according to the invention and/or their salts are suitable for controlling the following genera of monocotyledonous and dicotyledonous harmful plants:

Monocotyledonous harmful plants of the genera: Aegilops, Agropyron, Agrostis, Alopecurus, Apera, Avena, Brachiaria, Bromus, Cenchrus, Commelina, Cynodon, Cyperus, Dactyloctenium, Digitaria, Echinochloa, Eleocharis, Eleusine, Eragrostis, Eriochloa, Festuca, Fimbristylis, Heteranthera, Imperata, Ischaemum, Leptochloa, Lolium, Monochoria, Panicum, Paspalum, Phalaris, Phleum, Poa, Rottboellia, Sagittaria, Scirpus, Setaria, Sorghum.

Dicotyledonous harmful plants of the genera: Abutilon, Amaranthus, Ambrosia, Anoda, Anthemis, Aphanes, Artemisia, Atriplex, Bellis, Bidens, Capsella, Carduus, Cassia, Centaurea, Chenopodium, Cirsium, Convolvulus, Datura, Desmodium, Emex, Erysimum, Euphorbia, Galeopsis, Galinsoga, Galium, Hibiscus, Ipomoea, Kochia, Lamium, Lepidium, Lindernia, Matricaria, Mentha, Mercurialis, Mullugo, Myosotis, Papaver, Pharbitis, Plantago, Polygonum, Portulaca, Ranunculus, Raphanus, Rorippa, Rotala, Rumex, Salsola, Senecio, Sesbania, Sida, Sinapis, Solanum, Sonchus, Sphenoclea, Stellaria, Taraxacum, Thlaspi, Trifolium, Urtica, Veronica, Viola, Xanthium.

When the compounds according to the invention are applied to the soil surface before germination of the harmful plants (weed grasses and/or broad-leaved weeds) (pre-emergence method), either the seedlings of the weed grasses or broad-leaved weeds are prevented completely from emerging or they grow until they have reached the cotyledon stage, but then stop growing and eventually, after three to four weeks have elapsed, die completely.

If the active compounds are applied post-emergence to the green parts of the plants, growth stops after the treatment, and the harmful plants remain at the growth stage at the time of application, or they die completely after a certain time, so that in this manner competition by the weeds, which is harmful to the crop plants, is eliminated very early and in a sustained manner.

Although the compounds according to the invention display an outstanding herbicidal activity against monocotyledonous and dicotyledonous weeds, crop plants of economically important crops, for example dicotyledonous crops of the genera Arachis, Beta, Brassica, Cucumis, Cucurbita, Helianthus, Daucus, Glycine, Gossypium, Ipomoea, Lactuca, Linum, Lycopersicon, Miscanthus, Nicotiana, Phaseolus, Pisum, Solanum, Vicia, or monocotyledonous crops of the genera Allium, Ananas, Asparagus, Avena, Hordeum, Oryza, Panicum, Saccharum, Secale, Sorghum, triticale, triticum, Zea, are damaged only to an insignificant extent, or not at all, depending on the structure of the respective compound according to the invention and its application rate. For these reasons, the present compounds are very suitable for selective control of unwanted plant growth in plant crops such as agriculturally useful plants or ornamental plants.

In addition, the compounds of the invention (depending on their particular structure and the application rate deployed) have outstanding growth-regulating properties in crop plants. They intervene in the plants' own metabolism with regulatory effect and can thus be used for the controlled influencing of plant constituents and to facilitate harvesting, for example by triggering desiccation and stunted growth. Furthermore, they are also suitable for the general control and inhibition of unwanted vegetative growth without killing the plants in the process. Inhibition of vegetative growth plays a major role for many mono- and dicotyledonous crops since, for example, this can reduce or completely prevent lodging.

By virtue of their herbicidal and plant growth regulatory properties, the active compounds can also be used to control harmful plants in crops of genetically modified plants or plants modified by conventional mutagenesis. In general, the transgenic plants are characterized by particular advantageous properties, for example by resistances to certain pesticides, in particular certain herbicides, resistances to plant diseases or pathogens of plant diseases, such as certain insects or microorganisms such as fungi, bacteria or viruses. Other specific characteristics relate, for example, to the harvested material with regard to quantity, quality, storability, composition and specific constituents. For instance, there are known transgenic plants with an elevated starch content or altered starch quality, or those with a different fatty acid composition in the harvested material.

It is preferred with a view to transgenic crops to use the compounds according to the invention and/or their salts in economically important transgenic crops of useful plants and ornamentals, for example of cereals such as wheat, barley, rye, oats, millet, rice and corn or else crops of sugar beet, cotton, soybean, oilseed rape, potato, tomato, peas and other vegetables.
It is preferred to employ the compounds according to the invention as herbicides in crops of useful plants which are resistant, or have been made resistant by recombinant means, to the phytotoxic effects of the herbicides.

By virtue of their herbicidal and plant growth regulatory properties, the active compounds can also be used to control harmful plants in crops of genetically modified plants which are known or are yet to be developed. In general, the transgenic plants are characterized by particular advantageous properties, for example by resistances to certain pesticides, in particular certain herbicides, resistances to plant diseases or pathogens of plant diseases, such as certain insects or microorganisms such as fungi, bacteria or viruses. Other specific characteristics relate, for example, to the harvested material with regard to quantity, quality, storability, composition and specific constituents. For instance, there are known transgenic plants with an elevated starch content or altered starch quality, or those with a different fatty acid composition in the harvested material. Further special properties may be tolerance or resistance to abiotic stressors, for example heat, cold, drought, salinity and ultraviolet radiation.

Preference is given to the use of the compounds of the general formula (I) according to the invention or salts thereof in economically important transgenic crops of useful plants and ornamental plants, for example of cereals such as wheat, barley, rye, oats, triticale, millet, rice, cassava and corn, or else crops of sugar beet, cotton, soybean, oilseed rape, potatoes, tomatoes, peas and other vegetables.

The compounds of the general formula (I) can preferably be used as herbicides in crops of useful plants which are resistant, or have been made resistant by recombinant means, to the phytotoxic effects of the herbicides.

Conventional ways of producing novel plants which have modified properties in comparison to existing plants consist, for example, in traditional cultivation methods and the generation of mutants. Alternatively, novel plants with altered properties can be generated with the aid of recombinant methods.

A large number of molecular-biological techniques by means of which novel transgenic plants with modified properties can be generated are known to the person skilled in the art. For such recombinant manipulations, nucleic acid molecules which allow mutagenesis or sequence alteration by recombination of DNA sequences can be introduced into plasmids. With the aid of standard methods, it is possible, for example, to undertake base exchanges, remove parts of sequences or add natural or synthetic sequences. To connect the DNA fragments to each other, adapters or linkers may be added to the fragments.

For example, the generation of plant cells with a reduced activity of a gene product can be achieved by expressing at least one corresponding antisense RNA, a sense RNA for achieving a cosuppression effect, or by expressing at least one suitably constructed ribozyme which specifically cleaves transcripts of the abovementioned gene product.

To this end, it is firstly possible to use DNA molecules which encompass the entire coding sequence of a gene product inclusive of any flanking sequences which may be present, and also DNA molecules which only encompass portions of the coding sequence, in which case it is necessary for these portions to be long enough to have an antisense effect in the cells. It is also possible to use DNA sequences which have a high degree of homology to the coding sequences of a gene product, but are not completely identical to them.

When expressing nucleic acid molecules in plants, the protein synthesized may be localized in any desired compartment of the plant cell. However, to achieve localization in a particular compartment, it is possible, for example, to join the coding region to DNA sequences which ensure localization in a

particular compartment. Such sequences are known to those skilled in the art (see, for example, Braun et al., EMBO J. 11 (1992), 3219-3227). The nucleic acid molecules can also be expressed in the organelles of the plant cells.

The transgenic plant cells can be regenerated by known techniques to give rise to entire plants. In principle, the transgenic plants may be plants of any desired plant species, i.e. not only monocotyledonous but also dicotyledonous plants.

Thus, transgenic plants can be obtained whose properties are altered by overexpression, suppression or inhibition of homologous (= natural) genes or gene sequences or expression of heterologous (= foreign) genes or gene sequences.

It is preferred to employ the compounds (I) according to the invention in transgenic crops which are resistant to growth regulators such as, for example, dicamba, or to herbicides which inhibit essential plant enzymes, for example acetolactate synthases (ALS), EPSP synthases, glutamine synthases (GS) or hydroxyphenylpyruvate dioxygenases (HPPD), or to herbicides from the group of the sulfonylureas, glyphosate, glufosinate or benzoylisoxazoles and analogous active compounds.

When the active compounds of the invention are employed in transgenic crops, not only do the effects toward harmful plants observed in other crops occur, but frequently also effects which are specific to application in the particular transgenic crop, for example an altered or specifically widened spectrum of weeds which can be controlled, altered application rates which can be used for the application, preferably good combinability with the herbicides to which the transgenic crop is resistant, and influencing of growth and yield of the transgenic crop plants.

The invention therefore also relates to the use of the compounds of the general formula (I) according to the invention and/or their salts as herbicides for controlling harmful plants in crops of useful plants or ornamentals, optionally in transgenic crop plants.

Preference is given to the use in cereals, here preferably corn, wheat, barley, rye, oats, millet or rice, by the pre- or post-emergence method.

Preference is also given to the use in soybeans by the pre- or post-emergence method.

The use according to the invention for the control of harmful plants or for growth regulation of plants also includes the case in which the active compound of the general formula (I) or its salt is not formed from a precursor substance (“prodrug”) until after application on the plant, in the plant or in the soil.

The invention also provides for the use of one or more compounds of the general formula (I) or salts thereof or of a composition according to the invention (as defined below) (in a method) for controlling harmful plants or for regulating the growth of plants which comprises applying an effective amount of one or more compounds of the general formula (I) or salts thereof onto the plants (harmful plants, if appropriate together with the useful plants), plant seeds, the soil in which or on which the plants grow or the area under cultivation.

The invention also provides a herbicidal and/or plant growth-regulating composition, characterized in that the composition comprises

(a) one or more compounds of the general formula (I) and/or salts thereof, as defined above, preferably in one of the embodiments identified as preferred or particularly preferred, in particular one or more compounds of the formulae (I-001) to (I-211) and/or salts thereof, in each case as defined above, and

(b) one or more further substances selected from groups (i) and/or (ii):

(i) one or more further agrochemically active substances, preferably selected from the group consisting of insecticides, acaricides, nematicides, further herbicides (i.e. those not corresponding to the general formula (I) defined above), fungicides, safeners, fertilizers and/or further growth regulators,

(ii) one or more formulation auxiliaries customary in crop protection.

Here, the further agrochemically active substances of component (i) of a composition according to the invention are preferably selected from the group of substances mentioned in "The Pesticide Manual", 16th edition, The British Crop Protection Council and the Royal Soc. of Chemistry, 2012.

A herbicidal or plant growth-regulating composition according to the invention comprises preferably one, two, three or more formulation auxiliaries (ii) customary in crop protection selected from the group consisting of surfactants, emulsifiers, dispersants, film-formers, thickeners, inorganic salts, dusting agents, carriers solid at 25 °C and 1013 mbar, preferably adsorbent granulated inert materials, wetting agents, antioxidants, stabilizers, buffer substances, antifoam agents, water, organic solvents, preferably organic solvents miscible with water in any ratio at 25 °C and 1013 mbar.

The compounds of general formula (I) according to the invention can be used in the form of wettable powders, emulsifiable concentrates, sprayable solutions, dusting products or granules in the customary

formulations. The invention therefore also provides herbicidal and plant growth-regulating compositions which comprise compounds of the general formula (I) and/or salts thereof.

The compounds of the general formula (I) and/or salts thereof can be formulated in various ways according to which biological and/or physicochemical parameters are required. Possible formulations include, for example: wettable powders (WP), water-soluble powders (SP), water-soluble concentrates, emulsifiable concentrates (EC), emulsions (EW), such as oil-in-water and water-in-oil emulsions, sprayable solutions, suspension concentrates (SC), dispersions based on oil or water, oil-miscible solutions, capsule suspensions (CS), dusting products (DP), dressings, granules for scattering and soil application, granules (GR) in the form of microgranules, spray granules, absorption and adsorption granules, water-dispersible granules (WG), water-soluble granules (SG), ULV formulations, microcapsules and waxes.

These individual formulation types and the formulation assistants, such as inert materials, surfactants, solvents and further additives, are known to the person skilled in the art and are described, for example, in: Watkins, "Handbook of Insecticide Dust Diluents and Carriers", 2nd Ed., Darland Books, Caldwell N.J.; H.v. Olphen, "Introduction to Clay Colloid Chemistry", 2nd ed., J. Wiley & Sons, N.Y.; C. Marsden, "Solvents Guide", 2nd ed., Interscience, N.Y. 1963; McCutcheon's "Detergents and Emulsifiers Annual", MC Publ. Corp., Ridgewood N.J.; Sisley and Wood, "Encyclopedia of Surface Active Agents", Chem. Publ. Co. Inc., N.Y. 1964; Schönfeldt, "Grenzflächenaktive Äthylenoxidaddukte" [Interface-active Ethylene Oxide Adducts], Wiss. Verlagsgesellschaft, Stuttgart 1976; Winnacker-Küchler, "Chemische Technologie" [Chemical Technology], volume 7, C. Hanser Verlag Munich, 4th Ed. 1986.

Wettable powders are preparations which can be dispersed uniformly in water and, in addition to the active compound, apart from a diluent or inert substance, also comprise surfactants of the ionic and/or nonionic type (wetting agents, dispersants), for example polyoxyethylated alkylphenols, polyoxyethylated fatty alcohols, polyoxyethylated fatty amines, fatty alcohol polyglycol ether sulfates, alkanesulfonates, alkylbenzenesulfonates, sodium lignosulfonate, sodium 2,2'-dinaphthylmethane-6,6'-disulfonate, sodium dibutylnaphthalenesulfonate or else sodium oleoylmethyltaurate. To produce the wettable powders, the herbicidally active compounds are finely ground, for example in customary apparatuses such as hammer mills, blower mills and air-jet mills, and simultaneously or subsequently mixed with the formulation auxiliaries.

Emulsifiable concentrates are produced by dissolving the active compound in an organic solvent, for example butanol, cyclohexanone, dimethylformamide, xylene, or else relatively high-boiling aromatics or hydrocarbons or mixtures of the organic solvents, with addition of one or more ionic and/or nonionic

surfactants (emulsifiers). Examples of emulsifiers which may be used are: calcium alkylarylsulfonates such as calcium dodecylbenzenesulfonate, or nonionic emulsifiers such as fatty acid polyglycol esters, alkylaryl polyglycol ethers, fatty alcohol polyglycol ethers, propylene oxide-ethylene oxide condensation products, alkyl polyethers, sorbitan esters, for example sorbitan fatty acid esters, or polyoxyethylene sorbitan esters, for example polyoxyethylene sorbitan fatty acid esters.

Dusting products are obtained by grinding the active compound with finely distributed solids, for example talc, natural clays, such as kaolin, bentonite and pyrophyllite, or diatomaceous earth.

Suspension concentrates may be water- or oil-based. They may be prepared, for example, by wet-grinding by means of commercial bead mills and optional addition of surfactants as have, for example, already been listed above for the other formulation types.

Emulsions, for example oil-in-water emulsions (EW), can be produced, for example, by means of stirrers, colloid mills and/or static mixers using aqueous organic solvents and optionally surfactants as already listed above, for example, for the other formulation types.

Granules can be produced either by spraying the active compound onto adsorptive granular inert material or by applying active compound concentrates to the surface of carriers, such as sand, kaolinites or granular inert material, by means of adhesives, for example polyvinyl alcohol, sodium polyacrylate or else mineral oils. Suitable active compounds can also be granulated in the manner customary for the production of fertilizer granules - if desired as a mixture with fertilizers.

Water-dispersible granules are produced generally by the customary processes such as spray-drying, fluidized-bed granulation, pan granulation, mixing with high-speed mixers and extrusion without solid inert material.

For the production of pan, fluidized-bed, extruder and spray granules, see e.g. processes in "Spray Drying Handbook" 3rd Ed. 1979, G. Goodwin Ltd., London, J.E. Browning, "Agglomeration", Chemical and Engineering 1967, pages 147 ff; "Perry's Chemical Engineer's Handbook", 5th Ed., McGraw Hill, New York 1973, p. 8-57.

For further details regarding the formulation of crop protection compositions, see, for example, G.C. Klingman, "Weed Control as a Science", John Wiley and Sons, Inc., New York, 1961, pages 81-96 and J.D. Freyer, S.A. Evans, "Weed Control Handbook", 5th Ed., Blackwell Scientific Publications, Oxford, 1968, pages 101-103.

The agrochemical preparations, preferably herbicidal or plant growth-regulating compositions, of the present invention preferably comprise a total amount of from 0.1 to 99% by weight, preferably 0.5 to 95% by weight, particularly preferably 1 to 90% by weight, especially preferably 2 to 80% by weight, of active compounds of the general formula (I) and their salts.

In wettable powders, the active compound concentration is, for example, about 10 to 90% by weight, the remainder to 100% by weight consisting of customary formulation constituents. In emulsifiable concentrates, the active compound concentration may be about 1% to 90% and preferably 5% to 80% by weight. Formulations in the form of dusts comprise 1% to 30% by weight of active compound, preferably usually 5% to 20% by weight of active compound; sprayable solutions contain about 0.05% to 80% by weight, preferably 2% to 50% by weight of active compound. In the case of water-dispersible granules, the active compound content depends partially on whether the active compound is in liquid or solid form and on which granulation auxiliaries, fillers, etc., are used. In the water-dispersible granules, the content of active compound is, for example, between 1% and 95% by weight, preferably between 10% and 80% by weight.

In addition, the active compound formulations mentioned optionally comprise the respective customary stickers, wetters, dispersants, emulsifiers, penetrants, preservatives, antifreeze agents and solvents, fillers, carriers and dyes, defoamers, evaporation inhibitors and agents which influence the pH and the viscosity. Examples of formulation auxiliaries are described inter alia in “Chemistry and Technology of Agrochemical Formulations”, ed. D.A. Knowles, Kluwer Academic Publishers (1998).

The compounds of the general formula (I) or salts thereof can be used as such or in the form of their preparations (formulations) in a combination with other pesticidally active substances, for example insecticides, acaricides, nematicides, herbicides, fungicides, safeners, fertilizers and/or growth regulators, for example in the form of a finished formulation or of a tank mix. The combination formulations can be prepared on the basis of the abovementioned formulations, while taking account of the physical properties and stabilities of the active compounds to be combined.

Active compounds which can be employed in combination with the compounds of general formula (I) according to the invention in mixture formulations or in a tank mix are, for example, known active compounds based on inhibition of, for example, acetolactate synthase, acetyl-CoA carboxylase, cellulose synthase, enolpyruvylshikimate-3-phosphate synthase, glutamine synthetase, p-hydroxyphenylpyruvate dioxygenase, phytoendesaturase, photosystem I, photosystem II, protoporphyrinogen oxidase, as described, for example, in Weed Research 26 (1986) 441-445 or "The Pesticide Manual", 16th edition, The British Crop Protection Council and the Royal Soc. of Chemistry, 2012 and literature cited therein.

Of particular interest is the selective control of harmful plants in crops of useful plants and ornamentals. Although the compounds of genarl formula (I) according to the invention have already demonstrated very good to adequate selectivity in a large number of crops, in principle, in some crops and in particular also in the case of mixtures with other, less selective herbicides, phytotoxicities on the crop plants may occur. In this connection, combinations of compounds of general formula (I) according to the invention are of particular interest which comprise the compounds of general formula (I) or their combinations with other herbicides or pesticides and safeners. The safeners, which are used in an antidotically effective amount, reduce the phytotoxic side effects of the herbicides/pesticides employed, for example in economically important crops, such as cereals (wheat, barley, rye, corn, rice, millet), sugarbeet, sugarcane, oilseed rape, cotton and soybeans, preferably cereals.

The weight ratios of herbicide (mixture) to safener depend generally on the herbicide application rate and the efficacy of the safener in question and may vary within wide limits, for example in the range from 200:1 to 1:200, preferably 100:1 to 1:100, in particular 20:1 to 1:20. Analogously to the compounds (I) or mixtures thereof, the safeners can be formulated with further herbicides/pesticides and be provided and employed as a finished formulation or tank mix with the herbicides.

For application, the herbicide or herbicide/safener formulations present in commercial form are, if appropriate, diluted in a customary manner, for example in the case of wettable powders, emulsifiable concentrates, dispersions and water-dispersible granules with water. Dust-type preparations, granules for soil application or granules for scattering and sprayable solutions are not normally diluted further with other inert substances prior to application.

The application rate of the compounds of the general formula (I) and/or their salts is affected to a certain extent by external conditions such as temperature, humidity, etc. Here, the application rate may vary within wide limits. For the application as a herbicide for controlling harmful plants, the total amount of compounds of the general formula (I) and/or their salts is preferably in the range from 0.001 to 10.0 kg/ha, with preference in the range from 0.005 to 5 kg/ha, more preferably in the range from 0.01 to 1.5 kg/ha, in particular preferably in the range from 0.05 to 1 kg/ha. This applies both to the pre-emergence and the post-emergence application.

When the compounds of the general formula (I) and/or their salts are used as plant growth regulator, for example as culm stabilizer for crop plants like those mentioned above, preferably cereal plants, such as wheat, barley, rye, triticale, millet, rice or corn, the total application rate is preferably in the range of from 0.001 to 2 kg/ha, preferably in the range of from 0.005 to 1 kg/ha, in particular in the range of from

10 to 500 g/ha, very particularly in the range from 20 to 250 g/ha. This applies both to the pre-emergence and the post-emergence application.

The application as culm stabilizer may take place at various stages of the growth of the plants. Preferred is, for example, the application after the tilling phase, at the beginning of the longitudinal growth.

As an alternative, application as plant growth regulator is also possible by treating the seed, which includes various techniques for dressing and coating seed. Here, the application rate depends on the particular techniques and can be determined in preliminary tests.

Active compounds which can be employed in combination with the compounds of the general formula (I) according to the invention in compositions according to the invention (for example in mixed formulations or in the tank mix) are, for example, known active compounds which are based on the inhibition of, for example, acetolactate synthase, acetyl-CoA carboxylase, cellulose synthase, enolpyruvylshikimate-3-phosphate synthase, glutamine synthetase, p-hydroxyphenylpyruvate dioxygenase, phytoene desaturase, photosystem I, photosystem II, protoporphyrinogen oxidase, as are described in, for example, Weed Research 26 (1986) 441-445 or "The Pesticide Manual", 16th edition, The British Crop Protection Council and the Royal Soc. of Chemistry, 2012 and the literature cited therein. Known herbicides or plant growth regulators which can be combined with the compounds according to the invention are, for example, the following active compounds, where the compounds are designated either with the "common name" in accordance with the International Organization for Standardization (ISO) or with the chemical name or with the code number. They always encompass all of the application forms such as, for example, acids, salts, esters and also all isomeric forms such as stereoisomers and optical isomers, even if not explicitly mentioned.

Examples of such herbicidal mixing partners are:
Acetochlor, acifluorfen, acifluorfen-methyl, acifluorfen-sodium, aclonifen, alachlor, allidochlor, alloxydim, alloxydim-sodium, ametryn, amicarbazone, amidochlor, amidosulfuron, 4-amino-3-chloro-6-(4-chloro-2-fluoro-3-methylphenyl)-5-fluoropyridine-2-carboxylic acid, aminocyclopyrachlor, aminocyclopyrachlor-potassium, aminocyclopyrachlor-methyl, aminopyralid, aminopyralid-dimethylammonium, aminopyralid-tripromine, amitrole, ammoniumsulfamate, anilofos, asulam, asulam-potassium, asulam sodium, atrazine, azafenidin, azimsulfuron, beflubutamid, (S)-(-)-beflubutamid, beflubutamid-M, benazolin, benazolin-ethyl, benazolin-dimethylammonium, benazolin-potassium, benfluralin, benfuresate, bensulfuron, bensulfuron-methyl, bensulide, bentazone, bentazone-sdium, benzobicyclon, benzofenap, bicyclopyrone, bifenox, bilanafos, bilanafos-sodium, bipyrazone, bispyribac, bispyribac-sodium, bixlozone, bromacil, bromacil-lithium, bromacil-sodium, bromobutide, bromofenoxim, bromoxynil, bromoxynil-butyrate, -potassium, -heptanoate und -octanoate, busoxinone,

butachlor, butafenacil, butamifos, butenachlor, butralin, butroxydim, butylate, cafenstrole, cambendichlor, carbetamide, carfentrazone, carfentrazone-ethyl, chloramben, chloramben-ammonium, chloramben-diolamine, chlroamben-methyl, chloramben-methylammonium, chloramben-sodium, chlorbromuron, chlorfenac, chlorfenac-ammonium, chlorfenac-sodium, chlorfenprop, chlorfenprop-methyl, chlorflurenol, chlorflurenol-methyl, chloridazon, chlorimuron, chlorimuron-ethyl, chlorophthalim, chlorotoluron, chlorsulfuron, chlorthal, chlorthal-dimethyl, chlorthal-monomethyl, cinidon, cinidon-ethyl, cinmethylin, exo-(+)-cinmethylin, i.e. (1R,2S,4S)-4-isopropyl-1-methyl-2-[(2-methylbenzyl)oxy]-7-oxabicyclo[2.2.1]heptane, exo-(-)-cinmethylin, i.e. (1R,2S,4S)-4-isopropyl-1-methyl-2-[(2-methylbenzyl)oxy]-7-oxabicyclo[2.2.1]heptane, cinosulfuron, clacyfos, clethodim, clodinafop, clodinafop-ethyl, clodinafop-propargyl, clomazone, clomeprop, clopyralid, clopyralid-methyl, clopyralid-olamine, clopyralid-potassium, clopyralid-tripomine, cloransulam, cloransulam-methyl, cumyluron, cyanamide, cyanazine, cycloate, cyclopyranil, cyclopyrimorate, cyclosulfamuron, cycloxydim, cyhalofop, cyhalofop-butyl, cyprazine, 2,4-D (including theammonium, butotyl, -butyl, choline, diethylammonium, -dimethylammonium, -diolamine, -doboxyl, -dodecylammonium, etexyl, ethyl, 2-ethylhexyl, heptylammonium, isobutyl, isooctyl, isopropyl, isopropylammonium, lithium, meptyl, methyl, potassium, tetradecylammonium, triethylammonium, triisopropanolammonium, tripromine and trolamine salt thereof), 2,4-DB, 2,4-DB-butyl, -dimethylammonium, isooctyl, -potassium und -sodium, daimuron (dymron), dalapon, dalapon-calcium, dalapon-magnesium, dalapon-sodium, dazomet, dazomet-sodium, n-decanol, 7-deoxy-D-sedoheptulose, desmedipham, detosyl-pyrazolate (DTP), dicamba and its salts, e. g. dicamba-biproamine, dicamba-N,N-Bis(3-aminopropyl)methylamine, dicamba-butotyl, dicamba-choline, dicamba-diglycolamine, dicamba-dimethylammonium, dicamba-diethanolaminemmonium, dicamba-diethylammonium, dicamba-isopropylammonium, dicamba-methyl, dicamba-monoethanolaminedicamba-olamine, dicamba-potassium, dicamba-sodium, dicamba-triethanolamine, dichlobenil, 2-(2,4-dichlorobenzyl)-4,4-dimethyl-1,2-oxazolidin-3-one, 2-(2,5-dichlorobenzyl)-4,4-dimethyl-1,2-oxazolidin-3-one, dichlorprop, dichlorprop-butotyl, dichlroprop-dimethylammonium, dichhlorprop-etexyl, dichlorprop-ethylammonium, dichlorprop-isoctyl, dichlorprop-methyl, dichlorprop-postassium, dichlorprop-sodium, dichlorprop-P, dichlorprop-P-dimethylammonium, dichlorprop-P-etexyl, dichlorprop-P-potassium, dichlorprop-sodium, diclofop, diclofop-methyl, diclofop-P, diclofop-P-methyl, diclosulam, difenzoquat, difenzoquat-metilsulfate, diflufenican, diflufenzopyr, diflufenzopyr-sodium, dimefuron, dimepiperate, dimesulfazet, dimethachlor, dimethametryn, dimethenamid, dimethenamid-P, dimetrasulfuron, dinitramine, dinoterb, dinoterb-acetate, diphenamid, diquat, diquat-dibromid, diquat-dichloride, dithiopyr, diuron, DNOC, DNOC-ammonium, DNOC-potassium, DNOC-sodium, endothal, endothal-diammonium, endothal-dipotassium, endothal-disodium, Epyrifenacil (S-3100), EPTC, esprocarb, ethalfluralin, ethametsulfuron, ethametsulfuron-methyl, ethiozin, ethofumesate, ethoxyfen, ethoxyfen-ethyl, ethoxysulfuron, etobenzanid, F-5231, i.e. N-[2-Chlor-4-fluor-5-[4-(3-fluorpropyl)-4,5-dihydro-5-oxo-1H-tetrazol-1-yl]-phenyl]-ethansulfonamid, F-7967, i.e. 3-[7-Chlor-5-fluor-2-(trifluormethyl)-1H-

benzimidazol-4-yl]-1-methyl-6-(trifluormethyl)pyrimidin-2,4(1H,3H)-dione, fenoxaprop, fenoxaprop-P, fenoxaprop-ethyl, fenoxaprop-P-ethyl, fenoxasulfone, fenpyrazone, fenquinotrione, fentrazamide, flamprop, flamprop-isoproyl, flamprop-methyl, flamprop-M-isopropyl, flamprop-M-methyl, flazasulfuron, florasulam, florpyrauxifen, florpyrauxifen-benzyl, fluazifop, fluazifop-butyl, fluazifop-methyl, fluazifop-P, fluazifop-P-butyl, flucarbazone, flucarbazone-sodium, flucetosulfuron, fluchloralin, flufenacet, flufenpyr, flufenpyr-ethyl, flumetsulam, flumiclorac, flumiclorac-pentyl, flumioxazin, fluometuron, flurenol, flurenol-butyl, -dimethylammonium und -methyl, fluoroglycofen, fluoroglycofen-ethyl, flupropanate, flupropanate-sdium, flupyrsulfuron, flupyrsulfuron-methyl, flupyrsulfuron-methyl-sodium, fluridone, flurochloridone, fluroxypyr, fluroxypyr-butometyl, fluroxypyr-meptyl, flurtamone, fluthiacet, fluthiacet-methyl, fomesafen, fomesafen-sodium, foramsulfuron, foramsulfuron sodium salt, fosamine, fosamine-ammonium, glufosinate, glufosinate-ammonium, glufosinate-sodium, L-glufosinate-ammonium, L-glufosiante-sodium, glufosinate-P-sodium, glufosinate-P-ammonium, glyphosate, glyphosate-ammonium, -isopropylammonium, -diammonium, -dimethylammonium, -potassium, -sodium, sesquisodium and -trimesium, H-9201, i.e. O-(2,4-Dimethyl-6-nitrophenyl)-O-ethyl-isopropylphosphoramidothioat, halauxifen, halauxifen-methyl, halosafen, halosulfuron, halosulfuron-methyl, haloxyfop, haloxyfop-P, haloxyfop-ethoxyethyl, haloxyfop-P-ethoxyethyl, haloxyfop-methyl, haloxyfop-P-methyl, haloxifop-sodium, hexazinone, HNPC-A8169, i.e. prop-2-yn-1-yl (2S)-2-{3-[(5-tert-butylpyridin-2-yl)oxy]phenoxy}propanoate, HW-02, i.e. 1-(Dimethoxyphosphoryl)-ethyl-(2,4-dichlorphenoxy)acetat, hydantocidin, imazamethabenz, imazamethabenz-methyl, imazamox, imazamox-ammonium, imazapic, imazapic-ammonium, imazapyr, imazapyr-isopropylammonium, imazaquin, imazaquin-ammonium, imazaquin.methyl, imazethapyr, imazethapyr-immonium, imazosulfuron, indanofan, indaziflam, iodosulfuron, iodosulfuron-methyl, iodosulfuron-methyl-sodium, ioxynil, ioxynil-lithium, -octanoate, -potassium und sodium, ipfencarbazone, isoproturon, isouron, isoxaben, isoxaflutole, karbutilate, KUH-043, i.e. 3-({[5-(Difluormethyl)-1-methyl-3-(trifluormethyl)-1H-pyrazol-4-yl]methyl}sulfonyl)-5,5-dimethyl-4,5-dihydro-1,2-oxazol, ketospiradox, ketospiradox-potassium, lactofen, lancotrione, lenacil, linuron, MCPA, MCPA-butotyl, -butyl, -dimethylammonium, -diolamine, -2-ethylhexyl, -ethyl, -isobutyl, isoctyl, -isopropyl, -isopropylammonium, -methyl, olamine, -potassium, –sodium and -trolamine, MCPB, MCPB-methyl, -ethyl und -sodium, mecoprop, mecoprop-butotyl, mecoprop- demethylammonium, mecoprop-diolamine, mecoprop-etexyl, mecoprop-ethadyl, mecoprop-isoctyl, mecoprop-methyl, mecoprop-potassium, mecoprop-sodium, and mecoprop-trolamine, mecoprop-P, mecoprop-P-butotyl, -dimethylammonium, -2-ethylhexyl and -potassium, mefenacet, mefluidide, mefluidide-diolamine, mefluidide-potassium, mesosulfuron, mesosulfuron-methyl, mesosulfuron sodium salt, mesotrione, methabenzthiazuron, metam, metamifop, metamitron, metazachlor, metazosulfuron, methabenzthiazuron, methiopyrsulfuron, methiozolin, methyl isothiocyanate, metobromuron, metolachlor, S-metolachlor, metosulam, metoxuron, metribuzin, metsulfuron, metsulfuron-methyl, molinate, monolinuron, monosulfuron, monosulfuron-methyl, MT-5950, i.e. N-[3-chlor-4-(1-methylethyl)-phenyl]-2-methylpentanamid, NGGC-011, napropamide, NC-

310, i.e. 4-(2,4-Dichlorbenzoyl)-1-methyl-5-benzyloxypyrazol, NC-656, i.e. 3-[(isopropylsulfonyl)methyl]-N-(5-methyl-1,3,4-oxadiazol-2-yl)-5-(trifluoromethyl)[1,2,4]triazolo[4,3-a]pyridine-8-carboxamide, neburon, nicosulfuron, nonanoic acid (pelargonic acid), norflurazon, oleic acid (fatty acids), orbencarb, orthosulfamuron, oryzalin, oxadiargyl, oxadiazon, oxasulfuron, oxaziclomefone, oxyfluorfen, paraquat, paraquat-dichloride, paraquat-dimethylsulfate, pebulate, pendimethalin, penoxsulam, pentachlorphenol, pentoxazone, pethoxamid, petroleum oils, phenmedipham, phenmedipham-ethyl, picloram, picloram-dimethylammonium, picloram-etexyl, picloram-isoctyl, picloram-methyl, picloram-olamine, picloram-potassium, picloram-triethylammonium, picloram-tripromine, picloram-trolamine, picolinafen, pinoxaden, piperophos, pretilachlor, primisulfuron, primisulfuron-methyl, prodiamine, profoxydim, prometon, prometryn, propachlor, propanil, propaquizafop, propazine, propham, propisochlor, propoxycarbazone, propoxycarbazone-sodium, propyrisulfuron, propyzamide, prosulfocarb, prosulfuron, pyraclonil, pyraflufen, pyraflufen-ethyl, pyrasulfotole, pyrazolynate (pyrazolate), pyrazosulfuron, pyrazosulfuron-ethyl, pyrazoxyfen, pyribambenz, pyribambenz-isopropyl, pyribambenz-propyl, pyribenzoxim, pyributicarb, pyridafol, pyridate, pyriftalid, pyriminobac, pyriminobac-methyl, pyrimisulfan, pyrithiobac, pyrithiobac-sodium, pyroxasulfone, pyroxsulam, quinclorac, quinclorac-dimethylammonium, quinclorac-methyl, quinmerac, quinoclamine, quizalofop, quizalofop-ethyl, quizalofop-P, quizalofop-P-ethyl, quizalofop-P-tefuryl, QYM201, i.e. 1-{2-chloro-3-[(3-cyclopropyl-5-hydroxy-1-methyl-1H-pyrazol-4-yl)carbonyl]-6-(trifluoromethyl)phenyl}piperidin-2-one, rimsulfuron, saflufenacil, sethoxydim, siduron, simazine, simetryn, SL-261, sulcotrione, sulfentrazone, sulfometuron, sulfometuron-methyl, sulfosulfuron, , SYP-249, i.e. 1-Ethoxy-3-methyl-1-oxobut-3-en-2-yl-5-[2-chlor-4-(trifluormethyl)phenoxy]-2-nitrobenzoat, SYP-300, i.e. 1-[7-Fluor-3-oxo-4-(prop-2-in-1-yl)-3,4-dihydro-2H-1,4-benzoxazin-6-yl]-3-propyl-2-thioxoimidazolidin-4,5-dion, 2,3,6-TBA, TCA (trichloro acetic acid) and its salts, e.g. TCA-ammonium, TCA-calcium, TCA-ethyl, TCA-magnesium, TCA-sodium, tebuthiuron, tefuryltrione, tembotrione, tepraloxydim, terbacil, terbucarb, terbumeton, terbuthylazine, terbutryn, tetflupyrolimet, thaxtomin, thenylchlor, thiazopyr, thiencarbazone, thiencarbazone-methyl, thifensulfuron, thifensulfuron-methyl, thiobencarb, tiafenacil, tolpyralate, topramezone, tralkoxydim, triafamone, tri-allate, triasulfuron, triaziflam, tribenuron, tribenuron-methyl, triclopyr, triclopyr-butotyl, triclopyr-choline, triclopyr-ethyl, triclopyr-triethylammonium, trietazine, trifloxysulfuron, trifloxysulfuron-sodium, trifludimoxazin, trifluralin, triflusulfuron, triflusulfuron-methyl, tritosulfuron, urea sulfate, vernolate, XDE-848, ZJ-0862, i.e. 3,4-Dichlor-N-{2-[(4,6-dimethoxypyrimidin-2-yl)oxy]benzyl}anilin, 3-(2-chloro-4-fluoro-5-(3-methyl-2,6-dioxo-4-trifluoromethyl-3,6-dihydropyrimidin-1 (2H)-yl)phenyl)-5-methyl-4,5-dihydroisoxazole-5-carboxylic acid ethyl ester, ethyl-[(3-{2-chlor-4-fluor-5-[3-methyl-2,6-dioxo-4-(trifluormethyl)-3,6-dihydropyrimidin-1(2H)-yl]phenoxy}pyridin-2-yl)oxy]acetate, 3-chloro-2-[3-(difluoromethyl)isoxazolyl-5-yl]phenyl-5-chloropyrimidin-2-yl ether, 2-(3,4-dimethoxyphenyl)-4-[(2-hydroxy-6-oxocyclohex-1-en-1-yl)carbonyl]-6-methylpyridazine-3(*2H*)-one, 2-({2-[(2-methoxyethoxy)methyl]-6-methylpyridin-3-yl}carbonyl)cyclohexane-1,3-dione, (5-hydroxy-1-methyl-

1H-pyrazol-4-yl)(3,3,4-trimethyl-1,1-dioxido-2,3-dihydro-1-benzothiophen-5-yl)methanone, 1-methyl-4-[(3,3,4-trimethyl-1,1-dioxido-2,3-dihydro-1-benzothiophen-5-yl)carbonyl]-1H-pyrazol-5-yl propane-1-sulfonate, 4-{2-chloro-3-[(3,5-dimethyl-1H-pyrazol-1-yl)methyl]-4-(methylsulfonyl)benzoyl}-1-methyl-1H-pyrazol-5-yl-1,3-dimethyl-1H-pyrazole-4-carboxylate; cyanomethyl 4-amino-3-chloro-5-fluoro-6-(7-fluoro-1H-indol-6-yl)pyridine-2-carboxylate, prop-2-yn-1-yl 4-amino-3-chloro-5-fluoro-6-(7-fluoro-1H-indol-6-yl)pyridine-2-carboxylate, methyl 4-amino-3-chloro-5-fluoro-6-(7-fluoro-1H-indol-6-yl)pyridine-2-carboxylate, 4-amino-3-chloro-5-fluoro-6-(7-fluoro-1H-indol-6-yl)pyridine-2-carboxylic acid, benzyl 4-amino-3-chloro-5-fluoro-6-(7-fluoro-1H-indol-6-yl)pyridine-2-carboxylate, ethyl 4-amino-3-chloro-5-fluoro-6-(7-fluoro-1H-indol-6-yl)pyridine-2-carboxylate, methyl 4-amino-3-chloro-5-fluoro-6-(7-fluoro-1-isobutyryl-1H-indol-6-yl)pyridine-2-carboxylate, methyl 6-(1-acetyl-7-fluoro-1H-indol-6-yl)-4-amino-3-chloro-5-fluoropyridine-2-carboxylate, methyl 4-amino-3-chloro-6-[1-(2,2-dimethylpropanoyl)-7-fluoro-1H-indol-6-yl]-5-fluoropyridine-2-carboxylate, methyl 4-amino-3-chloro-5-fluoro-6-[7-fluoro-1-(methoxyacetyl)-1H-indol-6-yl]pyridine-2-carboxylate, potassium 4-amino-3-chloro-5-fluoro-6-(7-fluoro-1H-indol-6-yl)pyridine-2-carboxylate, sodium 4-amino-3-chloro-5-fluoro-6-(7-fluoro-1H-indol-6-yl)pyridine-2-carboxylate, butyl 4-amino-3-chloro-5-fluoro-6-(7-fluoro-1H-indol-6-yl)pyridine-2-carboxylate, 4-hydroxy-1-methyl-3-[4-(trifluoromethyl)pyridin-2-yl]imidazolidin-2-one, 3-(5-tert-butyl-1,2-oxazol-3-yl)-4-hydroxy-1-methylimidazolidin-2-one, 3-[5-chloro-4-(trifluormethyl)pyridin-2-yl]-4-hydroxy-1-methylimidazolidin-2-one, 4-hydroxy-1-methoxy-5-methyl-3-[4-(trifluormethyl)pyridin-2-yl]imidazolidin-2-one, 6-[(2-hydroxy-6-oxocyclohex-1-en-1-yl)carbonyl]-1,5-dimethyl-3-(2-methylphenyl)quinazolin-2,4(1H,3H)-dione, 3-(2,6-dimethylphenyl)-6-[(2-hydroxy-6-oxocyclohex-1-en-1-yl)carbonyl]-1-methylquinazolin-2,4(1H,3H)-dione, 2-[2-chloro-4-(methylsulfonyl)-3-(morpholin-4-ylmethyl)benzoyl]-3-hydroxycyclohex-2-en-1-one, 1-(2-carboxyethyl)-4-(pyrimidin-2-yl)pyridazin-1-ium salt (with anions such as chloride, acetate or trifluoroacetate), 1-(2-carboxyethyl)-4-(pyridazin-3-yl)pyridazin-1-ium salt (with anions such as chloride, acetate or trifluoroacetate), 4-(pyrimidin-2-yl)-1-(2-sulfoethyl)pyridazin-1-ium salt (with anions such as chloride, acetate or trifluoroacetate), 4-(pyridazin-3-yl)-1-(2-sulfoethyl)pyridazin-1-ium salt (with anions such as chloride, acetate or trifluoroacetate).

Examples of plant growth regulators as possible mixing partners are:

Abscisic acid, acibenzolar, acibenzolar-S-methyl, 1-aminocyclopro-1-yl carboxylic acid and derivatives thereof,5-Aminolävulinsäure, ancymidol, 6-benzylaminopurine, bikinin, brassinolide, brassinolide-ethyl, catechin, chitooligosaccharides (CO; COs differ from LCOs in that they lack the pendant fatty acid chain that is characteristic of LCOs. COs, sometimes referred to as N-acetylchitooligosaccharides, are also composed of GlcNAc residues but have side chain decorations that make them different from chitin molecules [$(C_8H_{13}NO_5)_n$, CAS No. 1398-61-4] and chitosan molecules [$(C_5H_{11}NO_4)_n$, CAS No. 9012-76-4]), chitinous compounds, chlormequat chloride, cloprop, cyclanilide, 3-(Cycloprop-1-enyl)propionic acid, daminozide, dazomet, dazomet-sodium, n-decanol, dikegulac, dikegulac-sodium,

endothal, endothal-dipotassium, -disodium, and mono(N,N-dimethylalkylammonium), ethephon, flumetralin, flurenol, flurenol-butyl, flurenol-methyl, flurprimidol, forchlorfenuron, gibberellic acid, inabenfide, indol-3-acetic acid (IAA), 4-indol-3-ylbutyric acid, isoprothiolane, probenazole, jasmonic acid, Jasmonic acid or derivatives thereof (e.g. Jasmonic acid methyl ester), lipo-chitooligosaccharides (LCO, sometimes referred to as symbiotic nodulation (Nod) signals (or Nod factors) or as Myc factors, consist of an oligosaccharide backbone of β-l,4-linked *N*-acetyl-D-glucosamine ("GlcNAc") residues with an N-linked fatty acyl chain condensed at the non-reducing end. As understood in the art, LCOs differ in the number of GlcNAc residues in the backbone, in the length and degree of saturation of the fatty acyl chain and in the substitutions of reducing and non-reducing sugar residues), linoleic acid or derivatives thereof, linolenic acid or derivatives thereof, maleic hydrazide, mepiquat chloride, mepiquat pentaborate, 1-methylcyclopropene, 3'-methyl abscisic acid, 2-(1-naphthyl)acetamide, 1-naphthylacetic acid, 2- naphthyloxyacetic acid, nitrophenolate-mixture, 4-Oxo-4[(2-phenylethyl)amino]butyric acid, paclobutrazol, 4-phenylbutyric acid, N-phenylphthalamic acid, prohexadione, prohexadione-calcium, prohydrojasmon, salicylic acid, salicylic acid methyl ester, strigolacton, tecnazene, thidiazuron, triacontanol, trinexapac, trinexapac-ethyl, tsitodef, uniconazole, uniconazole-P, 2-fluoro-N-(3-methoxyphenyl)-*9H*-purin-6-amine.

Suitable combination partners for the compounds of the general formula (I) according to the invention also include, for example, the following safeners:

S1) Compounds from the group of heterocyclic carboxylic acid derivatives:

$S1^a$) Compounds of the dichlorophenylpyrazoline-3-carboxylic acid type ($S1^a$), preferably compounds such as

1-(2,4-dichlorophenyl)-5-(ethoxycarbonyl)-5-methyl-2-pyrazoline-3-carboxylic acid, ethyl 1-(2,4-dichlorophenyl)-5-(ethoxycarbonyl)-5-methyl-2-pyrazoline-3-carboxylate (S1-1) ("mefenpyr-diethyl"), and related compounds as described in WO-A-91/07874;

$S1^b$) Derivatives of dichlorophenylpyrazolecarboxylic acid ($S1^b$), preferably compounds such as ethyl 1-(2,4-dichlorophenyl)-5-methylpyrazole-3-carboxylate (S1-2), ethyl 1-(2,4-dichlorophenyl)-5-isopropylpyrazole-3-carboxylate (S1-3), ethyl 1-(2,4-dichlorophenyl)-5-(1,1-dimethylethyl)pyrazole-3-carboxylate (S1-4) and related compounds as described in EP-A-333131 131 and EP-A-269806;

$S1^c$) Derivatives of 1,5-diphenylpyrazole-3-carboxylic acid ($S1^c$), preferably compounds such as ethyl 1-(2,4-dichlorophenyl)-5-phenylpyrazole-3-carboxylate (S1-5), methyl 1-(2-chlorophenyl)-5-phenylpyrazole-3-carboxylate (S1-6) and related compounds as described, for example, in EP-A-268554;

S1[d]) Compounds of the triazolecarboxylic acid type (S1[d]), preferably compounds such as fenchlorazole (ethyl ester), i.e. ethyl 1-(2,4-dichlorophenyl)-5-trichloromethyl-1H-1,2,4-triazole-3-carboxylate (S1-7), and related compounds, as described in EP-A-174562 and EP-A-346620;

S1[e]) Compounds of the 5-benzyl- or 5-phenyl-2-isoxazoline-3-carboxylic acid or of the 5,5-diphenyl-2-isoxazoline-3-carboxylic acid type (S1[e]), preferably compounds such as ethyl 5-(2,4-dichlorobenzyl)-2-isoxazoline-3-carboxylate (S1-8) or ethyl 5-phenyl-2-isoxazoline-3-carboxylate (S1-9) and related compounds as described in WO-A-91/08202, or 5,5-diphenyl-2-isoxazolinecarboxylic acid (S1-10) or ethyl 5,5-diphenyl-2-isoxazoline-3-carboxylate (S1-11) ("isoxadifen-ethyl") or n-propyl 5,5-diphenyl-2-isoxazoline-3-carboxylate (S1-12) or ethyl 5-(4-fluorophenyl)-5-phenyl-2-isoxazoline-3-carboxylate (S1-13), as described in patent application WO-A-95/07897.

S2) Compounds from the group of the 8-quinolinoxy derivatives (S2):

S2[a]) Compounds of the 8-quinolinoxyacetic acid type (S2[a]), preferably 1-methylhexyl (5-chloro-8-quinolinoxy)acetate ("cloquintocet-mexyl") (S2-1), 1,3-dimethylbut-1-yl (5-chloro-8-quinolinoxy)acetate (S2-2), 4-allyloxybutyl (5-chloro-8-quinolinoxy)acetate (S2-3), 1-allyloxyprop-2-yl (5-chloro-8-quinolinoxy)acetate (S2-4), ethyl (5-chloro-8-quinolinoxy)acetate (S2-5), methyl 5-chloro-8-quinolinoxyacetate (S2-6), allyl (5-chloro-8-quinolinoxy)acetate (S2-7), 2-(2-propylideneiminoxy)-1-ethyl (5-chloro-8-quinolinoxy)acetate (S2-8), 2-oxoprop-1-yl (5-chloro-8-quinolinoxy)acetate (S2-9) and related compounds, as described in EP-A-86750, EP-A-94349 and EP-A-191736 or EP-A-0 492 366, and also (5-chloro-8-quinolinoxy)acetic acid (S2-10), hydrates and salts thereof, for example the lithium, sodium, potassium, calcium, magnesium, aluminum, iron, ammonium, quaternary ammonium, sulfonium or phosphonium salts thereof, as described in WO-A-2002/34048;

S2[b]) Compounds of the (5-chloro-8-quinolinoxy)malonic acid type (S2[b]), preferably compounds such as diethyl (5-chloro-8-quinolinoxy)malonate, diallyl (5-chloro-8-quinolinoxy)malonate, methyl ethyl (5-chloro-8-quinolinoxy)malonate and related compounds, as described in EP-A-0 582 198.

S3) Active compounds of the dichloroacetamide type (S3), which are frequently used as pre-emergence safeners (soil-acting safeners), for example
"dichlormid" (N,N-diallyl-2,2-dichloroacetamide) (S3-1),
"R-29148" (3-dichloroacetyl-2,2,5-trimethyl-1,3-oxazolidine) from Stauffer (S3-2),
"R-28725" (3-dichloroacetyl-2,2-dimethyl-1,3-oxazolidine) from Stauffer (S3-3),
"benoxacor" (4-dichloroacetyl-3,4-dihydro-3-methyl-2H-1,4-benzoxazine) (S3-4),

"PPG-1292" (N-allyl-N-[(1,3-dioxolan-2-yl)methyl]dichloroacetamide) from PPG Industries (S3-5),

"DKA-24" (N-allyl-N-[(allylaminocarbonyl)methyl]dichloroacetamide) from Sagro-Chem (S3-6),

"AD-67" or "MON 4660" (3-dichloroacetyl-1-oxa-3-azaspiro[4.5]decane) from Nitrokemia or Monsanto (S3-7),

"TI-35" (1-dichloroacetylazepane) from TRI-Chemical RT (S3-8),

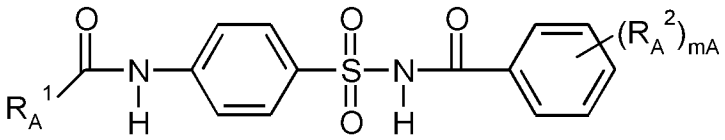
"Diclonon" (Dicyclonon) or "BAS145138" or "LAB145138" (S3-9)

((RS)-1-dichloroacetyl-3,3,8a-trimethylperhydropyrrolo[1,2-a]pyrimidin-6-one) from BASF,

"furilazole" or "MON 13900" ((RS)-3-dichloroacetyl-5-(2-furyl)-2,2-dimethyloxazolidine) (S3-10), and the (R) isomer thereof (S3-11).

S4) Compounds from the class of the acylsulfonamides (S4):

S4[a]) N-Acylsulfonamides of the formula (S4[a]) and salts thereof, as described in WO-A-97/45016,



(S4[a])

in which

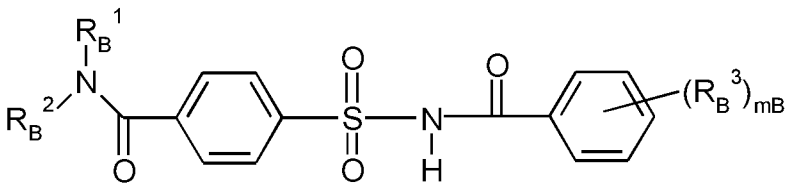
R_A^1 is $(C_1\text{-}C_6)$-alkyl, $(C_3\text{-}C_6)$-cycloalkyl, where the 2 latter radicals are substituted by v_A substituents from the group of halogen, $(C_1\text{-}C_4)$-alkoxy, $(C_1\text{-}C_6)$-haloalkoxy and $(C_1\text{-}C_4)$-alkylthio and, in the case of cyclic radicals, also by $(C_1\text{-}C_4)$-alkyl and $(C_1\text{-}C_4)$-haloalkyl;

R_A^2 is halogen, $(C_1\text{-}C_4)$-alkyl, $(C_1\text{-}C_4)$-alkoxy, CF_3;

m_A is 1 or 2;

v_A is 0, 1, 2 or 3;

S4[b]) Compounds of the 4-(benzoylsulfamoyl)benzamide type of the formula (S4[b]) and salts thereof, as described in WO-A-99/16744,



(S4[b])

in which

R_B^1, R_B^2 are independently hydrogen, (C_1-C_6)-alkyl, (C_3-C_6)-cycloalkyl, (C_3-C_6)-alkenyl, (C_3-C_6)-alkynyl,

R_B^3 is halogen, (C_1-C_4)-alkyl, (C_1-C_4)-haloalkyl or (C_1-C_4)-alkoxy and

m_B is 1 or 2,

for example those in which

R_B^1 = cyclopropyl, R_B^2 = hydrogen and (R_B^3) = 2-OMe ("cyprosulfamide", S4-1),

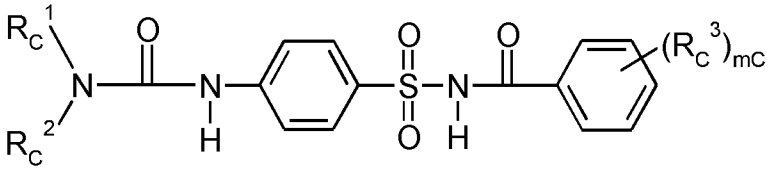
R_B^1 = cyclopropyl, R_B^2 = hydrogen and (R_B^3) = 5-Cl-2-OMe (S4-2),

R_B^1 = ethyl, R_B^2 = hydrogen and (R_B^3) = 2-OMe (S4-3),

R_B^1 = isopropyl, R_B^2 = hydrogen and (R_B^3) = 5-Cl-2-OMe (S4-4) and

R_B^1 = isopropyl, R_B^2 = hydrogen and (R_B^3) = 2-OMe (S4-5);

S4^c) Compounds from the class of the benzoylsulfamoylphenylureas of the formula (S4^c), as described in EP-A-365484,



(S4^c)

in which

R_C^1, R_C^2 are independently hydrogen, (C_1-C_8)-alkyl, (C_3-C_8)-cycloalkyl, (C_3-C_6)-alkenyl, (C_3-C_6)-alkynyl,

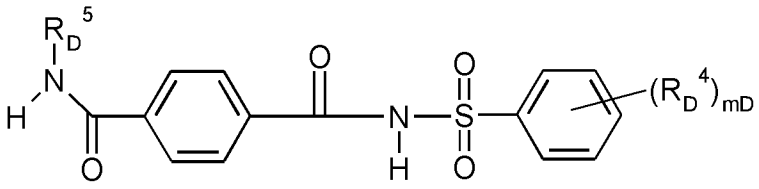
R_C^3 is halogen, (C_1-C_4)-alkyl, (C_1-C_4)-alkoxy, CF_3 and

m_C is 1 or 2;

for example

1-[4-(N-2-methoxybenzoylsulfamoyl)phenyl]-3-methylurea,
1-[4-(N-2-methoxybenzoylsulfamoyl)phenyl]-3,3-dimethylurea,
1-[4-(N-4,5-dimethylbenzoylsulfamoyl)phenyl]-3-methylurea;

S4[d]) Compounds of the N-phenylsulfonylterephthalamide type of the formula (S4[d]) and salts thereof, which are known, for example, from CN 101838227,



(S4[d])

in which

R_D^4 is halogen, $(C_1\text{-}C_4)$-alkyl, $(C_1\text{-}C_4)$-alkoxy, CF_3;

m_D is 1 or 2;

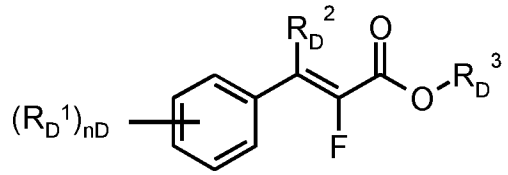
R_D^5 is hydrogen, $(C_1\text{-}C_6)$-alkyl, $(C_3\text{-}C_6)$-cycloalkyl, $(C_2\text{-}C_6)$-alkenyl, $(C_2\text{-}C_6)$-alkynyl or $(C_5\text{-}C_6)$-cycloalkenyl.

S5) Active compounds from the class of the hydroxyaromatics and the aromatic-aliphatic carboxylic acid derivatives (S5), for example ethyl 3,4,5-triacetoxybenzoate, 3,5-dimethoxy-4-hydroxybenzoic acid, 3,5-dihydroxybenzoic acid, 4-hydroxysalicylic acid, 4-fluorosalicyclic acid, 2-hydroxycinnamic acid, 2,4-dichlorocinnamic acid, as described in WO-A-2004/084631, WO-A-2005/015994, WO-A-2005/016001.

S6) Active compounds from the class of the 1,2-dihydroquinoxalin-2-ones (S6), for example 1-methyl-3-(2-thienyl)-1,2-dihydroquinoxalin-2-one, 1-methyl-3-(2-thienyl)-1,2-dihydroquinoxaline-2-thione, 1-(2-aminoethyl)-3-(2-thienyl)-1,2-dihydroquinoxalin-2-one hydrochloride, 1-(2-methylsulfonylaminoethyl)-3-(2-thienyl)-1,2-dihydroquinoxalin-2-one, as described in WO-A-2005/112630.

S7) Compounds from the class of the diphenylmethoxyacetic acid derivatives (S7), e.g. methyl diphenylmethoxyacetate (CAS Reg. No. 41858-19-9) (S7-1), ethyl diphenylmethoxyacetate or diphenylmethoxyacetic acid, as described in WO-A-98/38856.

S8) Compounds of the formula (S8), as described in WO-A-98/27049,



(S8)

in which the symbols and indices are defined as follows:

R_D^1 is halogen, (C_1-C_4)-alkyl, (C_1-C_4)-haloalkyl, (C_1-C_4)-alkoxy, (C_1-C_4)-haloalkoxy,

R_D^2 is hydrogen or (C_1-C_4)-alkyl,

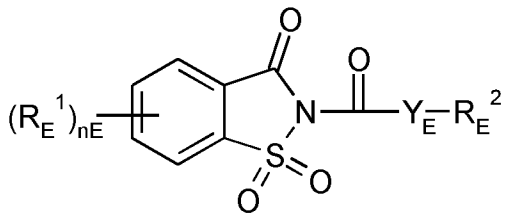
R_D^3 is hydrogen, (C_1-C_8)-alkyl, (C_2-C_4)-alkenyl, (C_2-C_4)-alkynyl or aryl, where each of the aforementioned carbon-containing radicals is unsubstituted or substituted by one or more, preferably up to three identical or different radicals from the group consisting of halogen and alkoxy; or salts thereof,

n_D is an integer from 0 to 2.

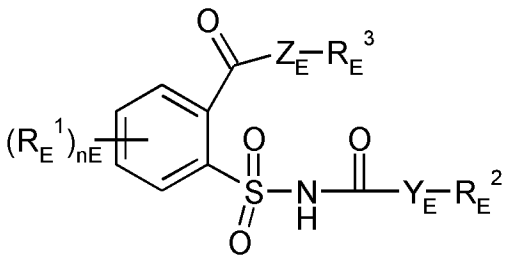
S9) active compounds from the class of the 3-(5-tetrazolylcarbonyl)-2-quinolones (S9), for example 1,2-dihydro-4-hydroxy-1-ethyl-3-(5-tetrazolylcarbonyl)-2-quinolone (CAS Reg. No. 219479-18-2), 1,2-dihydro-4-hydroxy-1-methyl-3-(5-tetrazolylcarbonyl)-2-quinolone (CAS Reg. No. 95855-00-8), as described in WO-A-199/000020;

S10) Compounds of the formula ($S10^a$) or ($S10^b$)

as described in WO-A-2007/023719 and WO-A-2007/023764



($S10^a$)



($S10^b$)

in which

R_E^1 is halogen, (C_1-C_4)-alkyl, methoxy, nitro, cyano, CF_3, OCF_3

Y_E, Z_E are independently O or S,

n_E is an integer from 0 to 4,

R_E^2 is (C_1-C_{16})-alkyl, (C_2-C_6)-alkenyl, (C_3-C_6)-cycloalkyl, aryl; benzyl, halobenzyl,

R_E^3 is hydrogen or (C_1-C_6)-alkyl.

S11) Active compounds of the oxyimino compound type (S11), which are known as seed-dressing agents, for example

"oxabetrinil" ((Z)-1,3-dioxolan-2-ylmethoxyimino(phenyl)acetonitrile) (S11-1), which is known as a seed-dressing safener for millet/sorghum against metolachlor damage,

"fluxofenim" (1-(4-chlorophenyl)-2,2,2-trifluoro-1-ethanone O-(1,3-dioxolan-2-ylmethyl)oxime) (S11-2), which is known as a seed-dressing safener for millet/sorghum against metolachlor damage, and

"cyometrinil" or "CGA-43089" ((Z)-cyanomethoxyimino(phenyl)acetonitrile) (S11-3), which is known as a seed-dressing safener for millet/sorghum against metolachlor damage.

S12) active compounds from the class of the isothiochromanones (S12), for example methyl [(3-oxo-1H-2-benzothiopyran-4(3H)-ylidene)methoxy]acetate (CAS Reg. No. 205121-04-6) (S12-1) and related compounds from WO-A-1998/13361.

S13) One or more compounds from group (S13):

"naphthalic anhydride" (1,8-naphthalenedicarboxylic anhydride) (S13-1), which is known as a seed-dressing safener for corn against thiocarbamate herbicide damage,

"fenclorim" (4,6-dichloro-2-phenylpyrimidine) (S13-2), which is known as a safener for pretilachlor in sown rice,

"flurazole" (benzyl 2-chloro-4-trifluoromethyl-1,3-thiazole-5-carboxylate) (S13-3), which is known as a seed-dressing safener for millet/sorghum against alachlor and metolachlor damage,

"CL 304415" (CAS Reg. No. 31541-57-8)

(4-carboxy-3,4-dihydro-2H-1-benzopyran-4-acetic acid) (S13-4) from American Cyanamid, which is known as a safener for corn against damage by imidazolinones,

"MG 191" (CAS Reg. No. 96420-72-3) (2-dichloromethyl-2-methyl-1,3-dioxolane) (S13-5) from Nitrokemia, which is known as a safener for corn,

"MG 838" (CAS Reg. No. 133993-74-5)

(2-propenyl 1-oxa-4-azaspiro[4.5]decane-4-carbodithioate) (S13-6) from Nitrokemia

"disulfoton" (O,O-diethyl S-2-ethylthioethyl phosphorodithioate) (S13-7),

"dietholate" (O,O-diethyl O-phenyl phosphorothioate) (S13-8),

"mephenate" (4-chlorophenyl methylcarbamate) (S13-9).

S14) active compounds which, in addition to herbicidal action against weeds, also have safener action on crop plants such as rice, for example

"dimepiperate" or "MY-93" (*S*-1-methyl 1-phenylethylpiperidine-1-carbothioate), which is known as a safener for rice against damage by the herbicide molinate,

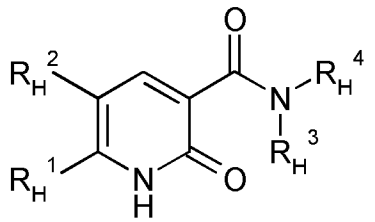
"daimuron" or "SK 23" (1-(1-methyl-1-phenylethyl)-3-p-tolylurea), which is known as safener for rice against imazosulfuron herbicide damage,

"cumyluron" = "JC-940" (3-(2-chlorophenylmethyl)-1-(1-methyl-1-phenylethyl)urea, see JP-A-60087254), which is known as safener for rice against damage by some herbicides,

"methoxyphenone" or "NK 049" (3,3'-dimethyl-4-methoxybenzophenone), which is known as a safener for rice against damage by some herbicides,

"CSB" (1-bromo-4-(chloromethylsulfonyl)benzene) from Kumiai, (CAS Reg. No. 54091-06-4), which is known as a safener against damage by some herbicides in rice.

S15) Compounds of the formula (S15) or tautomers thereof



(S15)

as described in WO-A-2008/131861 and WO-A-2008/131860

in which

R_H^1 is a (C_1-C_6)-haloalkyl radical and

R_H^2 is hydrogen or halogen and

R_H^3, R_H^4 are each independently hydrogen, (C_1-C_{16})-alkyl, (C_2-C_{16})-alkenyl or (C_2-C_{16})-alkynyl,

where each of the 3 latter radicals is unsubstituted or substituted by one or more radicals from the group of halogen, hydroxyl, cyano, (C_1-C_4)-alkoxy, (C_1-C_4)-haloalkoxy, (C_1-C_4)-alkylthio, (C_1-C_4)-alkylamino, di[(C_1-C_4)-alkyl]amino, [(C_1-C_4)-alkoxy]carbonyl, [(C_1-C_4)-haloalkoxy]carbonyl, (C_3-C_6)-cycloalkyl which is unsubstituted or substituted, phenyl which is unsubstituted or substituted, and heterocyclyl which is unsubstituted or substituted,

or (C_3-C_6)-cycloalkyl, (C_4-C_6)-cycloalkenyl, (C_3-C_6)-cycloalkyl fused on one side of the ring to a 4 to 6-membered saturated or unsaturated carbocyclic ring, or (C_4-C_6)-cycloalkenyl fused on one side of the ring to a 4 to 6-membered saturated or unsaturated carbocyclic ring,

where each of the 4 latter radicals is unsubstituted or substituted by one or more radicals from the group of halogen, hydroxyl, cyano, (C_1-C_4)alkyl, (C_1-C_4)haloalkyl, (C_1-C_4)alkoxy, (C_1-C_4)haloalkoxy, (C_1-C_4)alkylthio, (C_1-C_4)alkylamino, di[(C_1-C_4)alkyl]amino, [(C_1-C_4)alkoxy]carbonyl, [(C_1-C_4)haloalkoxy]carbonyl, (C_3-C_6)cycloalkyl which is unsubstituted or substituted, phenyl which is unsubstituted or substituted, and heterocyclyl which is unsubstituted or substituted,

or

R_H^3 is (C_1-C_4)-alkoxy, (C_2-C_4)-alkenyloxy, (C_2-C_6)-alkynyloxy or (C_2-C_4)-haloalkoxy and

R_H^4 is hydrogen or (C_1-C_4)-alkyl or

R_H^3 and R_H^4 together with the directly bonded nitrogen atom are a four- to eight-membered heterocyclic ring which, as well as the nitrogen atom, may also contain further ring heteroatoms, preferably up to two further ring heteroatoms from the group of N, O and S, and which is unsubstituted or substituted by one or more radicals from the group of halogen, cyano, nitro, (C_1-C_4)-alkyl, (C_1-C_4)-haloalkyl, (C_1-C_4)-alkoxy, (C_1-C_4)-haloalkoxy and (C_1-C_4)-alkylthio.

S16) Active compounds which are used primarily as herbicides but also have safener action on crop plants, for example

(2,4-dichlorophenoxy)acetic acid (2,4-D),

(4-chlorophenoxy)acetic acid,

(R,S)-2-(4-chloro-o-tolyloxy)propionic acid (mecoprop),

4-(2,4-dichlorophenoxy)butyric acid (2,4-DB),

(4-chloro-o-tolyloxy)acetic acid (MCPA),

4-(4-chloro-o-tolyloxy)butyric acid,

4-(4-chlorophenoxy)butyric acid,

3,6-dichloro-2-methoxybenzoic acid (dicamba),

1-(ethoxycarbonyl)ethyl 3,6-dichloro-2-methoxybenzoate (lactidichlor-ethyl).

Preferred safeners in combination with the compounds of the general formula (I) according to the invention and/or salts thereof, in particular with the compounds of the formulae (I-001) to (I-211) and and/or salts thereof, are: cloquintocet-mexyl, cyprosulfamide, fenchlorazole-ethyl, isoxadifen-ethyl, mefenpyr-diethyl, fenclorim, cumyluron, S4-1 and S4-5, and particularly preferred safeners are: cloquintocet-mexyl, cyprosulfamide, isoxadifen-ethyl and mefenpyr-diethyl.

Biological examples:

The following abbreviations are used in the examples and tables below:

Tested harmful plants:

ABUTH:	Abutilon theophrasti
AGSTE:	Agrostis tenuis
ALOMY:	Alopecurus myosuroides
AMARE	Amaranthus retroflexus
DIGSA:	Digitaria sanguinalis
ECHCG:	Echinochloa crus-galli
KCHSC:	Kochia scoparia
LOLRI:	Lolium rigidum
MATIN:	Matricaria inodora
POAAN:	Poa annua
POLCO:	Polygonum convolvulus
SETVI:	Setaria viridis
STEME:	Stellaria media
VERPE:	Veronica persica
VIOTR:	Viola tricolor

A. Herbicidal pre-emergence action

Seeds of mono- and dicotyledonous weed plants were sown in plastic pots (double sowings with one species of mono- and one species of dicotyledonous weed plants per pot), in sandy loam, and covered with soil. The compounds according to the invention, formulated in the form of wettable powders (WP) or as emulsifiable concentrates (EC), were applied to the surface of the covering soil as aqueous suspension or emulsion, with the addition of 0.5% of an additive, at an application rate of 600 l of water per hectare (converted). Following treatment, the pots were placed in a greenhouse and kept under optimum growth conditions for the test plants. The visual grading of the damage to the test plants was

carried out after ca. 3 weeks in comparison to untreated controls (herbicidal effect in percent (%): 100% effect = plants have died off, 0% effect = as control plants).

Tables A1 to A12, below, show the effects of selected compounds of the general formula (I) according to table 1 on various harmful plants and an application rate corresponding to 1280 g/ha obtained by the experimental procedure mentioned above.

Table A1

Example Number	Dosage [g/ha]	ALOMY
I-003	1280	90
I-041	1280	100
I-010	1280	100
I-165	1280	90
I-017	1280	100
I-093	1280	100
I-023	1280	100
I-045	1280	100
I-122	1280	100
I-124	1280	100
I-029	1280	100
I-137	1280	100
I-111	1280	90
I-030	1280	100
I-151	1280	100
I-049	1280	100
I-145	1280	100
I-051	1280	100
I-069	1280	100
I-083	1280	100
I-068	1280	100
I-013	1280	100
I-086	1280	90
I-129	1280	90
I-132	1280	100
I-102	1280	100
I-072	1280	100
I-135	1280	90
I-133	1280	100
I-134	1280	90
I-141	1280	100
I-114	1280	100

Example Number	Dosage [g/ha]	ALOMY
I-035	1280	90
I-143	1280	100
I-088	1280	100
I-194	1280	100
I-193	1280	90
I-192	1280	100
I-191	1280	100
I-190	1280	100
I-198	1280	100
I-188	1280	100
I-205	1280	100
I-189	1280	90
I-184	1280	90

Table A2

Example Number	Dosage [g/ha]	POAAN
I-036	1280	100
I-115	1280	100
I-056	1280	100
I-073	1280	100
I-003	1280	100
I-041	1280	100
I-103	1280	90
I-155	1280	100
I-021	1280	100
I-010	1280	100
I-104	1280	100
I-074	1280	100
I-118	1280	100
I-105	1280	100
I-165	1280	100
I-059	1280	100
I-017	1280	100
I-169	1280	100
I-080	1280	100
I-092	1280	90
I-093	1280	100
I-094	1280	100
I-023	1280	100
I-045	1280	100

Example Number	Dosage [g/ha]	POAAN
I-164	1280	100
I-122	1280	100
I-007	1280	90
I-064	1280	100
I-124	1280	100
I-174	1280	100
I-029	1280	100
I-137	1280	100
I-111	1280	100
I-030	1280	100
I-151	1280	100
I-049	1280	100
I-050	1280	100
I-145	1280	100
I-152	1280	100
I-071	1280	100
I-051	1280	100
I-069	1280	100
I-083	1280	100
I-068	1280	100
I-013	1280	100
I-053	1280	100
I-054	1280	100
I-154	1280	90
I-086	1280	90
I-055	1280	100
I-129	1280	100
I-132	1280	100
I-138	1280	100
I-102	1280	100
I-072	1280	100
I-135	1280	100
I-142	1280	100
I-133	1280	90
I-134	1280	90
I-141	1280	100
I-114	1280	100
I-035	1280	100
I-130	1280	100
I-143	1280	100
I-088	1280	100
I-194	1280	100

Example Number	Dosage [g/ha]	POAAN
I-197	1280	100
I-195	1280	100
I-193	1280	100
I-192	1280	100
I-191	1280	100
I-190	1280	100
I-198	1280	100
I-188	1280	100
I-205	1280	100
I-189	1280	100
I-185	1280	100
I-184	1280	100
I-204	1280	90

Table A3

Example Number	Dosage [g/ha]	DIGSA
I-003	1280	100
I-041	1280	100
I-103	1280	90
I-155	1280	90
I-010	1280	100
I-104	1280	100
I-074	1280	100
I-118	1280	100
I-105	1280	100
I-059	1280	100
I-017	1280	100
I-093	1280	100
I-094	1280	100
I-023	1280	100
I-043	1280	90
I-045	1280	100
I-122	1280	100
I-064	1280	100
I-124	1280	100
I-029	1280	100
I-137	1280	100
I-111	1280	100
I-176	1280	90
I-030	1280	90
I-151	1280	100

Example Number	Dosage [g/ha]	DIGSA
I-049	1280	90
I-145	1280	100
I-152	1280	100
I-051	1280	100
I-069	1280	100
I-083	1280	100
I-068	1280	100
I-013	1280	100
I-053	1280	100
I-132	1280	100
I-102	1280	100
I-072	1280	100

Table A4

Example Number	Dosage [g/ha]	ECHCG
I-001	1280	100
I-036	1280	100
I-115	1280	100
I-003	1280	100
I-041	1280	100
I-103	1280	90
I-155	1280	100
I-010	1280	100
I-074	1280	100
I-105	1280	100
I-158	1280	100
I-017	1280	100
I-169	1280	90
I-093	1280	90
I-023	1280	100
I-045	1280	100
I-122	1280	100
I-064	1280	100
I-124	1280	100
I-029	1280	100
I-137	1280	100
I-111	1280	100
I-030	1280	100
I-151	1280	100
I-049	1280	100
I-050	1280	100

Example Number	Dosage [g/ha]	ECHCG
I-145	1280	100
I-152	1280	100
I-071	1280	100
I-051	1280	100
I-069	1280	100
I-083	1280	100
I-068	1280	100
I-013	1280	100
I-055	1280	100
I-132	1280	100
I-102	1280	100
I-072	1280	100
I-135	1280	100
I-133	1280	100
I-141	1280	100
I-114	1280	100
I-035	1280	100
I-143	1280	100
I-088	1280	100
I-194	1280	100
I-195	1280	100
I-193	1280	100
I-201	1280	100
I-192	1280	100
I-191	1280	100
I-190	1280	100
I-198	1280	100
I-188	1280	100
I-205	1280	100
I-189	1280	100
I-185	1280	100
I-184	1280	100
I-204	1280	90
I-203	1280	100

Table A5

Example Number	Dosage [g/ha]	LOLRI
I-036	1280	100
I-003	1280	100
I-041	1280	100
I-021	1280	100

Example Number	Dosage [g/ha]	LOLRI
I-010	1280	100
I-118	1280	100
I-105	1280	100
I-017	1280	100
I-093	1280	100
I-023	1280	100
I-045	1280	100
I-122	1280	100
I-064	1280	100
I-124	1280	100
I-029	1280	100
I-137	1280	100
I-111	1280	100
I-030	1280	100
I-151	1280	100
I-049	1280	100
I-050	1280	90
I-145	1280	100
I-152	1280	100
I-071	1280	100
I-051	1280	100
I-069	1280	90
I-083	1280	100
I-068	1280	100
I-013	1280	100
I-055	1280	90
I-129	1280	90
I-132	1280	100
I-138	1280	90
I-102	1280	100
I-072	1280	100
I-135	1280	100
I-133	1280	100
I-134	1280	100
I-114	1280	100
I-035	1280	100
I-143	1280	100
I-088	1280	100
I-194	1280	100
I-195	1280	100
I-193	1280	100
I-192	1280	100

Example Number	Dosage [g/ha]	LOLRI
I-191	1280	100
I-190	1280	100
I-198	1280	90
I-188	1280	100
I-205	1280	90
I-189	1280	90
I-185	1280	100
I-184	1280	100

Table A6

Example Number	Dosage [g/ha]	SETVI
I-001	1280	100
I-036	1280	100
I-115	1280	100
I-003	1280	100
I-041	1280	100
I-103	1280	90
I-155	1280	100
I-021	1280	100
I-010	1280	100
I-104	1280	100
I-074	1280	100
I-118	1280	100
I-105	1280	100
I-165	1280	100
I-159	1280	90
I-059	1280	100
I-017	1280	100
I-106	1280	100
I-169	1280	90
I-093	1280	100
I-094	1280	100
I-023	1280	100
I-043	1280	90
I-045	1280	100
I-164	1280	100
I-122	1280	100
I-007	1280	100
I-064	1280	100
I-124	1280	100
I-029	1280	100

Example Number	Dosage [g/ha]	SETVI
I-137	1280	100
I-097	1280	100
I-111	1280	100
I-176	1280	100
I-030	1280	100
I-151	1280	100
I-049	1280	100
I-145	1280	100
I-152	1280	100
I-071	1280	90
I-051	1280	100
I-069	1280	100
I-083	1280	100
I-068	1280	100
I-013	1280	100
I-070	1280	100
I-055	1280	100
I-129	1280	100
I-132	1280	100
I-138	1280	90
I-102	1280	100
I-072	1280	100
I-135	1280	100
I-133	1280	100
I-134	1280	100
I-141	1280	100
I-114	1280	100
I-035	1280	100
I-130	1280	100
I-143	1280	100
I-088	1280	100
I-194	1280	100
I-197	1280	100
I-195	1280	100
I-193	1280	100
I-201	1280	90
I-192	1280	100
I-191	1280	100
I-190	1280	100
I-198	1280	100
I-188	1280	100
I-205	1280	100

Example Number	Dosage [g/ha]	SETVI
I-189	1280	100
I-184	1280	100
I-204	1280	100
I-203	1280	100

Table A7

Example Number	Dosage [g/ha]	ABUTH
I-041	1280	90
I-105	1280	90
I-017	1280	90
I-093	1280	90
I-023	1280	90
I-045	1280	90
I-122	1280	100
I-064	1280	90
I-124	1280	100
I-029	1280	90
I-137	1280	100
I-151	1280	90
I-051	1280	90
I-013	1280	90
I-102	1280	90
I-114	1280	90
I-143	1280	90
I-190	1280	90

Table A8

Example Number	Dosage [g/ha]	AMARE
I-036	1280	90
I-003	1280	90
I-041	1280	100
I-155	1280	90
I-021	1280	100
I-010	1280	90
I-104	1280	90
I-074	1280	90
I-118	1280	90
I-105	1280	90
I-165	1280	90

Example Number	Dosage [g/ha]	AMARE
I-158	1280	90
I-017	1280	100
I-169	1280	90
I-061	1280	90
I-092	1280	90
I-093	1280	90
I-094	1280	100
I-023	1280	100
I-043	1280	90
I-045	1280	100
I-122	1280	100
I-064	1280	100
I-124	1280	100
I-174	1280	100
I-029	1280	100
I-137	1280	100
I-111	1280	90
I-030	1280	90
I-151	1280	100
I-049	1280	90
I-050	1280	90
I-145	1280	100
I-152	1280	90
I-071	1280	90
I-068	1280	90
I-013	1280	90
I-070	1280	100
I-154	1280	90
I-129	1280	90
I-132	1280	100
I-102	1280	90
I-072	1280	100
I-135	1280	90
I-133	1280	90
I-139	1280	90
I-141	1280	90
I-114	1280	90
I-035	1280	90
I-130	1280	90
I-143	1280	90
I-088	1280	90
I-194	1280	100

Example Number	Dosage [g/ha]	AMARE
I-197	1280	90
I-193	1280	90
I-191	1280	90
I-190	1280	90
I-189	1280	90
I-184	1280	90
I-204	1280	90
I-203	1280	90

Table A9

Example Number	Dosage [g/ha]	MATIN
I-001	1280	90
I-036	1280	90
I-115	1280	90
I-003	1280	90
I-041	1280	100
I-010	1280	100
I-104	1280	90
I-118	1280	90
I-105	1280	100
I-017	1280	100
I-093	1280	100
I-094	1280	100
I-023	1280	100
I-045	1280	100
I-122	1280	100
I-124	1280	100
I-029	1280	90
I-137	1280	90
I-111	1280	90
I-030	1280	100
I-151	1280	90
I-049	1280	90
I-050	1280	90
I-145	1280	90
I-152	1280	90
I-051	1280	90
I-069	1280	90
I-013	1280	90
I-132	1280	90

Example Number	Dosage [g/ha]	MATIN
I-102	1280	100
I-072	1280	100
I-135	1280	100
I-142	1280	100
I-134	1280	90
I-141	1280	90
I-114	1280	90
I-035	1280	90
I-143	1280	90
I-088	1280	90
I-194	1280	100
I-195	1280	90
I-193	1280	90
I-199	1280	90
I-192	1280	100
I-191	1280	90
I-190	1280	100
I-188	1280	90
I-205	1280	90
I-189	1280	90
I-185	1280	90
I-184	1280	90

Table A10

Example Number	Dosage [g/ha]	KCHSC
I-003	1280	100
I-041	1280	100
I-155	1280	90
I-021	1280	90
I-010	1280	90
I-104	1280	100
I-105	1280	100
I-059	1280	90
I-017	1280	100
I-169	1280	90
I-093	1280	100
I-023	1280	100
I-024	1280	100
I-043	1280	90
I-045	1280	100
I-164	1280	90

Example Number	Dosage [g/ha]	KCHSC
I-122	1280	100
I-064	1280	100
I-124	1280	100
I-029	1280	100
I-137	1280	100
I-111	1280	100
I-176	1280	90
I-030	1280	100
I-151	1280	100
I-049	1280	100
I-050	1280	90
I-145	1280	90
I-152	1280	100
I-071	1280	90
I-051	1280	90
I-069	1280	90
I-068	1280	100
I-013	1280	100
I-053	1280	90
I-055	1280	100
I-129	1280	90
I-132	1280	100
I-102	1280	100
I-072	1280	100
I-135	1280	90
I-133	1280	90
I-114	1280	90
I-035	1280	90
I-143	1280	90
I-088	1280	90
I-194	1280	100
I-197	1280	90
I-195	1280	90
I-193	1280	90
I-201	1280	90
I-192	1280	100
I-191	1280	90
I-190	1280	90
I-188	1280	90
I-189	1280	90
I-185	1280	90
I-184	1280	90

Table A11

Example Number	Dosage [g/ha]	STEME
I-001	1280	90
I-019	1280	90
I-036	1280	90
I-115	1280	100
I-056	1280	100
I-073	1280	90
I-003	1280	90
I-041	1280	100
I-103	1280	100
I-021	1280	100
I-010	1280	100
I-104	1280	90
I-156	1280	90
I-118	1280	100
I-105	1280	100
I-165	1280	90
I-158	1280	90
I-017	1280	100
I-106	1280	100
I-022	1280	90
I-061	1280	90
I-080	1280	100
I-092	1280	90
I-093	1280	100
I-094	1280	100
I-023	1280	90
I-024	1280	100
I-045	1280	100
I-122	1280	100
I-064	1280	100
I-124	1280	100
I-029	1280	100
I-137	1280	100
I-111	1280	100
I-176	1280	90
I-030	1280	90
I-151	1280	100
I-049	1280	100
I-162	1280	90
I-050	1280	90

Example Number	Dosage [g/ha]	STEME
I-145	1280	90
I-152	1280	90
I-071	1280	90
I-051	1280	90
I-069	1280	90
I-083	1280	100
I-068	1280	100
I-013	1280	100
I-053	1280	100
I-154	1280	90
I-055	1280	90
I-132	1280	90
I-138	1280	90
I-102	1280	90
I-072	1280	90
I-135	1280	90
I-133	1280	90
I-134	1280	100
I-141	1280	90
I-114	1280	90
I-035	1280	90
I-143	1280	90
I-088	1280	90
I-194	1280	100
I-195	1280	90
I-193	1280	100
I-201	1280	100
I-199	1280	100
I-192	1280	100
I-191	1280	100
I-190	1280	90
I-198	1280	90
I-188	1280	90
I-189	1280	90
I-185	1280	90
I-184	1280	90
I-204	1280	90
I-203	1280	90
I-202	1280	100

Table A12

Example Number	Dosage [g/ha]	VERPE
I-003	1280	90
I-041	1280	100
I-155	1280	90
I-021	1280	90
I-010	1280	90
I-104	1280	90
I-165	1280	90
I-017	1280	90
I-061	1280	90
I-092	1280	90
I-093	1280	100
I-023	1280	100
I-024	1280	90
I-043	1280	100
I-045	1280	100
I-122	1280	100
I-064	1280	90
I-124	1280	100
I-029	1280	90
I-137	1280	100
I-111	1280	90
I-030	1280	100
I-151	1280	90
I-049	1280	100
I-162	1280	90
I-145	1280	100
I-152	1280	90
I-071	1280	90
I-051	1280	90
I-069	1280	90
I-083	1280	100
I-068	1280	90
I-013	1280	90
I-132	1280	100
I-102	1280	100
I-072	1280	100
I-135	1280	90
I-133	1280	90
I-141	1280	90
I-114	1280	100
I-035	1280	90

Example Number	Dosage [g/ha]	VERPE
I-143	1280	100
I-194	1280	100
I-195	1280	90
I-193	1280	90
I-192	1280	90
I-191	1280	100
I-190	1280	90
I-198	1280	90
I-188	1280	90
I-205	1280	100
I-189	1280	90
I-185	1280	90
I-184	1280	90

As the results show, various compounds of the general formula (I) according the invention have very good herbicidal pre-emergence efficacy against a broad spectrum of mono- and dicotyledonous weeds such as Abutilon theophrasti, Alopecurus myosuroides, Amaranthus retroflexus, Bassia scoparia, Digitaria sanguinalis, Echinochloa crus-galli, Lolium rigidum, Matricaria inodora, Poa annua, Setaria viridis, Stellaria media and Veronica persica at an application rate of 1280 g of active ingredient per hectare.

B. Herbicidal post-emergence action

Seeds of mono- and dicotyledonous weed plants were placed in plastic pots in sandy loam soil (doubly sown with in each case one species of mono- or dicotyledonous weed plants per pot), covered with soil and cultivated in a greenhouse under controlled growth conditions. 2 to 3 weeks after sowing, the test plants were treated at the one-leaf stage. The compounds of the invention, formulated in the form of wettable powders (WP) or as emulsion concentrates (EC), were applied onto the green parts of the plants as aqueous suspension or emulsion with addition of 0.5% additive at a water application rate of 600 liters per hectare (converted). After the test plants had been kept in the greenhouse under optimum growth conditions for about 3 weeks, the activity of the preparations was rated visually in comparison to untreated controls. For example, 100% activity = the plants have died, 0% activity = like control plants.

Tables B1 to B12, below, show the effects of selected compounds of the general formula (I) according to table 1 on various harmful plants and an application rate corresponding to 1280 g/ha obtained by the experimental procedure mentioned above.

Table B1

Example Number	Dosage [g/ha]	ALOMY
I-003	1280	100
I-041	1280	100
I-010	1280	100
I-017	1280	100
I-093	1280	100
I-094	1280	100
I-023	1280	100
I-045	1280	100
I-122	1280	100
I-124	1280	100
I-029	1280	100
I-137	1280	100
I-030	1280	90
I-151	1280	100
I-145	1280	100
I-152	1280	100
I-071	1280	90
I-051	1280	100
I-069	1280	100
I-068	1280	90
I-013	1280	100
I-053	1280	100
I-086	1280	100
I-132	1280	100
I-102	1280	100
I-072	1280	100
I-135	1280	90
I-114	1280	90
I-035	1280	90
I-143	1280	100
I-194	1280	100
I-195	1280	100
I-192	1280	100
I-191	1280	100
I-190	1280	100
I-198	1280	90

Table B2

Example Number	Dosage [g/ha]	POAAN
I-036	1280	100
I-056	1280	100
I-003	1280	100
I-041	1280	100
I-021	1280	100
I-010	1280	100
I-118	1280	100
I-105	1280	100
I-158	1280	100
I-017	1280	100
I-093	1280	100
I-094	1280	100
I-023	1280	100
I-045	1280	100
I-122	1280	100
I-124	1280	100
I-029	1280	100
I-137	1280	100
I-111	1280	100
I-030	1280	100
I-151	1280	100
I-049	1280	100
I-152	1280	100
I-051	1280	100
I-069	1280	100
I-068	1280	100
I-013	1280	90
I-055	1280	100
I-132	1280	90
I-138	1280	90
I-102	1280	90
I-072	1280	100
I-135	1280	90
I-133	1280	100
I-134	1280	90
I-035	1280	90
I-143	1280	100
I-194	1280	100
I-195	1280	100
I-193	1280	100
I-192	1280	90

Example Number	Dosage [g/ha]	POAAN
I-191	1280	100
I-190	1280	100
I-188	1280	90
I-189	1280	90
I-184	1280	90

Table B3

Example Number	Dosage [g/ha]	DIGSA
I-003	1280	90
I-041	1280	100
I-010	1280	100
I-074	1280	100
I-165	1280	100
I-159	1280	100
I-017	1280	100
I-092	1280	100
I-093	1280	100
I-094	1280	100
I-023	1280	100
I-122	1280	100
I-007	1280	100
I-124	1280	100
I-029	1280	100
I-137	1280	100
I-111	1280	100
I-030	1280	100
I-049	1280	90
I-145	1280	100
I-051	1280	100
I-068	1280	100
I-132	1280	90
I-102	1280	100
I-072	1280	90

Table B4

Example Number	Dosage [g/ha]	ECHCG
I-036	1280	100
I-003	1280	100
I-041	1280	100

Example Number	Dosage [g/ha]	ECHCG
I-010	1280	90
I-105	1280	100
I-017	1280	100
I-093	1280	100
I-094	1280	100
I-023	1280	100
I-045	1280	100
I-122	1280	90
I-124	1280	90
I-029	1280	100
I-137	1280	100
I-030	1280	100
I-145	1280	100
I-051	1280	100
I-069	1280	100
I-013	1280	100
I-055	1280	90
I-132	1280	100
I-102	1280	100
I-072	1280	90
I-133	1280	90
I-141	1280	90
I-114	1280	90
I-035	1280	90
I-143	1280	100
I-194	1280	100
I-193	1280	100
I-192	1280	100
I-191	1280	100
I-190	1280	100
I-188	1280	90
I-189	1280	100
I-185	1280	90
I-184	1280	90

Table B5

Example Number	Dosage [g/ha]	LOLRI
I-036	1280	100
I-041	1280	100
I-105	1280	100
I-017	1280	100

Example Number	Dosage [g/ha]	LOLRI
I-093	1280	100
I-023	1280	100
I-045	1280	90
I-137	1280	90
I-030	1280	90
I-051	1280	100
I-069	1280	90
I-068	1280	90
I-013	1280	90
I-132	1280	100
I-134	1280	90
I-143	1280	100
I-194	1280	100
I-188	1280	90

Table B6

Example Number	Dosage [g/ha]	SETVI
I-001	1280	90
I-036	1280	100
I-003	1280	90
I-041	1280	100
I-010	1280	100
I-105	1280	90
I-017	1280	100
I-093	1280	100
I-094	1280	100
I-023	1280	100
I-045	1280	100
I-122	1280	90
I-124	1280	90
I-029	1280	100
I-137	1280	100
I-030	1280	90
I-051	1280	100
I-069	1280	90
I-132	1280	90
I-102	1280	100
I-072	1280	90
I-114	1280	90
I-035	1280	90
I-143	1280	90

Example Number	Dosage [g/ha]	SETVI
I-088	1280	90
I-188	1280	90
I-189	1280	90
I-185	1280	90

Table B7

Example Number	Dosage [g/ha]	ABUTH
I-041	1280	100
I-010	1280	100
I-105	1280	90
I-159	1280	90
I-059	1280	100
I-017	1280	90
I-169	1280	100
I-092	1280	90
I-093	1280	100
I-094	1280	100
I-023	1280	100
I-045	1280	90
I-122	1280	90
I-007	1280	90
I-124	1280	100
I-029	1280	100
I-137	1280	90
I-030	1280	100
I-152	1280	90
I-051	1280	90
I-068	1280	90
I-053	1280	90
I-070	1280	90
I-054	1280	90
I-132	1280	90
I-133	1280	90
I-114	1280	90
I-035	1280	90
I-130	1280	90
I-143	1280	100
I-088	1280	90
I-194	1280	90
I-193	1280	90
I-192	1280	100

Example Number	Dosage [g/ha]	ABUTH
I-191	1280	90
I-186	1280	90

Table B8

Example Number	Dosage [g/ha]	AMARE
I-001	1280	90
I-036	1280	100
I-056	1280	100
I-003	1280	100
I-041	1280	100
I-090	1280	100
I-155	1280	100
I-021	1280	90
I-010	1280	100
I-104	1280	90
I-156	1280	100
I-074	1280	90
I-118	1280	90
I-105	1280	100
I-059	1280	100
I-158	1280	90
I-017	1280	90
I-022	1280	100
I-169	1280	90
I-092	1280	100
I-093	1280	100
I-094	1280	100
I-023	1280	100
I-006	1280	90
I-043	1280	100
I-045	1280	90
I-122	1280	100
I-007	1280	100
I-124	1280	90
I-029	1280	100
I-137	1280	100
I-111	1280	100
I-030	1280	100
I-151	1280	100
I-049	1280	100

Example Number	Dosage [g/ha]	AMARE
I-162	1280	90
I-050	1280	90
I-145	1280	100
I-152	1280	100
I-071	1280	90
I-051	1280	100
I-069	1280	90
I-083	1280	100
I-068	1280	90
I-013	1280	100
I-070	1280	100
I-054	1280	100
I-154	1280	90
I-067	1280	90
I-052	1280	100
I-086	1280	100
I-132	1280	90
I-102	1280	100
I-072	1280	100
I-135	1280	90
I-133	1280	90
I-134	1280	90
I-141	1280	90
I-114	1280	90
I-035	1280	100
I-143	1280	100
I-088	1280	100
I-194	1280	100
I-193	1280	100
I-199	1280	100
I-192	1280	100
I-188	1280	100
I-186	1280	100
I-189	1280	90
I-185	1280	100
I-184	1280	100
I-209	1280	90
I-203	1280	90
I-208	1280	100

Table B9

Example Number	Dosage [g/ha]	MATIN
I-036	1280	100
I-041	1280	100
I-021	1280	100
I-010	1280	100
I-118	1280	100
I-158	1280	100
I-022	1280	90
I-093	1280	100
I-094	1280	100
I-007	1280	100
I-064	1280	100
I-137	1280	90
I-051	1280	100
I-132	1280	90
I-102	1280	90
I-072	1280	90
I-135	1280	90
I-143	1280	100
I-194	1280	100
I-191	1280	90
I-188	1280	90

Table B10

Example Number	Dosage [g/ha]	KCHSC
I-003	1280	90
I-041	1280	100
I-155	1280	100
I-021	1280	100
I-010	1280	100
I-104	1280	100
I-074	1280	90
I-165	1280	90
I-159	1280	90
I-059	1280	90
I-039	1280	90
I-017	1280	90
I-022	1280	90
I-169	1280	90
I-061	1280	90
I-092	1280	100

Example Number	Dosage [g/ha]	KCHSC
I-093	1280	100
I-094	1280	100
I-023	1280	90
I-024	1280	90
I-043	1280	90
I-045	1280	90
I-122	1280	100
I-007	1280	90
I-064	1280	100
I-124	1280	100
I-029	1280	100
I-137	1280	90
I-111	1280	100
I-176	1280	90
I-030	1280	100
I-151	1280	100
I-049	1280	100
I-162	1280	90
I-145	1280	90
I-152	1280	90
I-071	1280	90
I-051	1280	90
I-069	1280	90
I-083	1280	90
I-068	1280	100
I-013	1280	100
I-053	1280	90
I-054	1280	90
I-154	1280	90
I-086	1280	90
I-132	1280	90
I-102	1280	100
I-072	1280	90
I-135	1280	90
I-141	1280	90
I-114	1280	90
I-035	1280	90
I-130	1280	90
I-143	1280	100
I-088	1280	100
I-194	1280	100
I-195	1280	90

Example Number	Dosage [g/ha]	KCHSC
I-193	1280	90
I-192	1280	90
I-191	1280	90
I-190	1280	90
I-198	1280	90
I-188	1280	90
I-189	1280	90
I-185	1280	90
I-184	1280	90

Table B11

Example Number	Dosage [g/ha]	STEME
I-019	1280	90
I-036	1280	100
I-003	1280	100
I-041	1280	100
I-090	1280	90
I-010	1280	100
I-074	1280	90
I-105	1280	100
I-039	1280	90
I-017	1280	100
I-093	1280	100
I-094	1280	100
I-023	1280	100
I-045	1280	100
I-122	1280	100
I-007	1280	100
I-064	1280	100
I-124	1280	100
I-029	1280	100
I-137	1280	100
I-097	1280	100
I-111	1280	90
I-030	1280	90
I-151	1280	100
I-049	1280	90
I-145	1280	100
I-071	1280	90
I-051	1280	100
I-069	1280	100

Example Number	Dosage [g/ha]	STEME
I-083	1280	100
I-068	1280	90
I-013	1280	100
I-053	1280	100
I-132	1280	100
I-102	1280	100
I-072	1280	90
I-143	1280	100
I-088	1280	100
I-194	1280	100
I-193	1280	90
I-201	1280	90
I-192	1280	90
I-191	1280	90
I-190	1280	90
I-188	1280	90
I-186	1280	90
I-189	1280	90
I-184	1280	90
I-203	1280	90

Table B12

Example Number	Dosage [g/ha]	VERPE
I-003	1280	90
I-041	1280	100
I-155	1280	90
I-010	1280	100
I-104	1280	100
I-118	1280	90
I-165	1280	90
I-059	1280	100
I-158	1280	90
I-017	1280	90
I-169	1280	90
I-080	1280	90
I-092	1280	90
I-093	1280	100
I-094	1280	100
I-023	1280	90
I-006	1280	90
I-043	1280	90

Example Number	Dosage [g/ha]	VERPE
I-045	1280	90
I-164	1280	90
I-122	1280	100
I-007	1280	90
I-064	1280	90
I-124	1280	100
I-029	1280	90
I-137	1280	100
I-097	1280	100
I-111	1280	90
I-176	1280	90
I-030	1280	90
I-151	1280	100
I-049	1280	90
I-162	1280	100
I-050	1280	90
I-145	1280	100
I-152	1280	100
I-071	1280	90
I-051	1280	100
I-069	1280	100
I-083	1280	90
I-068	1280	100
I-013	1280	100
I-101	1280	90
I-054	1280	90
I-154	1280	100
I-132	1280	100
I-138	1280	90
I-102	1280	100
I-072	1280	100
I-135	1280	90
I-141	1280	90
I-114	1280	90
I-035	1280	90
I-130	1280	90
I-143	1280	100
I-088	1280	100
I-194	1280	100
I-197	1280	90
I-193	1280	90
I-192	1280	100

Example Number	Dosage [g/ha]	VERPE
I-191	1280	100
I-190	1280	100
I-198	1280	100
I-205	1280	90
I-186	1280	90
I-189	1280	90
I-185	1280	90
I-184	1280	90
I-209	1280	90
I-204	1280	90
I-208	1280	90

As the results show, various compounds of the general formula (I) according to the invention, in post-emergence applications, have very good herbicidal activity against harmful plants plants such as Abutilon theophrasti, Alopecurus myosuroides, Amaranthus retroflexus, Bassia scoparia, Digitaria sanguinalis, Echinochloa crus-galli, Lolium rigidum, Matricaria inodora, Poa annua, Setaria viridis, Stellaria media and Veronica persica at an application rate of 1280 g of active substance per hectare.

C. Herbicidal pre-emergence action

Seeds of mono- and dicotyledonous weed plants and crop plants were sown, in plastic or organic planting pots, in sandy loam and covered with soil. The compounds according to the invention, formulated in the form of wettable powders (WP) or as emulsifiable concentrates (EC), were applied to the surface of the covering soil as aqueous suspension or emulsion, with the addition of 0.5% of an additive, at an application rate of 600 l of water/ha (converted).
Following treatment, the pots were placed in a greenhouse and kept under optimum growth conditions for the test plants. The visual grading of the damage to the test plants was carried out after ca. 3 weeks in comparison to untreated controls (herbicidal effect in percent (%): 100% effect = plants have died off, 0% effect = as control plants).

Tables C1 to C13 below show the effects of selected compounds of the general formula (I) according to table 1 on various harmful plants and an application rate corresponding to 320 g/ha obtained by the experimental procedure mentioned above.

Table C1

Example Number	Dosage [g/ha]	ALOMY
I-036	320	100
I-002	320	100
I-003	320	100
I-041	320	100
I-010	320	100
I-017	320	100
I-093	320	100
I-023	320	100
I-045	320	100
I-018	320	100
I-122	320	100
I-124	320	100
I-029	320	100
I-137	320	100
I-030	320	100
I-151	320	100
I-012	320	100
I-051	320	100
I-069	320	100
I-068	320	100
I-013	320	100
I-102	320	90
I-072	320	100
I-135	320	100
I-114	320	90
I-127	320	90
I-143	320	100
I-087	320	100
I-194	320	100
I-193	320	100
I-192	320	100
I-191	320	90
I-190	320	100
I-188	320	100
I-189	320	100
I-185	320	90
I-184	320	100

Table C2

Example Number	Dosage [g/ha]	AVEFA
I-036	320	100
I-002	320	100
I-041	320	90
I-017	320	90
I-093	320	80
I-045	320	90
I-122	320	100
I-137	320	80
I-012	320	100
I-051	320	90
I-127	320	90
I-143	320	90
I-087	320	80
I-193	320	80
I-188	320	100

Table C3

Example Number	Dosage [g/ha]	DIGSA
I-036	320	100
I-002	320	100
I-003	320	100
I-041	320	100
I-010	320	100
I-017	320	100
I-093	320	100
I-023	320	100
I-045	320	100
I-018	320	100
I-122	320	100
I-124	320	100
I-029	320	100
I-137	320	100
I-030	320	100
I-151	320	100
I-051	320	100
I-069	320	100

Table C4

Example Number	Dosage [g/ha]	ECHCG
I-036	320	100
I-002	320	100
I-003	320	100
I-041	320	100
I-010	320	100
I-105	320	90
I-017	320	100
I-093	320	100
I-094	320	80
I-023	320	100
I-045	320	100
I-018	320	100
I-122	320	100
I-124	320	100
I-029	320	100
I-137	320	100
I-030	320	100
I-012	320	100
I-051	320	100
I-069	320	100
I-013	320	100
I-132	320	100
I-102	320	100
I-072	320	100
I-135	320	100
I-114	320	100
I-127	320	100
I-143	320	100
I-087	320	100
I-194	320	100
I-193	320	100
I-192	320	100
I-191	320	100
I-190	320	100
I-188	320	100
I-189	320	100
I-185	320	100
I-184	320	100

Table C5

Example Number	Dosage [g/ha]	LOLRI
I-036	320	100
I-002	320	100
I-003	320	100
I-041	320	100
I-010	320	100
I-017	320	100
I-093	320	100
I-023	320	100
I-045	320	100
I-018	320	100
I-122	320	100
I-124	320	100
I-029	320	100
I-137	320	100
I-030	320	100
I-151	320	90
I-012	320	100
I-051	320	100
I-069	320	100
I-013	320	100
I-132	320	100
I-102	320	100
I-072	320	100
I-135	320	100
I-114	320	100
I-127	320	80
I-143	320	100
I-087	320	100
I-194	320	100
I-193	320	100
I-192	320	100
I-190	320	100
I-188	320	100
I-185	320	100
I-184	320	100

Table C6

Example Number	Dosage [g/ha]	SETVI
I-036	320	100
I-002	320	100

Example Number	Dosage [g/ha]	SETVI
I-003	320	100
I-041	320	100
I-010	320	100
I-017	320	100
I-093	320	100
I-023	320	100
I-045	320	100
I-018	320	100
I-122	320	100
I-124	320	100
I-029	320	100
I-137	320	100
I-030	320	100
I-151	320	100
I-145	320	90
I-012	320	100
I-051	320	100
I-069	320	100
I-068	320	100
I-013	320	100
I-132	320	100
I-102	320	100
I-072	320	100
I-135	320	100
I-114	320	90
I-127	320	100
I-143	320	100
I-087	320	100
I-194	320	100
I-193	320	100
I-192	320	100
I-190	320	100
I-188	320	100
I-189	320	100
I-185	320	100
I-184	320	100

Table C7

Example Number	Dosage [g/ha]	ABUTH
I-036	320	90
I-002	320	90

Example Number	Dosage [g/ha]	ABUTH
I-017	320	80
I-023	320	80
I-045	320	80
I-018	320	80
I-012	320	80
I-051	320	90
I-143	320	80
I-087	320	90
I-193	320	80
I-188	320	80
I-189	320	80

Table C8

Example Number	Dosage [g/ha]	AMARE
I-036	320	100
I-002	320	90
I-003	320	80
I-041	320	90
I-010	320	90
I-017	320	90
I-093	320	90
I-023	320	80
I-045	320	90
I-018	320	90
I-122	320	90
I-124	320	90
I-029	320	90
I-137	320	90
I-030	320	90
I-151	320	90
I-012	320	90
I-051	320	90
I-069	320	90
I-068	320	90
I-013	320	90
I-132	320	90
I-102	320	90
I-072	320	80
I-135	320	90
I-114	320	90

Example Number	Dosage [g/ha]	AMARE
I-127	320	80
I-143	320	90
I-087	320	80
I-194	320	90
I-193	320	90
I-192	320	100
I-190	320	90
I-188	320	90
I-189	320	80
I-184	320	90

Table C9

Example Number	Dosage [g/ha]	MATIN
I-036	320	100
I-002	320	90
I-041	320	90
I-017	320	90
I-093	320	90
I-023	320	90
I-018	320	90
I-124	320	80
I-137	320	90
I-012	320	90
I-051	320	90
I-135	320	80
I-114	320	80
I-127	320	80
I-143	320	90
I-087	320	90
I-194	320	90
I-193	320	80
I-190	320	80
I-184	320	80

Table C10

Example Number	Dosage [g/ha]	POLCO
I-036	320	90
I-002	320	90
I-003	320	80

Example Number	Dosage [g/ha]	POLCO
I-041	320	90
I-017	320	90
I-023	320	80
I-045	320	80
I-018	320	90
I-030	320	80
I-151	320	80
I-012	320	80
I-051	320	80
I-013	320	80
I-087	320	90
I-194	320	90
I-193	320	80
I-188	320	80

Table C11

Example Number	Dosage [g/ha]	STEME
I-002	320	90
I-036	320	90

Table C12

Example Number	Dosage [g/ha]	VIOTR
I-036	320	100
I-002	320	80
I-003	320	80
I-023	320	80
I-045	320	80
I-124	320	90
I-137	320	90
I-051	320	100
I-102	320	80
I-087	320	80
I-194	320	90
I-184	320	80

Table C13

Example Number	Dosage [g/ha]	VERPE
I-036	320	90

Example Number	Dosage [g/ha]	VERPE
I-002	320	90
I-003	320	90
I-041	320	90
I-017	320	90
I-093	320	90
I-023	320	90
I-045	320	90
I-018	320	90
I-122	320	90
I-124	320	90
I-029	320	90
I-137	320	90
I-030	320	90
I-151	320	90
I-012	320	80
I-051	320	90
I-069	320	90
I-068	320	80
I-013	320	80
I-102	320	80
I-072	320	80
I-135	320	80
I-114	320	80
I-127	320	90
I-143	320	90
I-087	320	90
I-194	320	80
I-193	320	80
I-192	320	90
I-188	320	90
I-189	320	80
I-184	320	80

As the results show, compounds according to the invention have very good herbicidal pre-emergence effectiveness against a broad spectrum of mono- and dicotyledonous weeds such as Abutilon theophrasti, Alopecurus myosuroides, Amaranthus retroflexus, Avena fatua, Cyperus esculentus, Echinochloa crus-galli, Lolium rigidum, Matricaria inodora, Polygonum convolvulus, Setaria viridis, Stellaria media, Veronica persica and Viola tricolor at an application rate of 320 g of active substance per hectare.

D. Herbicidal post-emergence action

Seeds of mono- and dicotyledonous weed plants and crop plants were sown, in plastic or organic planting pots, in sandy loam, covered with soil and grown in a greenhouse under controlled growth conditions. 2 to 3 weeks after sowing, the test plants were sprayed in the single-leaf stage. The compounds according to the invention, formulated in form of wettable powders (WP) or as emulsifiable concentrates (EC), were sprayed onto the green plant parts as aqueous suspension or emulsion, with the addition of 0.5% of an additive, at an application rate of 600 l of water/ha (converted). The test plants were placed in the greenhouse for ca. 3 weeks under optimum growth conditions, and then the effect of the preparations was assessed visually in comparison with untreated controls (herbicidal effect in percent (%): 100% effect = plants have died off, 0% effect = as control plants).

Tables D1 to D13 below show the effects of selected compounds of the general formula (I) according to table 1 on various harmful plants and an application rate corresponding to 320 g/ha obtained by the experimental procedure mentioned above.

Table D1

Example Number	Dosage [g/ha]	ALOMY
I-002	320	90
I-003	320	90
I-041	320	90
I-010	320	90
I-017	320	90
I-093	320	90
I-023	320	90
I-045	320	90
I-018	320	90
I-122	320	90
I-124	320	90
I-029	320	90
I-137	320	90
I-030	320	80
I-151	320	80
I-012	320	90
I-051	320	90
I-069	320	90
I-013	320	80
I-127	320	90
I-143	320	90

Example Number	Dosage [g/ha]	ALOMY
I-087	320	90
I-194	320	90
I-193	320	90
I-192	320	90
I-191	320	80
I-188	320	90
I-189	320	90
I-184	320	90

Table D2

Example Number	Dosage [g/ha]	AVEFA
I-002	320	80
I-087	320	80
I-194	320	80
I-192	320	80

Table D3

Example Number	Dosage [g/ha]	DIGSA
I-002	320	90
I-041	320	90
I-023	320	80
I-045	320	90
I-018	320	90
I-137	320	90
I-051	320	80

Table D4

Example Number	Dosage [g/ha]	ECHCG
I-036	320	80
I-002	320	100
I-041	320	100
I-010	320	90
I-017	320	80
I-023	320	90
I-045	320	90
I-122	320	80
I-124	320	80
I-029	320	90

Example Number	Dosage [g/ha]	ECHCG
I-137	320	90
I-012	320	80
I-051	320	90
I-135	320	80
I-127	320	90
I-143	320	80
I-087	320	90
I-194	320	90
I-193	320	80
I-192	320	100
I-191	320	90
I-190	320	90
I-188	320	100
I-189	320	90
I-185	320	80
I-184	320	80

Table D5

Example Number	Dosage [g/ha]	LOLRI
I-036	320	80
I-002	320	80
I-041	320	80
I-093	320	80
I-045	320	80
I-051	320	80
I-087	320	80

Table D6

Example Number	Dosage [g/ha]	SETVI
I-036	320	80
I-002	320	90
I-003	320	80
I-041	320	90
I-017	320	80
I-023	320	80
I-045	320	80
I-018	320	80
I-012	320	90
I-051	320	80
I-102	320	80

Example Number	Dosage [g/ha]	SETVI
I-127	320	90
I-143	320	80
I-087	320	90
I-194	320	80
I-193	320	80
I-192	320	80
I-190	320	80
I-188	320	100
I-189	320	90
I-185	320	90
I-184	320	90

Table D7

Example Number	Dosage [g/ha]	ABUTH
I-002	320	80
I-041	320	90
I-010	320	80
I-017	320	80
I-094	320	80
I-023	320	80
I-045	320	90
I-127	320	80
I-087	320	80
I-189	320	80

Table D8

Example Number	Dosage [g/ha]	AMARE
I-002	320	90
I-003	320	80
I-041	320	90
I-010	320	80
I-017	320	100
I-093	320	90
I-023	320	100
I-045	320	100
I-018	320	90
I-122	320	80
I-137	320	90
I-151	320	80

Example Number	Dosage [g/ha]	AMARE
I-012	320	90
I-051	320	90
I-069	320	80
I-068	320	90
I-013	320	80
I-102	320	80
I-072	320	80
I-143	320	80
I-194	320	80
I-193	320	80
I-190	320	80
I-188	320	90
I-184	320	80

Table D9

Example Number	Dosage [g/ha]	MATIN
I-002	320	80

Table D10

Example Number	Dosage [g/ha]	POLCO
I-036	320	80
I-002	320	90
I-041	320	90
I-017	320	90
I-023	320	90
I-045	320	90
I-018	320	100
I-122	320	90
I-029	320	90
I-137	320	80
I-030	320	90
I-012	320	90
I-051	320	90
I-102	320	80
I-072	320	80
I-127	320	90
I-087	320	90
I-188	320	80
I-189	320	80

Example Number	Dosage [g/ha]	POLCO
I-185	320	80
I-184	320	80

Table D11

Example Number	Dosage [g/ha]	STEME
I-002	320	90
I-036	320	90

Table D12

Example Number	Dosage [g/ha]	VIOTR
I-002	320	80
I-017	320	90
I-018	320	90
I-127	320	80
I-087	320	80

Table D13

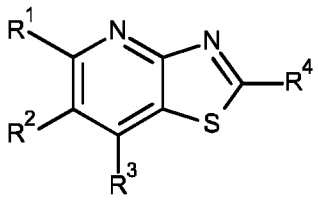
Example Number	Dosage [g/ha]	VERPE
I-002	320	80
I-003	320	90
I-041	320	90
I-017	320	90
I-093	320	90
I-094	320	90
I-023	320	90
I-045	320	90
I-018	320	80
I-122	320	90
I-124	320	90
I-029	320	90
I-137	320	80
I-111	320	80
I-030	320	90
I-151	320	80
I-051	320	90
I-069	320	90
I-013	320	80
I-102	320	80

Example Number	Dosage [g/ha]	VERPE
I-127	320	80
I-143	320	80
I-087	320	90
I-192	320	80
I-190	320	80
I-188	320	90
I-189	320	80
I-185	320	90
I-184	320	90

As the results show, compounds according to the invention have good herbicidal post-emergence effectiveness against a broad spectrum of mono- and dicotyledonous weeds such as Abutilon theophrasti, Alopecurus myosuroides, Amaranthus retroflexus, Avena fatua, Cyperus esculentus, Echinochloa crus-galli, Hordeum murinum, Lolium rigidum, Matricaria inodora, Polygonum convolvulus, Setaria viridis, Stellaria media, Veronica persica and Viola tricolor at an application rate of 320 g and less of active ingredient per hectare.

Claims:

1. Substituted thiazolopyridines of the general formula (I) or salts thereof



(I)

in which

R^1 represents (C_3-C_8)-cycloalkyl, (C_3-C_8)-cycloalkenyl, (C_3-C_8)-cycloalkoxy, aryl, heteroaryl, heterocyclyl, a bicyclic or a heterobicyclic residue, wherein each of the previously mentioned eight residues is unsubstituted or is independently substituted by one or more residues selected from the group R^5,

R^2 represents hydrogen, halogen, formyl, hydroxy, hydrothio, hydroxycarbonyl, aminocarbonyl, aminothiocarbonyl, (C_1-C_8)-alkyl, (C_1-C_8)-haloalkyl, (C_2-C_8)-alkenyl, (C_2-C_8)-haloalkenyl, (C_2-C_8)-alkynyl, (C_2-C_8)-haloalkynyl, (C_1-C_8)-alkoxy, (C_1-C_8) haloalkoxy, (C_1-C_8)-alkoxy-(C_1-C_8)-alkyl, (C_1-C_8)-alkylthio, (C_1-C_8)-haloalkylthio, (C_1-C_8)-alkylsulfinyl, (C_1-C_8)-haloalkylsulfinyl, (C_1-C_8)-alkylsulfonyl, (C_1-C_8)-haloalkylsulfonyl, (C_1-C_8)-alkylcarbonyl, (C_2-C_8)-alkenylcarbonyl, (C_2-C_8)-alkynylcarbonyl, (C_1-C_8)-haloalkylcarbonyl, (C_2-C_8)-haloalkenylcarbonyl, (C_2-C_8)-haloalkynylcarbonyl, (C_1-C_8)-alkoxycarbonyl, (C_3-C_8)-cycloalkyl, (C_3-C_8)-cycloalkoxy, (C_3-C_8)-cycloalkylthio, (C_3-C_8)-cycloalkylsulfinyl, (C_3-C_8)-cycloalkylsulfonyl, (C_3-C_8)-halocycloalkyl, (C_3-C_8)-halocycloalkoxy, (C_3-C_8)-halocycloalkylthio, (C_3-C_8)-halocycloalkylsulfinyl, (C_3-C_8)-halocycloalkylsulfonyl, (C_3-C_8)-cycloalkyl-(C_1-C_8)-alkyl, (C_1-C_8)-alkyl-(C_3-C_8)-cycloalkyl, (C_3-C_8)-cycloalkylcarbonyl, (C_3-C_8)-cycloalkyl-(C_1-C_8)-alkylcarbonyl, (C_1-C_8)-alkylaminocarbonyl, (C_2-C_{12})-dialkylaminocarbonyl, (C_1-C_8)-alkylaminosulfonyl, (C_2-C_{12})-dialkylaminosulfonyl or (C_3-C_{12})-trialkylsilyl,

R^3 represents hydrogen, halogen, cyano, (C_1-C_8)-alkyl, (C_1-C_8)-haloalkyl, (C_2-C_8)-alkenyl, (C_2-C_8)-haloalkenyl, (C_1-C_8)-alkoxy, (C_1-C_8) haloalkoxy, (C_1-C_8)-alkylthio, (C_1-C_8)-haloalkylthio, (C_3-C_8)-cycloalkyl, (C_3-C_8)-halocycloalkyl, (C_3-C_8)-cycloalkoxy or (C_3-C_8)-halocycloalkoxy,

R^4 represents hydrogen, halogen, cyano, hydrothio, hydroxycarbonyl, (C_1-C_8)-alkoxycarbonyl, aminocarbonyl, aminothiocarbonyl, (C_1-C_8)-alkylaminocarbonyl, (C_2-C_{12})-dialkylaminocarbonyl, (C_2-C_8)-alkenylaminocarbonyl, *N*-(C_2-C_8)-alkenyl-*N*-(C_1-C_8)-alkylaminocarbonyl, (C_1-C_8)-haloalkyl, (C_3-C_8)-cycloalkyl, (C_3-C_8)-halocycloalkyl, (C_1-C_8) haloalkoxy, (C_3-C_8)-cycloalkoxy, (C_3-C_8)-halocycloalkoxy, (C_1-C_8)-alkoxy-(C_1-C_8)-alkyl, (C_3-C_{12})-trialkylsilyl, or represents benzyl, unsubstituted or optionally substituted by one or more residues selected from the group R^5, or represents (C_1-C_8)-alkyl, optionally substituted by one or more residues selected from cyano, (C_1-C_8)-alkylcarbonyl, (C_1-C_8)-haloalkylcarbonyl, hydroxycarbonyl, (C_1-C_8)-alkoxycarbonyl, aminocarbonyl, (C_1-C_8)-alkylaminocarbonyl, (C_2-C_{12})-dialkylaminocarbonyl, (C_2-C_8)-alkenylaminocarbonyl and *N*-(C_2-C_8)-alkenyl-*N*-(C_1-C_8)-alkylaminocarbonyl, or represents (C_1-C_8)-alkoxy, optionally substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_8)-alkoxycarbonyl, aminocarbonyl, (C_1-C_8)-alkylaminocarbonyl, (C_2-C_{12})-dialkylaminocarbonyl, (C_2-C_8)-alkenylaminocarbonyl and *N*-(C_2-C_8)-alkenyl-*N*-(C_1-C_8)-alkylaminocarbonyl, or represents (C_1-C_8)-alkylthio, optionally substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_8)-alkoxycarbonyl, aminocarbonyl, (C_1-C_8)-alkylaminocarbonyl, (C_2-C_{12})-dialkylaminocarbonyl, (C_2-C_8)-alkenylaminocarbonyl and *N*-(C_2-C_8)-alkenyl-*N*-(C_1-C_8)-alkylaminocarbonyl, or represents (C_1-C_8)-alkylamino, substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_8)-alkoxycarbonyl, aminocarbonyl, (C_1-C_8)-alkylaminocarbonyl, (C_2-C_{12})-dialkylaminocarbonyl, (C_2-C_8)-alkenylaminocarbonyl and *N*-(C_2-C_8)-alkenyl-*N*-(C_1-C_8)-alkylaminocarbonyl, or represents (C_2-C_{12})-dialkylamino, substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_8)-alkoxycarbonyl, aminocarbonyl, (C_1-C_8)-alkylaminocarbonyl, (C_2-C_{12})-dialkylaminocarbonyl, (C_2-C_8)-alkenylaminocarbonyl and *N*-(C_2-C_8)-alkenyl-*N*-(C_1-C_8)-alkylaminocarbonyl, or represents (C_1-C_8)-haloalkylthio, (C_3-C_8)-cycloalkylthio, (C_3-C_8)-halocycloalkylthio, (C_1-C_8)-alkylsulfinyl, (C_1-C_8)-haloalkylsulfinyl, (C_3-C_8)-cycloalkylsulfinyl, (C_3-C_8)-halocycloalkylsulfinyl, (C_1-C_8)-alkylsulfonyl, (C_1-C_8)-haloalkylsulfonyl, (C_3-C_8)-cycloalkylsulfonyl or (C_3-C_8)-halocycloalkylsulfonyl, and

R^5 represents halogen, formyl, hydroxy, hydroxycarbonyl, nitro, cyano, amino, aminocarbonyl, aminothiocarbonyl, (C_1-C_8)-alkyl, (C_1-C_8)-haloalkyl, (C_2-C_8)-alkenyl, (C_2-C_8)-haloalkenyl, (C_2-C_8)-alkynyl, (C_2-C_8)-haloalkynyl, (C_1-C_8)-alkoxy, (C_1-C_8)-haloalkoxy, (C_1-C_8)-alkylthio, (C_1-C_8)-haloalkylthio, (C_1-C_8)-alkylsulfinyl, (C_1-C_8)-haloalkylsulfinyl, (C_1-C_8)-alkylsulfonyl, (C_1-C_8)-haloalkylsulfonyl, (C_1-C_8)-alkylcarbonyl, (C_1-C_8)-haloalkylcarbonyl, (C_2-C_8)-alkenylcarbonyl, (C_2-C_8)-haloalkenylcarbonyl, (C_2-C_8)-alkynylcarbonyl, (C_2-C_8)-haloalkynylcarbonyl, (C_1-C_8)-

alkoxycarbonyl, (C_1-C_8)-haloalkoxycarbonyl, (C_3-C_8)-cycloalkyl, (C_3-C_8)-halocycloalkyl, (C_3-C_8)-cycloalkoxy, (C_3-C_8)-halocycloalkoxy, (C_3-C_8)-cycloalkylthio, (C_3-C_8)-halocycloalkylthio, (C_3-C_8)-cycloalkylsulfinyl, (C_3-C_8)-halocycloalkylsulfinyl, (C_3-C_8)-cycloalkylsulfonyl, (C_3-C_8)-halocycloalkylsulfonyl, (C_3-C_8)-cycloalkyl-(C_1-C_8)-alkyl, (C_1-C_8)-alkyl-(C_3-C_8)-cycloalkyl, (C_1-C_8)-alkoxycarbonyl-(C_1-C_8)-alkyl, hydroxycarbonyl-(C_1-C_8)-alkyl, (C_3-C_8)-cycloalkylcarbonyl, (C_3-C_8)-cycloalkyl-(C_1-C_8)-alkylcarbonyl, (C_1-C_8)-alkylamino, (C_2-C_{12})-dialkylamino, (C_1-C_8)-alkylaminocarbonyl, (C_2-C_{12})-dialkylaminocarbonyl, (C_1-C_8)-alkylaminosulfonyl, (C_2-C_{12})-dialkylaminosulfonyl or (C_3-C_{12})-trialkylsilyl.

2. The compound of the general formula (I) as claimed in claim 1 and/or the salt thereof, characterized in that

R^1 represents (C_3-C_6)-cycloalkyl, (C_3-C_6)-cycloalkenyl, (C_3-C_6)-cycloalkoxy, aryl, heteroaryl, heterocyclyl, a bicyclic or a heterobicyclic residue, wherein each of the previously mentioned eight residues is unsubstituted or is independently substituted by one or more residues selected from the group R^5,

R^2 represents hydrogen, halogen, formyl, hydroxy, hydrothio, hydroxycarbonyl, aminocarbonyl, aminothiocarbonyl, (C_1-C_6)-alkyl, (C_1-C_6)-haloalkyl, (C_2-C_6)-alkenyl, (C_2-C_6)-haloalkenyl, (C_2-C_6)-alkynyl, (C_2-C_6)-haloalkynyl, (C_1-C_6)-alkoxy, (C_1-C_6) haloalkoxy, (C_1-C_6)-alkoxy-(C_1-C_6)-alkyl, (C_1-C_6)-alkylthio, (C_1-C_6)-haloalkylthio, (C_1-C_6)-alkylsulfinyl, (C_1-C_6)-haloalkylsulfinyl, (C_1-C_6)-alkylsulfonyl, (C_1-C_6)-haloalkylsulfonyl, (C_1-C_6)-alkylcarbonyl, (C_2-C_6)-alkenylcarbonyl, (C_2-C_6)-alkynylcarbonyl, (C_1-C_6)-haloalkylcarbonyl, (C_2-C_6)-haloalkenylcarbonyl, (C_2-C_6)-haloalkynylcarbonyl, (C_1-C_6)-alkoxycarbonyl, (C_3-C_6)-cycloalkyl, (C_3-C_6)-cycloalkoxy, (C_3-C_6)-cycloalkylthio, (C_3-C_6)-cycloalkylsulfinyl, (C_3-C_6)-cycloalkylsulfonyl, (C_3-C_6)-halocycloalkyl, (C_3-C_6)-halocycloalkoxy, (C_3-C_6)-halocycloalkylthio, (C_3-C_6)-halocycloalkylsulfinyl, (C_3-C_6)-halocycloalkylsulfonyl, (C_3-C_6)-cycloalkyl-(C_1-C_6)-alkyl, (C_1-C_6)-alkyl-(C_3-C_6)-cycloalkyl, (C_3-C_6)-cycloalkylcarbonyl, (C_3-C_6)-cycloalkyl-(C_1-C_6)-alkylcarbonyl, (C_1-C_6)-alkylaminocarbonyl, (C_2-C_{10})-dialkylaminocarbonyl, (C_1-C_6)-alkylaminosulfonyl, (C_2-C_{10})-dialkylaminosulfonyl or (C_3-C_{10})-trialkylsilyl,

R^3 represents hydrogen, halogen, cyano, (C_1-C_6)-alkyl, (C_1-C_6)-haloalkyl, (C_2-C_6)-alkenyl, (C_2-C_6)-haloalkenyl, (C_1-C_6)-alkoxy, (C_1-C_6) haloalkoxy, (C_1-C_6)-alkylthio, (C_1-C_6)-

haloalkylthio, (C_3-C_6)-cycloalkyl, (C_3-C_6)-halocycloalkyl, (C_3-C_6)-cycloalkoxy or (C_3-C_6)-halocycloalkoxy,

R^4 represents hydrogen, halogen, cyano, hydrothio, hydroxycarbonyl, (C_1-C_6)-alkoxycarbonyl, aminocarbonyl, aminothiocarbonyl, (C_1-C_6)-alkylaminocarbonyl, (C_2-C_{10})-dialkylaminocarbonyl, (C_2-C_6)-alkenylaminocarbonyl, *N*-(C_2-C_6)-alkenyl-*N*-(C_1-C_6)-alkylaminocarbonyl, (C_1-C_6)-haloalkyl, (C_3-C_6)-cycloalkyl, (C_3-C_6)-halocycloalkyl, (C_1-C_6) haloalkoxy, (C_3-C_6)-cycloalkoxy, (C_3-C_6)-halocycloalkoxy, (C_1-C_6)-alkoxy-(C_1-C_6)-alkyl, (C_3-C_{10})-trialkylsilyl, or represents benzyl, unsubstituted or optionally substituted by one or more residues selected from the group R^5, or represents (C_1-C_6)-alkyl, optionally substituted by one or more residues selected from cyano, (C_1-C_6)-alkylcarbonyl, (C_1-C_6)-haloalkylcarbonyl, hydroxycarbonyl, (C_1-C_6)-alkoxycarbonyl, aminocarbonyl, (C_1-C_6)-alkylaminocarbonyl, (C_2-C_{10})-dialkylaminocarbonyl, (C_2-C_6)-alkenylaminocarbonyl and *N*-(C_2-C_6)-alkenyl-*N*-(C_1-C_6)-alkylaminocarbonyl, or represents (C_1-C_6)-alkoxy, optionally substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_6)-alkoxycarbonyl, aminocarbonyl, (C_1-C_6)-alkylaminocarbonyl, (C_2-C_{10})-dialkylaminocarbonyl, (C_2-C_6)-alkenylaminocarbonyl and *N*-(C_2-C_6)-alkenyl-*N*-(C_1-C_6)-alkylaminocarbonyl, or represents (C_1-C_6)-alkylthio, optionally substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_6)-alkoxycarbonyl, aminocarbonyl, (C_1-C_6)-alkylaminocarbonyl, (C_2-C_{10})-dialkylaminocarbonyl, (C_2-C_6)-alkenylaminocarbonyl and *N*-(C_2-C_6)-alkenyl-*N*-(C_1-C_6)-alkylaminocarbonyl, or represents (C_1-C_6)-alkylamino, substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_6)-alkoxycarbonyl, aminocarbonyl, (C_1-C_6)-alkylaminocarbonyl, (C_2-C_{10})-dialkylaminocarbonyl, (C_2-C_6)-alkenylaminocarbonyl and *N*-(C_2-C_6)-alkenyl-*N*-(C_1-C_6)-alkylaminocarbonyl, or represents (C_2-C_{10})-dialkylamino, substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_6)-alkoxycarbonyl, aminocarbonyl, (C_1-C_6)-alkylaminocarbonyl, (C_2-C_{10})-dialkylaminocarbonyl, (C_2-C_6)-alkenylaminocarbonyl and *N*-(C_2-C_6)-alkenyl-*N*-(C_1-C_6)-alkylaminocarbonyl, or represents (C_1-C_6)-haloalkylthio, (C_3-C_6)-cycloalkylthio, (C_3-C_6)-halocycloalkylthio, (C_1-C_6)-alkylsulfinyl, (C_1-C_6)-haloalkylsulfinyl, (C_3-C_6)-cycloalkylsulfinyl, (C_3-C_6)-halocycloalkylsulfinyl, (C_1-C_6)-alkylsulfonyl, (C_1-C_6)-haloalkylsulfonyl, (C_3-C_6)-cycloalkylsulfonyl or (C_3-C_6)-halocycloalkylsulfonyl, and

R^5 represents halogen, formyl, hydroxy, hydroxycarbonyl, nitro, cyano, amino, aminocarbonyl, aminothiocarbonyl, (C_1-C_6)-alkyl, (C_1-C_6)-haloalkyl, (C_2-C_6)-alkenyl, (C_2-C_6)-haloalkenyl, (C_2-C_6)-alkynyl, (C_2-C_6)-haloalkynyl, (C_1-C_6)-alkoxy, (C_1-C_6)-haloalkoxy, (C_1-C_6)-alkylthio, (C_1-C_6)-haloalkylthio, (C_1-C_6)-alkylsulfinyl, (C_1-C_6)-

haloalkylsulfinyl, (C_1-C_6)-alkylsulfonyl, (C_1-C_6)-haloalkylsulfonyl, (C_1-C_6)-alkylcarbonyl, (C_1-C_6)-haloalkylcarbonyl, (C_2-C_6)-alkenylcarbonyl, (C_2-C_6)-haloalkenylcarbonyl, (C_2-C_6)-alkynylcarbonyl, (C_2-C_6)-haloalkynylcarbonyl, (C_1-C_6)-alkoxycarbonyl, (C_1-C_6)-haloalkoxycarbonyl, (C_3-C_6)-cycloalkyl, (C_3-C_6)-halocycloalkyl, (C_3-C_6)-cycloalkoxy, (C_3-C_6)-halocycloalkoxy, (C_3-C_6)-cycloalkylthio, (C_3-C_6)-halocycloalkylthio, (C_3-C_6)-cycloalkylsulfinyl, (C_3-C_6)-halocycloalkylsulfinyl, (C_3-C_6)-cycloalkylsulfonyl, (C_3-C_6)-halocycloalkylsulfonyl, (C_3-C_6)-cycloalkyl-(C_1-C_6)-alkyl, (C_1-C_6)-alkyl-(C_3-C_6)-cycloalkyl, (C_1-C_6)-alkoxycarbonyl-(C_1-C_6)-alkyl, hydroxycarbonyl-(C_1-C_6)-alkyl, (C_3-C_6)-cycloalkylcarbonyl, (C_3-C_6)-cycloalkyl-(C_1-C_6)-alkylcarbonyl, (C_1-C_6)-alkylamino, (C_2-C_{10})-dialkylamino, (C_1-C_6)-alkylaminocarbonyl, (C_2-C_{10})-dialkylaminocarbonyl, (C_1-C_6)-alkylaminosulfonyl, (C_2-C_{10})-dialkylaminosulfonyl or (C_3-C_{10})-trialkylsilyl.

3. The compound of the general formula (I) as claimed in claim 1 and/or the salt thereof, characterized in that

R^1 represents (C_3-C_6)-cycloalkyl, (C_3-C_6)-cycloalkenyl, (C_3-C_6)-cycloalkoxy, aryl, heteroaryl, heterocyclyl, a bicyclic or a heterobicyclic residue, wherein each of the previously mentioned eight residues is unsubstituted or is independently substituted by one or more residues selected from the group R^5,

R^2 represents hydrogen, halogen, formyl, hydroxy, hydrothio, hydroxycarbonyl, aminocarbonyl, aminothiocarbonyl, (C_1-C_4)-alkyl, (C_1-C_4)-haloalkyl, (C_2-C_4)-alkenyl, (C_2-C_4)-haloalkenyl, (C_2-C_4)-alkynyl, (C_2-C_4)-haloalkynyl, (C_1-C_4)-alkoxy, (C_1-C_4) haloalkoxy, (C_1-C_4)-alkoxy-(C_1-C_4)-alkyl, (C_1-C_4)-alkylthio, (C_1-C_4)-haloalkylthio, (C_1-C_4)-alkylsulfinyl, (C_1-C_4)-haloalkylsulfinyl, (C_1-C_4)-alkylsulfonyl, (C_1-C_4)-haloalkylsulfonyl, (C_2-C_4)-alkylcarbonyl, (C_2-C_4)-alkenylcarbonyl, (C_2-C_4)-alkynylcarbonyl, (C_1-C_4)-haloalkylcarbonyl, (C_2-C_4)-haloalkenylcarbonyl, (C_2-C_4)-haloalkynylcarbonyl, (C_1-C_4)-alkoxycarbonyl, (C_3-C_6)-cycloalkyl, (C_3-C_6)-cycloalkoxy, (C_3-C_6)-cycloalkylthio, (C_3-C_6)-cycloalkylsulfinyl, (C_3-C_6)-cycloalkylsulfonyl, (C_3-C_6)-halocycloalkyl, (C_3-C_6)-halocycloalkoxy, (C_3-C_6)-halocycloalkylthio, (C_3-C_6)-halocycloalkylsulfinyl, (C_3-C_6)-halocycloalkylsulfonyl, (C_3-C_6)-cycloalkyl-(C_1-C_4)-alkyl, (C_1-C_4)-alkyl-(C_3-C_6)-cycloalkyl, (C_3-C_6)-cycloalkylcarbonyl, (C_3-C_6)-cycloalkyl-(C_1-C_4)-alkylcarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_1-C_6)-alkylaminosulfonyl, (C_2-C_8)-dialkylaminosulfonyl or (C_3-C_8)-trialkylsilyl,

R^3 represents hydrogen, halogen, cyano, (C_1-C_4)-alkyl, (C_1-C_4)-haloalkyl, (C_2-C_4)-alkenyl, (C_2-C_4)-haloalkenyl, (C_1-C_4)-alkoxy, (C_1-C_4) haloalkoxy, (C_1-C_4)-alkylthio, (C_1-C_4)-haloalkylthio, (C_3-C_4)-cycloalkyl, (C_3-C_4)-halocycloalkyl, (C_3-C_4)-cycloalkoxy or (C_3-C_4)-halocycloalkoxy,

R^4 represents hydrogen, halogen, cyano, hydrothio, hydroxycarbonyl, (C_1-C_4)-alkoxycarbonyl, aminocarbonyl, aminothiocarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_2-C_4)-alkenylaminocarbonyl, *N*-(C_2-C_4)-alkenyl-*N*-(C_1-C_4)-alkylaminocarbonyl, (C_1-C_4)-haloalkyl, (C_3-C_6)-cycloalkyl, (C_3-C_6)-halocycloalkyl, (C_1-C_4) haloalkoxy, (C_3-C_6)-cycloalkoxy, (C_3-C_6)-halocycloalkoxy, (C_1-C_4)-alkoxy-(C_1-C_4)-alkyl, (C_3-C_8)-trialkylsilyl, or represents benzyl, unsubstituted or optionally substituted by one or more residues selected from the group R^5, or represents (C_1-C_4)-alkyl, optionally substituted by one or more residues selected from cyano, (C_1-C_4)-alkylcarbonyl, (C_1-C_4)-haloalkylcarbonyl, hydroxycarbonyl, (C_1-C_4)-alkoxycarbonyl, aminocarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_2-C_4)-alkenylaminocarbonyl and *N*-(C_2-C_4)-alkenyl-*N*-(C_1-C_4)-alkylaminocarbonyl, or represents (C_1-C_4)-alkoxy, optionally substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_4)-alkoxycarbonyl, aminocarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_2-C_4)-alkenylaminocarbonyl and *N*-(C_2-C_4)-alkenyl-*N*-(C_1-C_4)-alkylaminocarbonyl, or represents (C_1-C_4)-alkylthio, optionally substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_4)-alkoxycarbonyl, aminocarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_2-C_4)-alkenylaminocarbonyl and *N*-(C_2-C_4)-alkenyl-*N*-(C_1-C_4)-alkylaminocarbonyl, or represents (C_1-C_4)-alkylamino, substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_4)-alkoxycarbonyl, aminocarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_2-C_4)-alkenylaminocarbonyl and *N*-(C_2-C_4)-alkenyl-*N*-(C_1-C_4)-alkylaminocarbonyl, or represents (C_2-C_8)-dialkylamino, substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_4)-alkoxycarbonyl, aminocarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_2-C_4)-alkenylaminocarbonyl and *N*-(C_2-C_4)-alkenyl-*N*-(C_1-C_4)-alkylaminocarbonyl, or represents (C_1-C_4)-haloalkylthio, (C_3-C_6)-cycloalkylthio, (C_3-C_6)-halocycloalkylthio, (C_1-C_4)-alkylsulfinyl, (C_1-C_4)-haloalkylsulfinyl, (C_3-C_6)-cycloalkylsulfinyl, (C_3-C_6)-halocycloalkylsulfinyl, (C_1-C_4)-alkylsulfonyl, (C_1-C_4)-haloalkylsulfonyl, (C_3-C_6)-cycloalkylsulfonyl or (C_3-C_6)-halocycloalkylsulfonyl, and

R^5 represents halogen, formyl, hydroxy, hydroxycarbonyl, nitro, cyano, amino, aminocarbonyl, aminothiocarbonyl, (C_1-C_4)-alkyl, (C_1-C_4)-haloalkyl, (C_2-C_4)-alkenyl,

(C_2-C_4)-haloalkenyl, (C_2-C_4)-alkynyl, (C_2-C_4)-haloalkynyl, (C_1-C_4)-alkoxy, (C_1-C_4)-haloalkoxy, (C_1-C_4)-alkylthio, (C_1-C_4)-haloalkylthio, (C_1-C_4)-alkylsulfinyl, (C_1-C_4)-haloalkylsulfinyl, (C_1-C_4)-alkylsulfonyl, (C_1-C_4)-haloalkylsulfonyl, (C_1-C_4)-alkylcarbonyl, (C_1-C_4)-haloalkylcarbonyl, (C_2-C_4)-alkenylcarbonyl, (C_2-C_4)-haloalkenylcarbonyl, (C_2-C_4)-alkynylcarbonyl, (C_2-C_4)-haloalkynylcarbonyl, (C_1-C_4)-alkoxycarbonyl, (C_1-C_4)-haloalkoxycarbonyl, (C_3-C_6)-cycloalkyl, (C_3-C_6)-halocycloalkyl, (C_3-C_6)-cycloalkoxy, (C_3-C_6)-halocycloalkoxy, (C_3-C_6)-cycloalkylthio, (C_3-C_6)-halocycloalkylthio, (C_3-C_6)-cycloalkylsulfinyl, (C_3-C_6)-halocycloalkylsulfinyl, (C_3-C_6)-cycloalkylsulfonyl, (C_3-C_6)-halocycloalkylsulfonyl, (C_3-C_6)-cycloalkyl-(C_1-C_4)-alkyl, (C_1-C_4)-alkyl-(C_3-C_6)-cycloalkyl, (C_1-C_4)-alkoxycarbonyl-(C_1-C_4)-alkyl, hydroxycarbonyl-(C_1-C_4)-alkyl, (C_3-C_6)-cycloalkylcarbonyl, (C_3-C_6)-cycloalkyl-(C_1-C_4)-alkylcarbonyl, (C_1-C_4)-alkylamino, (C_2-C_8)-dialkylamino, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_1-C_4)-alkylaminosulfonyl, (C_2-C_8)-dialkylaminosulfonyl or (C_3-C_8)-trialkylsilyl.

4. The compound of the general formula (I) as claimed in claim 1 and/or the salt thereof, characterized in that

R^1 represents phenyl, furyl, pyrrolyl, thienyl, pyridyl, pyrimidinyl, pyridazinyl, pyrazinyl, thiazolyl, isothiazolyl, thiadiazolyl, oxazolyl, isoxazolyl, pyrazolyl, imidazolyl, triazolyl, tetrazolyl, cyclopentenyl, cyclohexenyl or an oxabicycloheptanyl residue, wherein each of the previously mentioned 20 residues is unsubstituted or is independently substituted by one or more residues selected from the group R^5,

R^2 represents hydrogen, halogen, (C_1-C_4)-alkyl, (C_1-C_4)-haloalkyl, (C_2-C_4)-alkenyl, (C_2-C_4)-haloalkenyl, (C_2-C_4)-alkynyl, (C_2-C_4)-haloalkynyl, (C_1-C_4)-alkoxy, (C_1-C_4) haloalkoxy, (C_1-C_4)-alkoxy-(C_1-C_4)-alkyl, (C_1-C_4)-alkylthio, (C_1-C_4)-haloalkylthio, (C_1-C_4)-alkylsulfinyl, (C_1-C_4)-haloalkylsulfinyl, (C_1-C_4)-alkylsulfonyl, (C_1-C_4)-haloalkylsulfonyl, (C_1-C_4)-alkylcarbonyl, (C_1-C_4)-haloalkylcarbonyl, (C_1-C_4)-alkoxycarbonyl, (C_3-C_6)-cycloalkyl, (C_3-C_6)-cycloalkoxy, (C_3-C_6)-halocycloalkyl, (C_3-C_6)-halocycloalkoxy, (C_3-C_6)-cycloalkyl-(C_1-C_4)-alkyl or (C_1-C_4)-alkyl-(C_3-C_6)-cycloalkyl,

R^3 represents hydrogen, halogen, cyano, (C_1-C_4)-alkyl, (C_1-C_4)-haloalkyl, (C_1-C_4)-alkoxy, (C_1-C_4) haloalkoxy, (C_3-C_4)-cycloalkyl or (C_3-C_4)-halocycloalkyl,

R^4 represents hydrogen, halogen, cyano, hydrothio, hydroxycarbonyl, (C_1-C_4)-alkoxycarbonyl, aminocarbonyl, aminothiocarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_2-C_4)-alkenylaminocarbonyl, *N*-(C_2-C_4)-alkenyl-*N*-(C_1-C_4)-alkylaminocarbonyl, (C_1-C_4)-haloalkyl, (C_3-C_6)-cycloalkyl, (C_3-C_6)-halocycloalkyl, (C_1-C_4) haloalkoxy, (C_3-C_6)-cycloalkoxy, (C_3-C_6)-halocycloalkoxy, (C_1-C_4)-alkoxy-(C_1-C_4)-alkyl, or represents benzyl, unsubstituted or optionally substituted by one or more residues selected from the group R^5, or represents (C_1-C_4)-alkyl, optionally substituted by one or more residues selected from cyano, (C_1-C_4)-alkylcarbonyl, (C_1-C_4)-haloalkylcarbonyl, hydroxycarbonyl, (C_1-C_4)-alkoxycarbonyl, aminocarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_2-C_4)-alkenylaminocarbonyl and *N*-(C_2-C_4)-alkenyl-*N*-(C_1-C_4)-alkylaminocarbonyl, or represents (C_1-C_4)-alkoxy, optionally substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_4)-alkoxycarbonyl, aminocarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_2-C_4)-alkenylaminocarbonyl and *N*-(C_2-C_4)-alkenyl-*N*-(C_1-C_4)-alkylaminocarbonyl, or represents (C_1-C_4)-alkylthio, optionally substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_4)-alkoxycarbonyl, aminocarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_2-C_4)-alkenylaminocarbonyl and *N*-(C_2-C_4)-alkenyl-*N*-(C_1-C_4)-alkylaminocarbonyl, or represents (C_1-C_4)-alkylamino, substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_4)-alkoxycarbonyl, aminocarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_2-C_4)-alkenylaminocarbonyl and *N*-(C_2-C_4)-alkenyl-*N*-(C_1-C_4)-alkylaminocarbonyl, or represents (C_2-C_8)-dialkylamino, substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_4)-alkoxycarbonyl, aminocarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_2-C_4)-alkenylaminocarbonyl and *N*-(C_2-C_4)-alkenyl-*N*-(C_1-C_4)-alkylaminocarbonyl, or represents (C_1-C_4)-haloalkylthio, (C_1-C_4)-alkylsulfinyl, (C_1-C_4)-haloalkylsulfinyl, (C_1-C_4)-alkylsulfonyl or (C_1-C_4)-haloalkylsulfonyl, and

R^5 represents halogen, nitro, cyano, hydroxy, amino, (C_1-C_4)-alkyl, (C_1-C_4)-haloalkyl, (C_1-C_4)-alkoxy, (C_1-C_4)-haloalkoxy, (C_1-C_4)-alkylthio, (C_1-C_4)-haloalkylthio, (C_1-C_4)-alkylsulfinyl, (C_1-C_4)-haloalkylsulfinyl, (C_1-C_4)-alkylsulfonyl, (C_1-C_4)-haloalkylsulfonyl, (C_1-C_4)-alkylcarbonyl, (C_1-C_4)-haloalkylcarbonyl, (C_1-C_4)-alkoxycarbonyl, (C_1-C_4)-haloalkoxycarbonyl, (C_3-C_6)-cycloalkyl, (C_3-C_6)-halocycloalkyl, (C_3-C_6)-cycloalkoxy, (C_3-C_6)-halocycloalkoxy, (C_3-C_6)-cycloalkylthio, (C_3-C_6)-halocycloalkylthio, (C_3-C_6)-cycloalkylsulfinyl, (C_3-C_6)-halocycloalkylsulfinyl, (C_3-C_6)-cycloalkylsulfonyl, (C_3-C_6)-halocycloalkylsulfonyl, (C_3-C_6)-cycloalkyl-(C_1-C_4)-

alkyl, (C_1-C_4)-alkyl-(C_3-C_6)-cycloalkyl, (C_1-C_4)-alkoxycarbonyl-(C_1-C_4)-alkyl, hydroxycarbonyl-(C_1-C_4)-alkyl, (C_1-C_4)-alkylamino or (C_2-C_8)-dialkylamino.

5. The compound of the general formula (I) as claimed in claim 1 and/or the salt thereof, characterized in that

R^1 represents phenyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, thiazolyl, isothiazolyl, cyclopentene-1-yl, cyclohexen-1-yl or 7-oxabicyclo[4.1.0]heptan-1-yl, wherein each of the previously mentioned nine residues is unsubstituted or is optionally substituted by one or more residues selected from the group R^5,

R^2 represents hydrogen, halogen, (C_1-C_4)-alkyl, (C_1-C_4)-haloalkyl, (C_2-C_4)-alkenyl, (C_2-C_4)-haloalkenyl, (C_1-C_4)-alkoxy, (C_1-C_4) haloalkoxy, (C_1-C_4)-alkoxy-(C_1-C_4)-alkyl, (C_1-C_4)-alkylthio, (C_1-C_4)-haloalkylthio, (C_1-C_4)-alkylsulfinyl, (C_1-C_4)-haloalkylsulfinyl, (C_1-C_4)-alkylsulfonyl, (C_1-C_4)-haloalkylsulfonyl, (C_1-C_4)-alkoxycarbonyl, (C_3-C_6)-cycloalkyl, (C_3-C_6)-cycloalkoxy, (C_3-C_6)-halocycloalkyl, (C_3-C_6)-halocycloalkoxy, (C_3-C_6)-cycloalkyl-(C_1-C_4)-alkyl or (C_1-C_4)-alkyl-(C_3-C_6)-cycloalkyl,

R^3 is hydrogen, halogen, cyano, (C_1-C_4)-alkyl or (C_1-C_4)-alkoxy,

R^4 represents hydrogen, halogen, cyano, hydrothio, hydroxycarbonyl, (C_1-C_4)-alkoxycarbonyl, aminocarbonyl, aminothiocarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_2-C_4)-alkenylaminocarbonyl, *N*-(C_2-C_4)-alkenyl-*N*-(C_1-C_4)-alkylaminocarbonyl, (C_1-C_4)-haloalkyl, (C_3-C_6)-cycloalkyl, (C_3-C_6)-halocycloalkyl, (C_1-C_4) haloalkoxy, (C_3-C_6)-cycloalkoxy, (C_3-C_6)-halocycloalkoxy, (C_1-C_4)-alkoxy-(C_1-C_4)-alkyl, or represents benzyl, unsubstituted or optionally substituted by one or more residues selected from the group R^5, or represents (C_1-C_4)-alkyl, optionally substituted by one or more residues selected from cyano, (C_1-C_4)-alkylcarbonyl, (C_1-C_4)-haloalkylcarbonyl, hydroxycarbonyl, (C_1-C_4)-alkoxycarbonyl, aminocarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_2-C_4)-alkenylaminocarbonyl and *N*-(C_2-C_4)-alkenyl-*N*-(C_1-C_4)-alkylaminocarbonyl, or represents (C_1-C_4)-alkoxy, optionally substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_4)-alkoxycarbonyl, aminocarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_2-C_4)-alkenylaminocarbonyl and *N*-(C_2-C_4)-alkenyl-*N*-(C_1-C_4)-alkylaminocarbonyl, or represents (C_1-C_4)-alkylthio, optionally substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_4)-alkoxycarbonyl, aminocarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_2-C_4)-

alkenylaminocarbonyl and *N*-(C_2-C_4)-alkenyl-*N*-(C_1-C_4)-alkylaminocarbonyl, or represents (C_1-C_4)-alkylamino, substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_4)-alkoxycarbonyl, aminocarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_2-C_4)-alkenylaminocarbonyl and *N*-(C_2-C_4)-alkenyl-*N*-(C_1-C_4)-alkylaminocarbonyl, or represents (C_2-C_8)-dialkylamino, substituted by one or more residues selected from hydroxycarbonyl, (C_1-C_4)-alkoxycarbonyl, aminocarbonyl, (C_1-C_4)-alkylaminocarbonyl, (C_2-C_8)-dialkylaminocarbonyl, (C_2-C_4)-alkenylaminocarbonyl and *N*-(C_2-C_4)-alkenyl-*N*-(C_1-C_4)-alkylaminocarbonyl, or represents (C_1-C_4)-haloalkylthio, (C_1-C_4)-alkylsulfinyl, (C_1-C_4)-haloalkylsulfinyl, (C_1-C_4)-alkylsulfonyl or (C_1-C_4)-haloalkylsulfonyl, and

R^5 represents halogen, cyano, (C_1-C_4)-alkyl, (C_1-C_4)-haloalkyl, (C_1-C_4)-alkoxy, (C_1-C_4)-haloalkoxy, (C_1-C_4)-alkylthio, (C_1-C_4)-haloalkylthio, (C_3-C_6)-cycloalkyl, (C_3-C_6)-halocycloalkyl, (C_3-C_6)-cycloalkoxy, (C_3-C_6)-halocycloalkoxy, (C_3-C_6)-cycloalkylthio, (C_3-C_6)-halocycloalkylthio, (C_3-C_6)-cycloalkyl-(C_1-C_4)-alkyl, (C_1-C_4)-alkyl-(C_3-C_6)-cycloalkyl, (C_1-C_4)-alkoxycarbonyl-(C_1-C_4)-alkyl, (C_1-C_4)-alkylamino or (C_2-C_8)-dialkylamino.

6. The compound of the general formula (I) as claimed in claim 1 and/or the salt thereof, characterized in that

R^1 represents phenyl, 2-fluorophenyl, 3-fluorophenyl, 4-fluorophenyl, 2-chlorophenyl, 3-chlorophenyl, 4-chlorophenyl, 2-bromophenyl, 2-methylphenyl, 2-methoxyphenyl, 2-trifluoromethylphenyl, 2,3-difluorophenyl, 2,4-difluorophenyl, 2,5-difluorophenyl, 2,6-difluorophenyl, 2,4,6-trifluorophenyl, 2-fluoro-6-methylphenyl, 2,6-dichlorophenyl, 3,5-dichlorophenyl, 2,6-dimethylphenyl, 2-chloro-6-methylphenyl, 2-bromo-6-fluorophenyl, 2-bromo-6-chlorophenyl, 2-bromo-6-methylphenyl, 2-bromo-6-methoxyphenyl, 2-thienyl, 3-fluoro-2-thienyl, 3-chloro-2-thienyl, 3-bromo-2-thienyl, 3-methyl-2-thienyl, 3-methoxy-2-thienyl, 3-thienyl, 2-fluoro-3-thienyl, 2-chloro-3-thienyl, 2-bromo-3-thienyl, 2-methyl-3-thienyl, 2-methoxy-3-thienyl, 4-fluoro-3-thienyl, 4-chloro-3-thienyl, 4-bromo-3-thienyl, 4-methyl-3-thienyl, 4-methoxy-3-thienyl, 3,5-dimethyl-2-thienyl, 5-bromo-3-methyl-2-thienyl, 2,5-dimethyl-3-thienyl, 4,5-dimethyl-3-thienyl, 5-bromo-2-methyl-3-thienyl, 5-bromo-4-methyl-3-thienyl, 2,4,5-trimethyl-3-thienyl, 2,5-dibromo-4-methyl-3-thienyl, 2-pyridyl, 3-fluorine-2-pyridyl, 3-chloro-2-pyridyl, 3-bromo-2-pyridyl, 3-methyl-2-pyridyl, 3-methoxy-2-pyridyl, 3-pyridyl, 2-methyl-3-pyridyl, 4-pyridyl, 4-methylthiazol-5-yl, 4-methylisothiazol-5-yl, cyclopenten-1-yl, cyclohexen-1-yl or 7-oxabicyclo[4.1.0]heptan-1-yl,

R^2 represents hydrogen, fluorine, chlorine, bromine, iodine, methyl, ethyl, n-propyl, iso-propyl, cyclopropyl, vinyl, methoxy, ethoxy, methylthio, ethoxycarbonyl, difluoromethyl or trifluoromethyl,

R^3 represents hydrogen, fluorine, chlorine or methyl, preferably hydrogen, and

R^4 represents hydrogen, chlorine, cyano, methyl, methoxy, ethoxy, hydrothio, methylthio, methylsulfinyl, methylsulfonyl, cyanomethyl, 2-fluorobenzyl, methoxycarbonyl, aminocarbonyl, ethyl 2-cyanoacetate, diethyl 2-propanedioate, *N*-allylacetamide, 2-aminoacetic acid, 2-oxyacetic acid, *N*-allyl-2-amino-acetamide, *N*-allyl-2-oxy-acetamide, *N*-methyl-2-sulfanyl-acetamide, sulfanyl-*N*,*N*-dimethylacetamide, *N*-allyl-2-sulfanyl-acetamide or *N*-allyl-*N*-methyl-2-sulfanyl-acetamide, preferably hydrogen, chlorine, cyano, methyl, methoxy, ethoxy, hydrothio, methylthio, methylsulfinyl, methylsulfonyl, cyanomethyl or 2-fluorobenzyl.

7. The compound of the general formula (I) as claimed in claim 1 and/or the salt thereof, characterized in that

R^1 represents phenyl, 2-fluorophenyl, 3-fluorophenyl, 4-fluorophenyl, 2-chlorophenyl, 2-methylphenyl, 2-methoxyphenyl, 2-trifluoromethylphenyl, 2,3-difluorophenyl, 2,4-difluorophenyl, 2,6-difluorophenyl, 2,4,6-trifluorophenyl, 2-fluoro-6-methylphenyl, 3-chloro-2-thienyl, 3-methyl-2-thienyl, 3-thienyl, 2-chloro-3-thienyl, 2-methyl-3-thienyl, 4-methyl-3-thienyl, 3,5-dimethyl-2-thienyl, 5-bromo-3-methyl-2-thienyl, 2,5-dimethyl-3-thienyl, 4,5-dimethyl-3-thienyl, 5-bromo-2-methyl-3-thienyl, 5-bromo-4-methyl-3-thienyl, 2,4,5-trimethyl-3-thienyl, 2,5-dibromo-4-methyl-3-thienyl, 2-methyl-3-pyridyl, 4-methylthiazol-5-yl, 4-methylisothiazol-5-yl, cyclohexen-1-yl or 7-oxabicyclo[4.1.0]heptan-1-yl,

R^2 represents hydrogen, chlorine, bromine, iodine, methyl, ethyl, iso-propyl, cyclopropyl, vinyl, methylthio or ethoxycarbonyl,

R^3 represents hydrogen or methyl, and

R^4 represents hydrogen, chlorine, cyano, methyl, methoxy, ethoxy, hydrothio, methylthio, methylsulfinyl, methylsulfonyl, cyanomethyl, 2-fluorobenzyl, methoxycarbonyl, aminocarbonyl, ethyl 2-cyanoacetate, *N*-allylacetamide, 2-aminoacetic acid or *N*-allyl-2-

amino-acetamide, preferably hydrogen, chlorine, cyano, methyl, methoxy, ethoxy, hydrothio, methylthio, methylsulfinyl, methylsulfonyl, cyanomethyl or 2-fluorobenzyl.

8. The use of one or more compounds of the general formula (I) and/or salts thereof, as defined in any of claims 1 to 7, as herbicide and/or plant growth regulator.

9. A herbicidal and/or plant growth-regulating composition, characterized in that the composition comprises one or more compounds of the general formula (I) and/or salts thereof as defined in any of claims 1 to 7, and one or more further substances selected from groups (i) and/or (ii), with

(i) one or more further agrochemically active substances, selected from the group consisting of insecticides, acaricides, nematicides, further herbicides, fungicides, safeners, fertilizers and/or further growth regulators,

(ii) one or more formulation auxiliaries customary in crop protection.

10. A method for controlling harmful plants or for regulating the growth of plants, characterized in that an effective amount

- of one or more compounds of the general formula (I) and/or salts thereof, as defined in any of claims 1 to 7, or
- of a composition as claimed in claim 9,

is applied to the plants, seeds of plants, the soil in which or on which the plants grow or the area under cultivation.

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2021/058223

A. CLASSIFICATION OF SUBJECT MATTER
INV. C07D513/04 A01N43/90
ADD.

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

B. FIELDS SEARCHED

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

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

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, 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.
A	WO 2016/087373 A1 (BAYER CROPSCIENCE AG [DE]) 9 June 2016 (2016-06-09) cited in the application page 1, line 2 - page 1, line 4; claims; examples	1-10
A	WO 2017/153601 A1 (AC IMMUNE SA [CH]) 14 September 2017 (2017-09-14) cited in the application page 1, line 12 - page 1, line 20; claims; examples	1-10
A	WO 2013/018928 A1 (SUMITOMO CHEMICAL CO [JP]; TAKAHASHI MASAKI [JP] ET AL.) 7 February 2013 (2013-02-07) cited in the application page 1, line 2 - page 1, line 4; claims; examples	1-10

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

[X] See patent family annex.

* Special categories of cited documents :

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

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

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

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

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

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

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

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

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
29 April 2021	11/05/2021

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