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(71) Applicant *(for all designated States except US)*: **BAYER SCHERING PHARMA AKTIENGESELLSCHAFT** [DE/DE]; Müllerstrasse 178, 13353 Berlin (DE).

(72) Inventors; and
(75) Inventors/Applicants *(for US only)*: **BRÄUER, Nico** [DE/DE]; Westendstr. 2 a, 07743 Jena (DE). **BUCHMANN, Bernd** [DE/DE]; Erdmannstr. 44, 16540 Hohen Neuendorf (DE). **HUWE, Christoph** [DE/DE]; Sandhauser Str. 111, 13505 Berlin (DE). **KOPPITZ, Marcus** [DE/DE]; Scharnhorststr. 28, 10115 Berlin (DE). **TER LAAK, Antonius** [NL/DE]; Hedwigstr. 11, 12159 Berlin (DE). **LANGER, Gernot** [DE/DE]; Mainstr. 32, 14612 Falkensee (DE). **LINDENTHAL, Bernhard** [DE/DE]; Wilkestr. 19, 13507 Berlin (DE). **PETERS, Olaf** [DE/DE]; Langenhainer Str. 8, 99891 Tabarz (DE). **WINTERMANTEL, Tim** [DE/DE]; Monbijouplatz 9, 10178 Berlin (DE).

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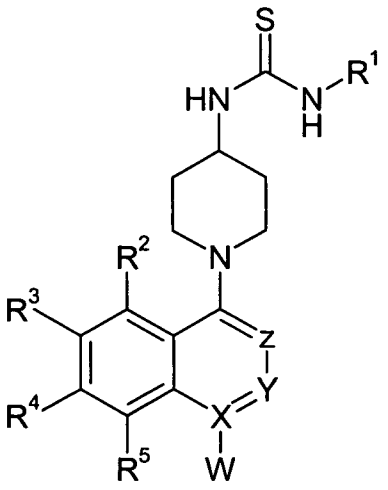
(54) **Title:** 1-(HET)ARYL-3-[HETARYL-PIPERIDIN-4-YL]-THIOUREAS AS MODULATORS OF THE EP_2 RECEPTOR



(I)

(57) **Abstract:** The present invention relates to aryl-3-[(het)aryl-piperidin-4-yl]-thioureas, processes for the production thereof and the use thereof for the production of pharmaceutical agents for the treatment of diseases and indications which are connected with the EP_2 receptor.

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1-(Het)aryl-3-[hetaryl-piperidin-4-yl]-thioureas as modulators of the EP_2 receptor

The present invention relates to 1-(het)aryl-3-[hetaryl-piperidin-4-yl]-thioureas as EP_2 receptor modulators, processes for the production thereof and the use thereof as medicaments.

It has already long been known that prostaglandins are the key molecules in the processes of female reproductive biology, such as for example the regulation of ovulation, fertilization, nidation, decidualization (e.g. placenta formation) and menstruation. Prostaglandins also play an important part in pathological changes in the reproductive tract, including hypermenorrhea, dysmenorrhea, endometriosis and cancer. So far, the mechanism through which the prostaglandins cause these changes has not yet been completely elucidated. Recent findings indicate that prostaglandins, their receptors and their signal transduction routes are involved in processes such as angiogenesis, apoptosis, proliferation and in inflammatory/antiinflammatory and immunological processes.

The effects of the prostaglandins are mediated by their G-protein-coupled receptors, which are located on the cell surface. Of particular interest is prostaglandin E_2 (PGE_2), which brings about a great variety of cellular actions since it binds to functionally different receptor subtypes, namely the EP_1, EP_2, EP_3 and EP_4 receptors. The receptor subtypes to which prostaglandin E_2 binds appear to be of particular interest for the receptor-mediated effects which are involved in fertility regulation. Thus it could be shown that the reproductive functions are affected in EP_2 knockout mice ($EP_2^{-/-}$), i.e. in mice which no longer carry the PGE_2 receptor subtype EP_2, and that these animals have a lower "litter number" (Matsumoto *et al.*, 2001, Biology of Reproduction 64, 1557-1565). Likewise, it could be shown that these EP_2 knockout mice (Hizaki *et al.* Proc Natl Acad Sci U. S. A. 1999 Aug 31; 96 (18), 10501-10506) show markedly reduced cumulus expansion and severe subfertility, which

demonstrates the importance of the prostaglandin EP_2 receptor for this process. Accordingly, the EP_2 receptor is an important target for the development of drugs for the regulation of female fertility. The existence of the four subclasses of the PGE_2 receptor opens up the possibility of targeted development of selectively acting compounds. However, hardly any selective EP_2 receptor ligands which bind to the EP_2 subtypes of the PGE_2 receptor were previously known, since most known compounds also bind to the other PGE_2 receptor subtypes, for example to the EP_4 receptor.

EP_2 receptor antagonists are for example described in the application US2005059742 (Jabbour, Medical Research Council). A method is claimed wherein an EP_2- and/or an EP_4- antagonist can be used for the treatment of hypermenorrhea and dysmenorrhea. AH6809 is disclosed as an antagonist of the EP_2- or EP_4 receptor, and no other specific antagonists and no new compounds are disclosed.

In a previous application, EP_2 or EP_4 antagonists for the treatment of pathological states, such as for example uterine carcinoma, myoma and endometriosis, are claimed by the same group (EP 1467738). Similarly, no new compounds are disclosed.

In the application WO03/016254, Ono Pharmaceutical claims the production of benzoic acid or saturated carboxylic acid derivatives which are substituted with aryl or heterocycles, inter alia as PGE_2 receptor antagonists. The compounds disclosed are claimed for the treatment of a large number of diseases, among them also allergic diseases, Alzheimers disease, pain, abortion, menstrual problems, hypermenorrhea and dysmenorrhea, endometriosis, diseases of the bones, ischemia and the like. The compounds described are however characterized by particularly high affinity to the EP_3 receptor. In a further application (WO04/032964), new compounds are described which likewise are characterized by particularly high affinity to the EP_3 receptor, which also find use as EP_2 antagonists for the treatment and prophylaxis of allergic diseases.

In the application WO04/39807 by the company Firma Merck Frosst, Canada, the production of pyridopyrrolizines and pyridoindolizines is disclosed. These compounds are however characterized by good binding to the PGD_2 receptor; this receptor represents another subtype of the prostaglandin receptor.

Naphthalene derivates as EP_4 receptor ligands are disclosed by the SmithKline Beecham Corporation in the application US2004102508. The compounds claimed find their use in the treatment or prophylaxis of pain, allergic reactions and neurodegenerative diseases.

EP_4 antagonists (γ-lactams) are claimed in the application WO03/103604 (Applied Research Systems). The compounds bind ca. 60 times better to the EP_4 than to the EP_2 receptor and are inter alia claimed for the treatment of premature labor, dysmenorrhea, asthma, sterility or fertility disorders. In the applications WO03/053923 (substituted pyrrolidines) or WO03/035064 (substituted pyrazolidiones), the same company claims compounds for the treatment of diseases, which are associated with prostaglandins, such as for example infertility, hypertension and osteoporosis. The compounds bind to the EP_4- and EP_2 receptor subtypes. In the application WO03/037433, ω-cycloalkyl, 17-heteroaryl-prostaglandin derivatives are claimed as EP_2 receptor antagonists, in particular for the treatment of elevated intraocular pressure.

In the application WO03/064391 (Pfizer Products), metabolites of [3-[[N-(4-tert-butylbenzyl)(pyridin-3-ylsulfonyl)amino]methyl] acetic acid are described which inhibit the binding of [^{3}H]-prostaglandin E_2 to the EP_2 receptor. The use of these metabolites for the treatment of osteoporosis is disclosed.

In the application US2005124577, Tani *et al.* claim 8-azaprostaglandin derivatives for the treatment of immunological diseases, allergic diseases, premature labor, abortion and the like. The compounds bind to the EP_2 and EP_4 receptor.

In the European patent EP 1306087, EP_2 receptor agonists are described which find their use in the treatment of erectile dysfunction. The same structural class is described in the European patent EP 860430 and the use thereof for the production of a drug for the treatment of immunological diseases, asthma and abortion is claimed. The application WO04/32965 describes the EP_2 receptor agonists which are used for the treatment and prevention of diseases which are caused by organ failure due to ischemia. In WO04/009117, EP_2 and EP_4 receptor agonists are described for the treatment of diseases which are caused by uterine contraction, for example menstrual problems.

In the applications WO 03/74483 and WO03/09872, agonists are described which bind equally to the EP_2 and the EP_4 receptor (Ono Pharmaceuticals).

The agonists of the EP_2 and EP_4 receptors are often described in connection with the treatment of osteoporosis (WO99/19300, US2003/0166631, WO03/77910, WO03/45371, WO 03/74483 and WO03/09872) and for the treatment of glaucoma (WO04/37813, WO04/37786, WO04/19938, WO03/103772, WO03/103664, US6747037, US6410591, WO03/40123, WO03/47513, WO03/47417).

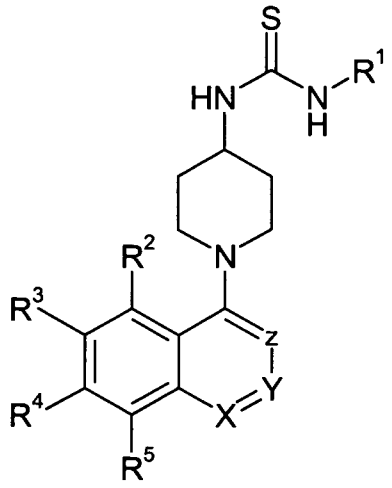
In the patent application WO04/12656, EP_2 receptor agonists are claimed in connection with inflammation.

In the patent application WO03/77919, EP_4 receptor agonists are claimed for fertility treatment.

Hitherto, however, no selective EP_2 receptor agonists and antagonists which regulate the processes which are ultimately responsible for nidation and decidualization, and thus contribute to the promotion or inhibition of fertility were known.

This leads to the objective of providing stable and effective compounds which bind selectively to the EP_2 receptor for the development of new drugs.

Surprisingly, it has now been found that compounds of the general formula I



(I)

wherein

X, Y, Z independently of each other mean a nitrogen residue or a carbon residue –C-R^8, wherein R^8 can be hydrogen or a C_1-C_4 alkyl residue,

under the condition that at least one, but at most 2 of the groups X, Y and Z is a nitrogen residue,

R^1 means a 5-12-membered, mono- or bicyclic aryl or heteroaryl ring, which can be unsubstituted or optionally singly to triply substituted,

R^2 - R^5 independently of each other mean a hydrogen, halogen, cyano,

- or a OR^6, $OC(O)R^6$, $S(O)_nR^6$, wherein n = 0, 1 or 2, SO_2NHR^6, $SO_2NHC(O)R^6$, NR^6R^7, $NHC(O)R^6$, $CH_2NR^6R^7$, $CH_2NHC(O)R^6$, $C(OH)R^6R^7$, $C(O)R^6$, CO_2R^6 or $C(O)NR^6R^7$ group,
- a C_1-C_6 alkyl group, which can be unsubstituted or optionally substituted
- a C_3-C_{10} cycloalkyl ring, which can be unsubstituted or optionally substituted,

- a C_2-C_6 alkenyl or C_2-C_6 alkynyl group, which can be unsubstituted or optionally substituted,
- a 5-12-membered, mono- or bicyclic aryl or heteroaryl ring, which can be unsubstituted or optionally substituted,

R^6, R^7 mean a hydrogen, a C_1-C_6 alkyl, a C_3-C_{10} cycloalkyl ring, a 5-12-membered mono- or bicyclic aryl or heteroaryl ring, wherein the alkyl, cycloalkyl and (het)aryl groups can be unsubstituted or optionally substituted or

R^6, R^7 together form a 3-8-membered ring,
and isomers and salts thereof and cyclodextrin clathrates thereof, can overcome the known disadvantages and achieve better selectivity to the EP_2 receptor and thus better efficacy and longer duration of action.

The saturated, unbranched C_1–C_4 alkyl substituents stated under R^8 to R^{10} are for example a methyl, ethyl, *n*-propyl or *n*-butyl, and the branched C_3–C_4 alkyl groups an *iso*-propyl, *iso*-butyl, *sec*-butyl or *tert*-butyl group.

The alkyl groups can optionally be singly to multiply substituted with halogen atoms, e.g. fluorine, chlorine or bromine.

The saturated, unbranched C_1–C_6 alkyl substituents stated under R^2 to R^7 are for example a methyl, ethyl, *n*-propyl, *n*-butyl, *n*-pentyl or *n*-hexyl, and the branched C_3–C_6 alkyl groups an *iso*-propyl, *iso*-butyl, *sec*-butyl, *tert*-butyl, *iso*-pentyl, *neo*-pentyl, 2-methylpentyl, 2,2-dimethylbutyl- or 2,3-dimethylbutyl group.

The alkyl groups can optionally be singly to quintuply substituted with halogen atoms (e.g. fluorine, chlorine or bromine), and with cyano, hydroxy, amino or carboxyl groups.

The C_2-C_6 alkenyl substituents in R^2-R^5 and/or the C_2-C_4 alkenyl substituents in R^9-R^{10} are each straight-chain or branched, wherein for example the following residues are meant:

Vinyl, allyl, homoallyl, (*E*)-but-2-enyl, (*Z*)-but-2-enyl, pent-4-enyl, (*E*)-pent-3-enyl, (*Z*)-pent-3-enyl, (*E*)-pent-2-enyl, (*Z*)-pent-2-enyl, 2-methylvinyl, 3-methylbut-3-enyl, 2-methylbut-3-enyl, (*E*)-2-methylbut-2-enyl, (*Z*)-2-methylbut-2-enyl, 2-ethylprop-2-enyl, hex-5-enyl, (*E*)-hex-4-enyl, (*Z*)-hex-4-enyl, (*E*)-hex-3-enyl, (*Z*)-hex-3-enyl, (*E*)-hex-2-enyl, (*Z*)-hex-2-enyl, 1-methylpent-4-enyl, (*E*)-1-methylpent-3-enyl, (*Z*)-1-methylpent-3-enyl, 1-ethylbut-3-enyl, (*E*)-1-methylpent-2-enyl and (*Z*)-1-methylpent-2-enyl.

The alkenyl groups can optionally be singly to triply substituted with halogen atoms (e.g. fluorine, chlorine or bromine), and with cyano or carboxyl groups.

The C_2-C_6 alkynyl substituents in R^2-R^5 and/or the C_2-C_4 alkenyl substituents in R^9-R^{10} are each straight-chain or branched, wherein for example the following residues are meant: ethinyl, prop-1-in-1-yl, but-1-in-1-yl or but-2-in-1-yl.

The alkynyl groups can optionally be singly substituted with halogen atoms (e.g. fluorine, chlorine or bromine), and with cyano or carboxyl groups.

Halogen is understood to mean the following: fluorine, chlorine, bromine or iodine.

The C_3-C_{10} cycloalkyl substituents stated in R^2-R^7 and the C_3-C_6 cycloalkyl substituents stated in R^9 - R^{10} should be understood to mean cycloalkyl rings such as cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, cycloheptyl, cyclooctyl, adamantyl or decalinyl.

The cycloalkyl groups can optionally be singly to doubly substituted with halogen atoms (fluorine, chlorine or bromine), and with cyano, hydroxy, amino or carboxyl groups.

The 5-12-membered, mono- or bicyclic aryl or heteroaryl residue stated in R^1 to R^7, which can optionally be singly or triply substituted, are understood to mean 5-12-membered ring systems, which instead of the carbon can contain one or more, similar or different hetero atoms, such as oxygen, nitrogen or sulfur in the ring, can be mono- or bicyclic and in addition can each be benzo-condensed and are connected to the structure via one of the possible linkage sites.

For example, as a 5-12-membered, mono- or bicyclic aryl residue, the following may be named: cyclopentadienyl, phenyl, tropyl, cyclooctadienyl, indenyl, naphthyl, azulenyl or biphenyl.

The 5-12-membered, mono- or bicyclic heteroaryl groups can be a pyridinyl, pyrimidinyl, quinolinyl, isoquinolinyl, phthalazinyl, quinazolinyl, quinoxalinyl, cinnolinyl, benzofuranyl, benzothiophenyl, 1,3-benzodioxolyl, benzimidazolyl, 2,1,3-benzothiadiazolyl, indolyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, pyrazinyl, pyridazinyl, triazolyl, tetrazolyl or imidazolyl group linked via one of the substitutable positions.

The 5-6-membered aryl or heteroaryl residue, which can optionally be singly or triply substituted, stated in R^9 to R^{10} is understood to mean 5-6-membered ring systems, which instead of the carbon can contain one or more, similar or different hetero atoms, such as oxygen, nitrogen or sulfur in the ring and are bound to the structure via one of the possible linkage sites.

For example as a 5-6-membered, mono- or bicyclic aryl residue the following may be named: cyclopentadienyl or phenyl.

The 5-6-membered heteroaryl groups can be a pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, pyrazinyl, pyridazinyl or imidazolyl group linked via one of the substitutable positions.

The 3-8-membered ring which can be formed by ring closure of R^6 and R^7 or R^9 and R^{10} can be a cycloalkyl or a nitrogen-containing heterocycle. As examples of a 3-8-membered cycloalkyl ring the following may for example be named: cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, cycloheptyl, or cyclooctyl.
As examples of an 3-8-membered, nitrogen-containing heterocycle the following may for example be named: aziridinyl, azetidinyl, pyrrolidinyl, piperidinyl, piperazinyl, morpholinyl, azepanyl or [1, 4]-diazepanyl.

The free alcohols of the compounds according to the invention can also be present as esters and thus are prodrugs of the physiological compounds of the general formula I, which in the body metabolize to compounds of the general formula I.

Suitable compounds are for example listed in Hans Bundgaard (Ed.), Design of Prodrugs, Elsevier, Amsterdam 1985.

If an acid function is present, the physiologically compatible salts of organic and inorganic bases are suitable as salts, such as for example the alkali metal and alkaline earth salts of good solubility and N-methyl-glucamine, dimethyl-glucamine, ethylglucamine, lysine, 1,6-hexadiamine, ethanolamine, glucosamine, sarcosine, serinol, tris-hydroxymethylaminomethane, aminopropanediol, Sovak base and 1-amino-2,3,4-butanetriol.

If a basic function is present, as inorganic acids inter alia hydrochloric acid, hydrobromic acid, sulfuric acid, phosphoric acid or nitric acid, as carboxylic acids inter alia acetic acid, propionic acid, hexanoic acid, octanoic acid, decanoic acid, oleic acid, stearic acid, maleic acid, fumaric acid, succinic acid, benzoic acid, ascorbic acid, oxalic acid, salicylic acid, tartaric acid, citric acid, lactic acid, glycolic acid, malic acid, mandelic acid, cinnamic acid, glutamic acid and aspartic acid, and as sulfonic acids inter alia methanesulfonic acid, ethanesulfonic acid, toluenesulfonic acid, benzenesulfonic acid and naphthalenesulfonic acid are possibilities for the formation of physiologically

compatible salts of the compounds according to the invention of the general formula I, by the methods known to the person skilled in the art.

Preferred are the compounds of the general formula 1, wherein

X means a nitrogen residue,

Y, Z mean a carbon residue –C-R^8,

R^8 means a hydrogen or a C_1-C_4 alkyl residue,

R^1 means a 5-12-membered, mono- or bicyclic, aryl or heteroaryl ring, which can be unsubstituted and optionally singly to triply substituted,

R^2 - R^5 independently of each other mean a hydrogen, halogen, cyano,

- or a OR^6, $OC(O)R^6$, $S(O)_nR^6$, wherein n = 0, 1 or 2, SO_2NHR^6, $SO_2NHC(O)R^6$, NR^6R^7, $NHC(O)R^6$, $CH_2NR^6R^7$, $CH_2NHC(O)R^6$, $C(OH)R^6R^7$, $C(O)R^6$, CO_2R^6 or $C(O)NR^6R^7$ group,
- a C_1-C_6 alkyl group, which is unsubstituted or can optionally be substituted,
- a C_3-C_{10} cycloalkyl ring, which is unsubstituted or can optionally be substituted,
- a C_2-C_6 alkenyl- or C_2-C_6 alkynyl group, which is unsubstituted or can optionally be substituted,
- a 5-12-membered mono- or bicyclic aryl or heteroaryl ring, which is unsubstituted or can optionally be substituted,

R^6, R^7 means a hydrogen, a C_1-C_6 alkyl, a C_3-C_{10} cycloalkyl ring or a 5-12-membered mono- or bicyclic aryl or heteroaryl ring, wherein the alkyl, cycloalkyl and (het)aryl groups are unsubstituted or can optionally be substituted or

R^6, R^7 together form a 3-8-membered ring.

Likewise preferred are the compounds of the general formula I, wherein

Y and Z mean a nitrogen residue,

X means a carbon residue –C-R^8,

R^8 means a hydrogen or a C_1-C_4 alkyl residue,

R^1 means a 5-12-membered mono or bicyclic aryl or heteroaryl ring, which is unsubstituted or can optionally be singly to triply substituted,

R^2-R^5 independently of each other mean hydrogen, halogen, cyano,

- or a OR^6, $OC(O)R^6$, $S(O)_nR^6$, wherein n = 0, 1 or 2, SO_2NHR^6, $SO_2NHC(O)R^6$, NR^6R^7, $NHC(O)R^6$, $CH_2NR^6R^7$, $CH_2NHC(O)R^6$, $C(OH)R^6R^7$, $C(O)R^6$, CO_2R^6 or $C(O)NR^6R^7$ group,
- a C_1-C_6 alkyl group, which is unsubstituted or can optionally be substituted,
- a C_3-C_{10} cycloalkyl ring, which is unsubstituted or can optionally be substituted,
- a C_2-C_6 alkenyl or C_2-C_6 alkynyl group, which is unsubstituted or can optionally be substituted,
- a 5-12-membered mono- or bicyclic aryl or heteroaryl ring, which is unsubstituted or can optionally be substituted,

R^6, R^7 mean a hydrogen, a C_1-C_6 alkyl, a C_3-C_{10} cycloalkyl ring, a 5-12-membered mono- or bicyclic aryl or heteroaryl ring, wherein the

alkyl, cycloalkyl and (het)aryl groups are unsubstituted or can optionally be substituted or

R^6, R^7 together form a 3-8-membered ring.

Likewise preferred are the compounds of the general formula I, wherein

X and Z each mean a nitrogen residue,

Y means a carbon residue –C-R^8,

R^8 means a hydrogen or a C_1-C_4 alkyl residue,

R^1 means a 5-12-membered mono- or bicyclic aryl or heteroaryl ring, which is unsubstituted and can optionally be singly to triply substituted,

R^2 - R^5 independently of each other mean a hydrogen, halogen, cyano,

- or a OR^6, $OC(O)R^6$, $S(O)_nR^6$, wherein n = 0, 1 or 2, SO_2NHR^6, $SO_2NHC(O)R^6$, NR^6R^7, $NHC(O)R^6$, $CH_2NR^6R^7$, $CH_2NHC(O)R^6$, $C(OH)R^6R^7$, $C(O)R^6$, CO_2R^6 or $C(O)NR^6R^7$ group,
- a C_1-C_6 alkyl group, which is unsubstituted or can optionally be substituted,
- a C_3-C_{10} cycloalkyl ring, which is unsubstituted or can optionally be substituted,
- a C_2-C_6 alkenyl or C_2-C_6 alkynyl group, which is unsubstituted or can optionally be substituted,
- a 5-12-membered mono- or bicyclic aryl or heteroaryl ring, which is unsubstituted or can optionally be substituted,

R^6, R^7 mean a hydrogen, a C_1-C_6 alkyl, a C_3-C_{10} cycloalkyl ring, a 5-12-membered, mono- or bicyclic aryl or heteroaryl ring, wherein the

alkyl, cycloalkyl and (het)aryl groups are unsubstituted or can optionally be substituted or

R^6, R^7 together form a 3-8-membered ring.

Likewise preferred are the compounds of the general formula I, wherein

X and Y each mean a carbon residue –C-R^8,

Z means a nitrogen residue,

R^8 means a hydrogen or a C_1-C_4 alkyl residue,

R^1 means a 5-12-membered or mono- or bicyclic aryl or heteroaryl ring, which is unsubstituted or can optionally be singly to triply substituted,

R^2 - R^5 independently of each other mean a hydrogen, halogen, cyano,

- or a OR^6, $OC(O)R^6$, $S(O)_nR^6$, wherein n = 0, 1 or 2, SO_2NHR^6, $SO_2NHC(O)R^6$, NR^6R^7, $NHC(O)R^6$, $CH_2NR^6R^7$, $CH_2NHC(O)R^6$, $C(OH)R^6R^7$, $C(O)R^6$, CO_2R^6 or $C(O)NR^6R^7$ group,
- a C_1-C_6 alkyl group, which is unsubstituted or can optionally be substituted,
- a C_3-C_{10} cycloalkyl ring, which is unsubstituted or can optionally be substituted,
- a C_2-C_6 alkenyl or C_2-C_6 alkynyl group, which is unsubstituted or can optionally be substituted,
- a 5-12-membered mono- or bicyclic aryl or heteroaryl ring, which is unsubstituted or can optionally be substituted,

R^6, R^7 mean a hydrogen, a C_1-C_6 alkyl, a C_3-C_{10} cycloalkyl ring, a 5-12-membered, mono- or bicyclic aryl or heteroaryl ring, wherein the

alkyl, cycloalkyl and (het)aryl groups are unsubstituted or can optionally be substituted or

R^6, R^7 together form a 3-8-membered ring.

Likewise preferred are the compounds of the general formula 1, wherein

X means a nitrogen residue,

Y, Z mean a carbon residue –C-R^8,

R^8 means a hydrogen,

R^1 means an unsubstituted 5-12-membered mono- or bicyclic aryl or heteroaryl ring, which is optionally singly to triply substituted,
wherein the substituents can be selected from the group
halogen,
-C_1-C_4 alkyl, which is unsubstituted and can optionally be substituted,
-OR^6, -$OC(O)R^6$, -$S(O)_nR^6$, wherein n = 0, 1 or 2,
-SO_2NHR^6, -$SO_2NHC(O)R^6$, NR^6R^7, -$NHC(O)R^6$, -CN, -CO_2-R^6, -C(O)-N-R^6R^7, -$C(O)R^6$ or -$C(OH)R^6R^7$,
wherein the 5-12-membered mono- or bicyclic aryl or heteroaryl ring can for example, but not exclusively, be a naphthyl, quinolinyl, isoquinolinyl, phthalazinyl, quinazolinyl, quinoxalinyl, cinnolinyl, benzothiophenyl, 1,3-benzodioxolyl, 2,1,3-benzothiadiazolyl, phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl, tetrazolyl, indolyl, benzofuranyl or benzimidazolyl group,

R^2 means a hydrogen,

R^3 - R^5 independently of each other mean a hydrogen, halogen, cyano, or a OR^6, $OC(O)R^6$, $S(O)_nR^6$ wherein n = 0, 1 or 2, SO_2NHR^6, $SO_2NHC(O)R^6$, NR^6R^7, $NHC(O)R^6$, $CH_2NR^6R^7$, $CH_2NHC(O)R^6$, $C(OH)R^6R^7$, $C(O)R^6$, CO_2R^6 or $C(O)NR^6R^7$ group,

a C_1-C_6 alkyl group, which is optionally unsubstituted or substituted,

a C_3-C_{10} cycloalkyl ring, which is optionally unsubstituted or substituted,

a C_2-C_6 alkenyl or C_2-C_6 alkynyl group, which is optionally substituted or unsubstituted,

a 5-12-membered mono- or bicyclic aryl or heteroaryl ring, which is optionally singly or multiply substituted,

wherein the substituents can be selected from the group

- halogen,
- -C_1-C_4 alkyl, which is unsubstituted and can optionally be substituted,
- -OR^9, -$OC(O)R^9$, -$S(O)_nR^9$, wherein n = 0, 1 or 2, -SO_2NHR^9, -$SO_2NHC(O)R^9$, NR^9R^{10}, -$NHC(O)R^9$, -CN, -CO_2-R^9, -C(O)-N-R^9R^{10}, -$C(O)R^9$ or -$C(OH)R^9R^{10}$,

wherein the 5-12-membered mono or bicyclic aryl or heteroaryl ring can for example, but not exclusively, be a naphthyl, quinolinyl, isoquinolinyl, phthalazinyl, quinazolinyl, quinoxalinyl, cinnolinyl, benzothiophenyl, 1,3-benzodioxolyl, 2,1,3-benzothiadiazolyl, phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl, tetrazolyl, indolyl, benzofuranyl or benzimidazolyl group,

R^6, R^7 mean a hydrogen, a C_1-C_6 alkyl group, which is unsubstituted or can optionally be up to quintuply halogenated,

a C_3-C_8 cycloalkyl residue,

a 5-12-membered, mono or bicyclic aryl or heteroaryl ring, which is optionally singly or multiply substituted,

wherein the substituents can be selected from the group

- halogen,
- cyano,
- R^9, $-OR^9$, $-OC(O)R^9$, $-S(O)_nR^9$, wherein n = 0, 1 or 2, $-SO_2NHR^9$, NR^9R^{10}, $-NHC(O)R^9$, $-CO_2-R^9$ or $-C(O)-N-R^9R^{10}$,

wherein the 5-12-membered mono- or bicyclic aryl or heteroaryl ring can for example, but not exclusively, be a naphthyl, quinolinyl, isoquinolinyl, phthalazinyl, quinazolinyl, quinoxalinyl, cinnolinyl, benzothiophenyl, 1,3-benzodioxolyl, 2,1,3-benzothiadiazolyl, phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl, tetrazolyl, indolyl, benzofuranyl or benzimidazolyl group, or

R^6, R^7 together form a 3-8-membered ring,

R^9, R^{10} independently of each other mean hydrogen,

- a C_1-C_4 alkyl group, which is unsubstituted or can optionally be up to quintuply fluorinated,
- a C_2-C_4 alkenyl group, which is unsubstituted or can optionally be up to triply fluorinated,
- a C_2-C_4 alkynyl group, which is unsubstituted or can optionally be singly fluorinated,
- a C_3-C_6 cycloalkyl group,
- a 5-6-membered aryl or heteroaryl ring, which can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl ring, which is

unsubstituted or can be up to doubly substituted with fluorine, chlorine or trifluoromethyl, or

R^9, R^{10} together form a 3-8-membered ring.

Likewise preferred are the compounds of the general formula I, wherein

Y and Z mean a nitrogen residue,

X means a carbon residue –C-R^8,

R^8 means a hydrogen or a methyl group,

R^1 a 5-12-membered mono- or bicyclic aryl or heteroaryl ring, which is optionally singly to triply substituted,

wherein the substituents can be selected from the group halogen,

-C_1-C_4 alkyl, which is unsubstituted and can optionally be substituted,

-OR^6, -$OC(O)R^6$, -$S(O)_nR^6$, wherein n = 0, 1 or 2,

-SO_2NHR^6, -$SO_2NHC(O)R^6$, NR^6R^7, -$NHC(O)R^6$, -CN,

-CO_2-R^6, -C(O)-N-R^6R^7, -$C(O)R^6$ or -$C(OH)R^6R^7$,

wherein the 5-12-membered mono- or bicyclic aryl or heteroaryl ring can for example, but not exclusively, be a naphthyl, quinolinyl, isoquinolinyl, phthalazinyl, quinazolinyl, quinoxalinyl, cinnolinyl, benzothiophenyl, 1,3-benzodioxolyl, 2,1,3-benzothiadiazolyl, phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl, tetrazolyl, indolyl, benzofuranyl or benzimidazolyl group,

R^2 means a hydrogen,

R^3- R^5 independently of each other mean a hydrogen, halogen, cyano,

- or a OR^6, $OC(O)R^6$, $S(O)_nR^6$, wherein n = 0, 1 or 2, SO_2NHR^6, $SO_2NHC(O)R^6$, NR^6R^7, $NHC(O)R^6$, $CH_2NR^6R^7$, $CH_2NHC(O)R^6$, $C(OH)R^6R^7$, $C(O)R^6$, CO_2R^6 or $C(O)NR^6R^7$ group,
- a C_1-C_6 alkyl group, which is unsubstituted or can optionally be substituted,
- a C_3-C_{10} cycloalkyl ring, which is unsubstituted or can optionally be substituted,
- a C_2-C_6 alkenyl or C_2-C_6 alkynyl group, which is unsubstituted or can optionally be substituted,
- an unsubstituted 5-12-membered mono- or bicyclic aryl or heteroaryl ring, which can optionally be singly or multiply substituted,

wherein the substituents can be selected from the group halogen,

-C_1-C_4 alkyl, which is unsubstituted and can optionally be substituted,

-OR^9, -$OC(O)R^9$, -$S(O)_nR^9$ wherein n = 0, 1 or 2, -SO_2NHR^9, -$SO_2NHC(O)R^9$, NR^9R^{10}, -$NHC(O)R^9$, -CN, -CO_2-R^9, -C(O)-N-R^9R^{10}, -$C(O)R^9$ or -$C(OH)R^9R^{10}$,

wherein the 5-12-membered mono- or bicyclic aryl or heteroaryl ring can for example, but not exclusively, be a naphthyl, quinolinyl, isoquinolinyl, phthalazinyl, quinazolinyl, quinoxalinyl, cinnolinyl, benzothiophenyl, 1,3-benzodioxolyl, 2,1,3-benzothiadiazolyl, phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl, tetrazolyl, indolyl, benzofuranyl or benzimidazolyl group,

R^6, R^7 mean a hydrogen, an unsubstituted C_1-C_6 alkyl group, which can optionally be up to quintuply halogenated,
a C_3-C_8 cycloalkyl residue,

an unsubstituted 5-12-membered, mono or bicyclic aryl or heteroaryl ring, which can optionally be singly or multiply substituted, wherein the substituents can be selected from the group

- halogen,
- cyano,
- R^9, $-OR^9$, $-OC(O)R^9$, $-S(O)_nR^9$, wherein n = 0, 1 or 2, $-SO_2NHR^9$, NR^9R^{10}, $-NHC(O)R^9$, $-CO_2-R^9$ or $-C(O)-N-R^9R^{10}$,

wherein the 5-12-membered mono or bicyclic aryl or heteroaryl ring can for example, but not exclusively, be a naphthyl, quinolinyl, isoquinolinyl, phthalazinyl, quinazolinyl, quinoxalinyl, cinnolinyl, benzothiophenyl, 1,3-benzodioxolyl, 2,1,3-benzothiadiazolyl, phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl, tetrazolyl, indolyl, benzofuranyl or benzimidazolyl group, or

R^6, R^7 together form a 3-8-membered ring,

R^9, R^{10} independently of each other mean hydrogen,

- a C_1-C_4 alkyl group, which is unsubstituted or can optionally be up to quintuply fluorinated,
- a C_2-C_4 alkenyl group, which is unsubstituted or can optionally be up to triply fluorinated,
- a C_2-C_4 alkynyl group, which is unsubstituted or can optionally be singly fluorinated,
- a C_3-C_6 cycloalkyl group,
- a 5-6-membered aryl or heteroaryl ring, which can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl ring, which is

unsubstituted or can be up to doubly substituted with fluorine, chlorine or trifluoromethyl, or

R^9, R^{10} together form a 3-8-membered ring.

Likewise preferred are the compounds of the general formula I, wherein

X and Z each mean a nitrogen residue,

Y means a carbon residue –C-R^8,

R^8 means a hydrogen,

R^1 means an unsubstituted 5-12-membered mono or bicyclic aryl or heteroaryl ring, which is optionally singly to triply substituted,
wherein the substituents can be selected from the group
halogen,
-C_1-C_4 alkyl, which is unsubstituted and can optionally be substituted,
-OR^6, -$OC(O)R^6$, -$S(O)_nR^6$, wherein n = 0, 1 or 2,
-SO_2NHR^6, -$SO_2NHC(O)R^6$, NR^6R^7, -$NHC(O)R^6$, -CN,
-CO_2-R^6, -C(O)-N-R^6R^7, -$C(O)R^6$ or -$C(OH)R^6R^7$,
wherein the 5-12-membered mono or bicyclic aryl or heteroaryl ring can for example, but not exclusively, be a naphthyl, quinolinyl, isoquinolinyl, phthalazinyl, quinazolinyl, quinoxalinyl, cinnolinyl, benzothiophenyl, 1,3-benzodioxolyl, 2,1,3-benzothiadiazolyl, phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl, tetrazolyl, indolyl, benzofuranyl or benzimidazolyl group,

R^2 means a hydrogen,

R^3 - R^5 independently of each other mean a hydrogen, halogen, cyano,

- or a OR^6, $OC(O)R^6$, $S(O)_nR^6$, wherein n = 0, 1 or 2, SO_2NHR^6, $SO_2NHC(O)R^6$, NR^6R^7, $NHC(O)R^6$, $CH_2NR^6R^7$, $CH_2NHC(O)R^6$, $C(OH)R^6R^7$, $C(O)R^6$, CO_2R^6 or $C(O)NR^6R^7$ group,
- an unsubstituted C_1-C_6 alkyl group, which can be substituted,
- an unsubstituted C_3-C_{10} cycloalkyl ring, which can optionally be substituted,
- an unsubstituted C_2-C_6 alkenyl or C_2-C_6 alkynyl group, which can optionally be substituted,
- an unsubstituted 5-12-membered, mono- or bicyclic aryl or heteroaryl ring, which can optionally be singly or multiply substituted,

wherein the substituents can be selected from the group halogen, -C_1-C_4 alkyl, which is unsubstituted and can optionally be substituted,
-OR^9, -$OC(O)R^9$, -$S(O)_nR^9$, wherein = 0, 1 or 2, -SO_2NHR^9, -$SO_2NHC(O)R^9$, NR^9R^{10}, -$NHC(O)R^9$, -CN, -CO_2-R^9, -C(O)-N-R^9R^{10}, -$C(O)R^9$ or -$C(OH)R^9R^{10}$,

wherein the 5-12-membered mono- or bicyclic aryl or heteroaryl ring can for example, but not exclusively, be a naphthyl, quinolinyl, isoquinolinyl, phthalazinyl, quinazolinyl, quinoxalinyl, cinnolinyl, benzothiophenyl, 1,3-benzodioxolyl, 2,1,3-benzothiadiazolyl, phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl, tetrazolyl, indolyl, benzofuranyl or benzimidazolyl group,

R^6, R^7 mean a hydrogen, a C_1-C_6 alkyl group, which can be unsubstituted or optionally up to quintuply halogenated,
an unsubstituted C_3-C_8 cycloalkyl residue,

an unsubstituted 5-12-membered mono- or bicyclic aryl or heteroaryl ring, which can optionally be singly or multiply substituted, wherein the substituents can be selected from the group

- halogen,
- cyano,
- R^9, $-OR^9$, $-OC(O)R^9$, $-S(O)_nR^9$, wherein n = 0, 1 or 2, $-SO_2NHR^9$, NR^9R^{10}, $-NHC(O)R^9$, $-CO_2-R^9$ or $-C(O)-N-R^9R^{10}$,

wherein the 5-12-membered mono- or bicyclic aryl or heteroaryl ring can for example, but not exclusively, be a naphthyl, quinolinyl, isoquinolinyl, phthalazinyl, quinazolinyl, quinoxalinyl, cinnolinyl, benzothiophenyl, 1,3-benzodioxolyl, 2,1,3-benzothiadiazolyl, phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl, tetrazolyl, indolyl, benzofuranyl or benzimidazolyl group, or

R^6, R^7 together form a 3-8-membered ring,

R^9, R^{10} independently of each other mean hydrogen,

- an unsubstituted C_1-C_4 alkyl group, which can optionally be up to quintuply fluorinated,
- an unsubstituted C_2-C_4 alkenyl group, which can optionally be up to triply fluorinated,
- an unsubstituted C_2-C_4 alkynyl group, which can optionally be singly fluorinated,
- an unsubstituted C_3-C_6 cycloalkyl group,
- an unsubstituted 5-6-membered aryl or heteroaryl ring, which can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl

ring, which can optionally be up to doubly substituted with fluorine, chlorine or trifluoromethyl, or

R^9, R^{10} together form a 3-8-membered ring.

Likewise preferred are the compounds of the general formula I, wherein

X and Y each mean a carbon residue –C-R^8,

Z means a nitrogen residue,

R^8 means a hydrogen or methyl group,

R^1 means an unsubstituted 5-12-membered, mono- or bicyclic aryl or heteroaryl ring, which is optionally singly to triply substituted,
wherein the substituents can be selected from the group halogen, -C_1-C_4 alkyl, which is unsubstituted or can optionally be substituted,
-OR^6, -$OC(O)R^6$, -$S(O)_nR^6$, wherein n = 0, 1 or 2,
-SO_2NHR^6, -$SO_2NHC(O)R^6$, NR^6R^7, -$NHC(O)R^6$, -CN,
-CO_2-R^6, -C(O)-N-R^6R^7, -$C(O)R^6$ or -$C(OH)R^6R^7$,
wherein the 5-12-membered mono- or bicyclic aryl or heteroaryl ring can for example, but not exclusively, be a naphthyl, quinolinyl, isoquinolinyl, phthalazinyl, quinazolinyl, quinoxalinyl, cinnolinyl, benzothiophenyl, 1,3-benzodioxolyl, 2,1,3-benzothiadiazolyl, phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl, tetrazolyl, indolyl, benzofuranyl or benzimidazolyl group,

R^2 means a hydrogen,

R^3 - R^5 independently of each other mean a hydrogen, halogen, cyano, or

- an OR^6, $OC(O)R^6$, $S(O)_nR^6$, wherein n = 0, 1 or 2, SO_2NHR^6, $SO_2NHC(O)R^6$, NR^6R^7, $NHC(O)R^6$, $CH_2NR^6R^7$, $CH_2NHC(O)R^6$, $C(OH)R^6R^7$, $C(O)R^6$, CO_2R^6 or $C(O)NR^6R^7$ group,
- an unsubstituted C_1-C_6 alkyl group, which can optionally be substituted,
- an unsubstituted C_3-C_{10} cycloalkyl ring, which can optionally be substituted,
- an unsubstituted C_2-C_6 alkenyl or C_2-C_6 alkynyl group, which can optionally be substituted,
- an unsubstituted 5-12-membered mono- or bicyclic aryl or heteroaryl ring, which is optionally singly or multiply substituted,

  wherein the substituents can be selected from the group halogen or C_1-C_4 alkyl, which is unsubstituted or can optionally be substituted,

  $-OR^9$, $-OC(O)R^9$, $-S(O)_nR^9$ wherein n = 0, 1 or 2, $-SO_2NHR^9$, $-SO_2NHC(O)R^9$, NR^9R^{10}, $-NHC(O)R^9$, -CN, $-CO_2-R^9$, $-C(O)-N-R^9R^{10}$, $-C(O)R^9$ or $-C(OH)R^9R^{10}$,

wherein the 5-12-membered mono- or bicyclic aryl or heteroaryl ring can for example, but not exclusively, be a naphthyl, quinolinyl, isoquinolinyl, phthalazinyl, quinazolinyl, quinoxalinyl, cinnolinyl, benzothiophenyl, 1,3-benzodioxolyl, 2,1,3-benzothiadiazolyl, phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl, tetrazolyl, indolyl, benzofuranyl or benzimidazolyl group,

R^6, R^7 mean a hydrogen, a C_1-C_6 alkyl group, which is unsubstituted or can optionally be up to quintuply halogenated, an unsubstituted C_3-C_8 cycloalkyl residue,

an unsubstituted 5-12-membered, mono- or bicyclic aryl or heteroaryl ring, which can optionally be singly or multiply substituted, wherein the substituents can be selected from the group

halogen,
cyano,
R^9, $-OR^9$, $-OC(O)R^9$, $-S(O)_nR^9$ wherein n = 0, 1 or 2,
$-SO_2NHR^9$, $-SO_2NHC(O)R^9$, NR^9R^{10}, $-NHC(O)R^9$,
$-CO_2-R^9$ or $-C(O)-N-R^9R^{10}$,

wherein the 5-12-membered mono- or bicyclic aryl or heteroaryl ring can for example, but not exclusively, be a naphthyl, quinolinyl, isoquinolinyl, phthalazinyl, quinazolinyl, quinoxalinyl, cinnolinyl, benzothiophenyl, 1,3-benzodioxolyl, 2,1,3-benzothiadiazolyl, phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl, tetrazolyl, indolyl, benzofuranyl or benzimidazolyl group, or

R^6, R^7 together form a 3-8-membered ring,

R^9, R^{10} independently of each other mean hydrogen,

- an unsubstituted C_1-C_4 alkyl group, which can optionally be up to quintuply fluorinated,
- an unsubstituted C_2-C_4 alkenyl group, which can optionally be up to triply fluorinated,
- an unsubstituted C_2-C_4 alkynyl group, which can optionally be singly fluorinated,
- an unsubstituted C_3-C_6 cycloalkyl group,
- an unsubstituted 5-6-membered aryl or heteroaryl ring, which can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl

ring, which can optionally be up to doubly substituted with fluorine, chlorine or trifluoromethyl, or

R^9, R^{10} together form a 3-8-membered ring.

Likewise preferred are the compounds of the general formula I, wherein

X means a nitrogen residue,

Y and Z mean a carbon residue –C-R^8,

R^8 means a hydrogen,

R^1 means an unsubstituted 5-6-membered aryl or heteroaryl ring, which is optionally singly to triply substituted,
wherein the substituents can be selected from the group halogen, -C_1-C_4 alkyl, which is unsubstituted or can optionally be substituted,
-OR^6, -$OC(O)R^6$, -$S(O)_nR^6$, wherein n = 0, 1 or 2,
-SO_2NHR^6, -$SO_2NHC(O)R^6$, NR^6R^7, -$NHC(O)R^6$, -CN,
-CO_2-R^6, -C(O)-N-R^6R^7, -$C(O)R^6$ or -$C(OH)R^6R^7$,
wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group,

R^2 means a hydrogen residue,

R^3 - R^5 independently of each other mean a hydrogen, halogen, cyano, or

- an OR^6, $OC(O)R^6$, $S(O)_nR^6$, wherein n = 0, 1 or 2, SO_2NHR^6, $SO_2NHC(O)R^6$, NR^6R^7, $NHC(O)R^6$, $CH_2NR^6R^7$,

$CH_2NHC(O)R^6$, $C(OH)R^6R^7$, $C(O)R^6$, CO_2R^6 or $C(O)NR^6R^7$-group,

- an unsubstituted C_1-C_6 alkyl group, which can optionally be substituted,
- an unsubstituted C_3-C_{10} cycloalkyl ring, which can optionally be substituted,
- an unsubstituted C_2-C_6 alkenyl or C_2-C_6 alkynyl group, which can optionally be substituted,
- an unsubstituted 5-6-membered aryl or heteroaryl ring, which is optionally singly or multiply substituted, wherein the substituents can be selected from the group
  halogen,
  -C_1-C_4 alkyl, which is unsubstituted and can optionally also be halogenated or else substituted with –OH, -CN or -CO_2H,
  -OR^9, -$OC(O)R^9$, -$S(O)_nR^9$, wherein n = 0, 1 or 2, -SO_2NHR^9, -$SO_2NHC(O)R^9$, NR^9R^{10}, -$NHC(O)R^9$, -CN, -CO_2-R^9, -C(O)-N-R^9R^{10}, -$C(O)R^9$ or -$C(OH)R^9R^{10}$,
  wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group,

R^6, R^7 mean a hydrogen,
an unsubstituted C_1-C_6 alkyl group, which can optionally be up to quintuply halogenated,
an unsubstituted C_3-C_8 cycloalkyl residue,
an unsubstituted 5-6-membered aryl or heteroaryl ring, which can optionally be singly or multiply substituted, wherein the substituents can be selected from the group

halogen, cyano, -R^9, -OR^9, -$OC(O)R^9$, -$S(O)_nR^9$ wherein n = 0, 1 or 2, -SO_2NHR^9, NR^9R^{10}, -$NHC(O)R^9$, -CO_2-R^9 or -C(O)-N-R^9R^{10},

wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group, or

R^6, R^7 together form a 3-8-membered ring,

R^9, R^{10} independently of each other mean hydrogen, a C_1-C_4 alkyl group, which is unsubstituted or can optionally be up to quintuply fluorinated,
an unsubstituted C_2-C_4 alkenyl group, which can optionally be up to triply fluorinated,
an unsubstituted C_2-C_4 alkynyl group, which can optionally be singly fluorinated,
an unsubstituted C_3-C_6 cycloalkyl group,
an unsubstituted 5-6-membered aryl or heteroaryl ring, which can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl ring, which can optionally be up to doubly substituted with fluorine, chlorine or trifluoromethyl, or

R^9, R^{10} together form a 3-8-membered ring.

Likewise preferred are the compounds of the general formula I, wherein

Y and Z mean a nitrogen residue,

X means a carbon residue –C-R^8,

R^8 means a hydrogen,

R^1 means a 5-6-membered aryl or heteroaryl ring, which is optionally singly to triply substituted,

wherein the substituents can be selected from the group halogen, -C_1-C_4 alkyl, which is unsubstituted or can optionally be substituted,

-OR^6, -$OC(O)R^6$, -$S(O)_nR^6$, wherein n = 0, 1 or 2,

-SO_2NHR^6, -$SO_2NHC(O)R^6$, NR^6R^7, -$NHC(O)R^6$, -CN,

-CO_2-R^6, -C(O)-N-R^6R^7, -$C(O)R^6$ or -$C(OH)R^6R^7$,

wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group,

R^2 means a hydrogen residue,

R^3 - R^5 independently of each other mean a hydrogen, halogen, cyano, or

- an OR^6, $OC(O)R^6$, $S(O)_nR^6$, wherein n = 0, 1 or 2, SO_2NHR^6, $SO_2NHC(O)R^6$, NR^6R^7, $NHC(O)R^6$, $CH_2NR^6R^7$, $CH_2NHC(O)R^6$, $C(OH)R^6R^7$, $C(O)R^6$, CO_2R^6 or $C(O)NR^6R^7$ group,
- an unsubstituted C_1-C_6 alkyl group, which can optionally be substituted,
- an unsubstituted C_3-C_{10} cycloalkyl ring, which can optionally be substituted,
- an unsubstituted C_2-C_6 alkenyl or C_2-C_6 alkynyl group, which can optionally be substituted,
- an unsubstituted 5-6-membered aryl or heteroaryl ring, which is optionally singly or multiply substituted, wherein the substituents can be selected from the group

halogen,
$-C_1$-C_4 alkyl, which is unsubstituted and can optionally be halogenated or else substituted with –OH, -CN or $-CO_2H$,
$-OR^9$, $-OC(O)R^9$, $-S(O)_nR^9$ wherein n = 0, 1 or 2, $-SO_2NHR^9$, $-SO_2NHC(O)R^9$, NR^9R^{10}, $-NHC(O)R^9$, -CN, $-CO_2-R^9$, $-C(O)-N-R^9R^{10}$, $-C(O)R^9$ or $-C(OH)R^9R^{10}$,
wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl-, triazolyl or tetrazolyl group,

R^6, R^7 mean a hydrogen,
an unsubstituted C_1-C_6 alkyl group, which can optionally be up to quintuply halogenated,
an unsubstituted C_3-C_8 cycloalkyl residue,
an unsubstituted 5-6-membered aryl or heteroaryl ring, which can optionally be singly or multiply substituted, wherein the substituents can be selected from the group
halogen, cyano, $-R^9$, $-OR^9$, $-OC(O)R^9$, $-S(O)_nR^9$ wherein n = 0, 1 or 2, $-SO_2NHR^9$, NR^9R^{10}, $-NHC(O)R^9$, $-CO_2-R^9$ or $-C(O)-N-R^9R^{10}$,
wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group, or

R^6, R^7 together form a 3-8-membered ring,

R^9, R^{10} independently of each other mean hydrogen, a C_1-C_4 alkyl group, which can be unsubstituted or optionally up to quintuply fluorinated,

- an unsubstituted C_2-C_4 alkenyl group, which can optionally be up to triply fluorinated,
- an unsubstituted C_2-C_4 alkynyl group, which can optionally be singly fluorinated,
- an unsubstituted C_3-C_6 cycloalkyl group,
- an unsubstituted 5-6-membered aryl or heteroaryl ring, which can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl ring, which can optionally be up to doubly substituted with fluorine, chlorine or trifluoromethyl, or

R^9, R^{10} together form a 3-8-membered ring.

Likewise preferred are the compounds of the general formula I, wherein

X and Z mean a nitrogen residue,

Y and Z mean a carbon residue –C-R^8,

R^8 means a hydrogen,

R^1 means an unsubstituted 5-6-membered aryl or heteroaryl ring, which is optionally singly to triply substituted,
wherein the substituents can be selected from the group halogen, -C_1-C_4 alkyl, which is unsubstituted or can optionally be substituted,
-OR^6, -$OC(O)R^6$, -$S(O)_nR^6$, wherein n = 0, 1 or 2,
-SO_2NHR^6, -$SO_2NHC(O)R^6$, NR^6R^7, -$NHC(O)R^6$, -CN,
-CO_2-R^6, -C(O)-N-R^6R^7, -$C(O)R^6$ or -$C(OH)R^6R^7$,

wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group,

R^2 means a hydrogen residue,

R^3 - R^5 independently of each other mean a hydrogen, halogen, cyano, or

- an OR^6, $OC(O)R^6$, $S(O)_nR^6$, wherein n = 0, 1 or 2, SO_2NHR^6, $SO_2NHC(O)R^6$, NR^6R^7, $NHC(O)R^6$, $CH_2NR^6R^7$, $CH_2NHC(O)R^6$, $C(OH)R^6R^7$, $C(O)R^6$, CO_2R^6 or $C(O)NR^6R^7$ group,
- an unsubstituted C_1-C_6 alkyl group, which can optionally be substituted,
- an unsubstituted C_3-C_{10} cycloalkyl ring, which can optionally be substituted,
- an unsubstituted C_2-C_6 alkenyl or C_2-C_6 alkynyl group, which can optionally be substituted,
- an unsubstituted 5-6-membered aryl or heteroaryl ring, which is optionally singly or multiply substituted,
  wherein the substituents can be selected from the group
  halogen,
  -C_1-C_4 alkyl, which is unsubstituted and can optionally also be halogenated or else substituted with –OH, -CN or -CO_2H,
  -OR^9, -$OC(O)R^9$, -$S(O)_nR^9$ wherein n = 0, 1 or 2, -SO_2NHR^9, -$SO_2NHC(O)R^9$, NR^9R^{10}, -$NHC(O)R^9$, -CN, -CO_2-R^9, -C(O)-N-R^9R^{10}, -$C(O)R^9$ or -$C(OH)R^9R^{10}$,
  wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl,

thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group,

R^6, R^7 mean a hydrogen,
an unsubstituted C_1-C_6 alkyl group, which can optionally be up to quintuply halogenated,
an unsubstituted C_3-C_8 cycloalkyl residue,
an unsubstituted 5-6-membered aryl or heteroaryl ring, which can optionally be singly or multiply substituted, wherein the substituents can be selected from the group
halogen, cyano, $-R^9$ $-OR^9$, $-OC(O)R^9$, $-S(O)_nR^9$ wherein n = 0, 1 or 2, $-SO_2NHR^9$, NR^9R^{10}, $-NHC(O)R^9$, $-CO_2-R^9$ or $-C(O)-N-R^9R^{10}$,
wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group, or

R^6, R^7 together form a 3-8-membered ring,

R^9, R^{10} independently of each other mean hydrogen, a C_1-C_4 alkyl group, which can be unsubstituted or optionally up to quintuply fluorinated,

- an unsubstituted C_2-C_4 alkenyl group, which can optionally be up to triply fluorinated,
- an unsubstituted C_2-C_4 alkynyl group, which can optionally be singly fluorinated, a C_3-C_6 cycloalkyl group,
- an unsubstituted 5-6-membered aryl or heteroaryl ring, which can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl ring, which can optionally

be up to doubly substituted with fluorine, chlorine or trifluoromethyl, or

R^9, R^{10} together form a 3-8-membered ring.

Likewise preferred are the compounds of the general formula I, wherein

X and Y mean a carbon residue –C-R^8,

Z means a nitrogen residue,

R^8 means a hydrogen,

R^1 means an unsubstituted 5-6-membered aryl or heteroaryl ring, which is optionally singly to triply substituted,
wherein the substituents can be selected from the group
halogen,
-C_1-C_4 alkyl, which is unsubstituted or can optionally be substituted,
-OR^6, -$OC(O)R^6$, -$S(O)_nR^6$, wherein n = 0, 1 or 2,
-SO_2NHR^6, -$SO_2NHC(O)R^6$, NR^6R^7, -$NHC(O)R^6$, -CN,
-CO_2-R^6, -C(O)-N-R^6R^7, -$C(O)R^6$ or -$C(OH)R^6R^7$,
wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group,

R^2 means a hydrogen residue,

R^3 - R^5 independently of each other mean a hydrogen, halogen, cyano, or

- an OR^6, $OC(O)R^6$, $S(O)_nR^6$, wherein n = 0, 1 or 2, SO_2NHR^6, $SO_2NHC(O)R^6$, NR^6R^7, $NHC(O)R^6$, $CH_2NR^6R^7$,

$CH_2NHC(O)R^6$, $C(OH)R^6R^7$, $C(O)R^6$, CO_2R^6 or $C(O)NR^6R^7$ group,

- an unsubstituted C_1-C_6 alkyl group, which can optionally be substituted,
- an unsubstituted C_3-C_{10} cycloalkyl ring, which can optionally be substituted,
- an unsubstituted C_2-C_6 alkenyl or C_2-C_6 alkynyl group, which can optionally be substituted,
- an unsubstituted 5-6-membered aryl or heteroaryl ring, which is optionally singly or multiply substituted, wherein the substituents can be selected from the group

  halogen,

  -C_1-C_4 alkyl, which is unsubstituted and can optionally also be halogenated or else substituted with –OH, -CN or -CO_2H,

  -OR^9, -$OC(O)R^9$, -$S(O)_nR^9$ wherein n = 0, 1 or 2, -SO_2NHR^9, -$SO_2NHC(O)R^9$, NR^9R^{10}, -$NHC(O)R^9$, -CN, -CO_2-R^9, -C(O)-N-R^9R^{10}, -$C(O)R^9$ or -$C(OH)R^9R^{10}$,

  wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group,

R^6, R^7 mean a hydrogen,
an unsubstituted C_1-C_6 alkyl group, which can optionally be up to quintuply halogenated,
an unsubstituted C_3-C_8 cycloalkyl residue,
an unsubstituted 5-6-membered aryl or heteroaryl ring, which can optionally be singly or multiply substituted, wherein the substituents can be selected from the group

halogen, cyano, -R^9 -OR^9, -$OC(O)R^9$, -$S(O)_nR^9$ wherein n = 0, 1 or 2, -SO_2NHR^9, NR^9R^{10}, -$NHC(O)R^9$, -CO_2-R^9 or -C(O)-N-R^9R^{10},

wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group, or

R^6, R^7 together form a 3-8-membered ring,

R^9, R^{10} independently of each other mean hydrogen, a C_1-C_4 alkyl group, which can be unsubstituted or optionally up to quintuply fluorinated,

- an unsubstituted C_2-C_4 alkenyl group, which can optionally be up to triply fluorinated,
- an unsubstituted C_2-C_4 alkynyl group, which can optionally be singly fluorinated,
- an unsubstituted C_3-C_6 cycloalkyl group,
- an unsubstituted 5-6-membered aryl or heteroaryl ring, which can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl ring, which can optionally be up to doubly substituted with fluorine, chlorine or trifluoromethyl, or

R^9, R^{10} together form a 3-8-membered ring.

Likewise preferred are the compounds of the general formula I, wherein

X means a nitrogen residue,

Y and Z mean a carbon residue –C-R^8,

R^8 means a hydrogen,

R^1 means a phenyl, thiophen-2-yl, thiophen-3-yl, furan-2-yl, furan-3-yl, pyrid-3-yl or pyrid-4-yl ring, which is optionally singly to triply substituted,

wherein the substituents can be selected from the group

halogen,

-C_1-C_4 alkyl, which can be unsubstituted or optionally substituted,

-OR^6, -$OC(O)R^6$, -$S(O)_nR^6$, wherein n = 0, 1 or 2,

-SO_2NHR^6, -$SO_2NHC(O)R^6$, NR^6R^7, -$NHC(O)R^6$, -CN,

-CO_2-R^6, -C(O)-N-R^6R^7, -$C(O)R^6$ or -$C(OH)R^6R^7$,

R^2 means a hydrogen residue,

R^3 - R^5 independently of each other mean a hydrogen, halogen, cyano, or

- an OR^6, $OC(O)R^6$, $S(O)_nR^6$, wherein n = 0, 1 or 2, SO_2NHR^6, $SO_2NHC(O)R^6$, NR^6R^7, $NHC(O)R^6$, $CH_2NR^6R^7$, $CH_2NHC(O)R^6$, $C(OH)R^6R^7$, $C(O)R^6$, CO_2R^6 or $C(O)NR^6R^7$ group,
- an unsubstituted C_1-C_6 alkyl group, which can optionally be up to quintuply halogenated or else substituted with, -CN or -CO_2H,
- an unsubstituted C_3-C_{10} cycloalkyl ring,
- an unsubstituted C_2-C_6 alkenyl group, which can optionally be up to triply halogenated or else substituted with –CN or -CO_2H,
- an unsubstituted C_2-C_6 alkynyl group, which can optionally be singly halogenated or else substituted with –CN or -CO_2H and,

- an unsubstituted 5-6-membered aryl or heteroaryl ring, which is optionally singly or multiply substituted, wherein the substituents can be selected from the group
  halogen,
  $-C_1-C_4$ alkyl, which is unsubstituted and can optionally be up to quintuply halogenated or else substituted with –OH, -CN or $-CO_2H$,
  $-OR^9$, $-OC(O)R^9$, $-S(O)_nR^9$, wherein n = 0, 1 or 2,
  $-SO_2NHR^9$, $-SO_2NHC(O)R^9$, NR^9R^{10}, $-NHC(O)R^9$,
  -CN, $-CO_2-R^9$, $-C(O)-N-R^9R^{10}$, $-C(O)R^9$ or
  $-C(OH)R^9R^{10}$,

wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group,

R^6, R^7 mean a hydrogen,
an unsubstituted C_1-C_6 alkyl group, which can optionally be up to quintuply halogenated,
an unsubstituted C_3-C_8 cycloalkyl group,
an unsubstituted 5-6-membered aryl or heteroaryl ring, which can optionally be singly or multiply substituted, wherein the substituents can be selected from the group
halogen,
cyano,
R^9 $-OR^9$, $-OC(O)R^9$, $-S(O)_nR^9$, wherein n = 0, 1 or 2,
$-SO_2NHR^9$, $-NR^9R^{10}$, $-NHC(O)R^9$, $-CO_2-R^9$ or
$-C(O)-N-R^9R^{10}$,
wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group, or

R^6, R^7 together form a 3-8-membered ring,

R^9, R^{10} independently of each other mean hydrogen, a C_1-C_4 alkyl group, which is unsubstituted or can optionally be up to quintuply fluorinated,
an unsubstituted C_2-C_4 alkenyl group, which can optionally be up to triply fluorinated,
an unsubstituted C_2-C_4 alkynyl group, which can optionally be singly fluorinated,
an unsubstituted C_3-C_6 cycloalkyl group,
an unsubstituted 5-6-membered aryl or heteroaryl ring, which can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl ring, which can optionally be up to doubly substituted with fluorine, chlorine or trifluoromethyl, or

R^9, R^{10} together form a 3-8-membered ring.

Likewise preferred are the compounds of the general formula I, wherein

Y and Z mean a nitrogen residue,

X means a carbon residue –C-R^8,

R^8 means a hydrogen,

R^1 means a phenyl, thiophen-2-yl, thiophen-3-yl, furan-2-yl, furan-3-yl, pyrid-3-yl or pyrid-4-yl ring, which is optionally singly to triply substituted,

wherein the substituents can be selected from the group halogen, -C_1-C_4 alkyl, which can be unsubstituted or optionally substituted,
-OR^6, -$OC(O)R^6$, -$S(O)_nR^6$, wherein n = 0, 1 or 2,
-SO_2NHR^6, -$SO_2NHC(O)R^6$, NR^6R^7, -$NHC(O)R^6$, -CN,
-CO_2-R^6, -C(O)-N-R^6R^7, -$C(O)R^6$ or -$C(OH)R^6R^7$,

R^2 means a hydrogen residue,

R^3 - R^5 independently of each other mean a hydrogen, halogen, cyano, or

- an OR^6, $OC(O)R^6$, $S(O)_nR^6$, wherein n = 0, 1 or 2, SO_2NHR^6, $SO_2NHC(O)R^6$, NR^6R^7, $NHC(O)R^6$, $CH_2NR^6R^7$, $CH_2NHC(O)R^6$, $C(OH)R^6R^7$, $C(O)R^6$, CO_2R^6 or $C(O)NR^6R^7$ group,
- an unsubstituted C_1-C_6 alkyl group, which can optionally be up to quintuply halogenated or else substituted with -CN or -CO_2H,
- an unsubstituted C_3-C_{10} cycloalkyl ring,
- an unsubstituted C_2-C_6 alkenyl group, which can optionally be up to triply halogenated or else substituted with –CN or -CO_2H,
- an unsubstituted C_2-C_6 alkynyl group, which can optionally be singly halogenated or else substituted with –CN or -CO_2H and,
- an unsubstituted 5-6-membered aryl or heteroaryl ring, which is optionally singly or multiply substituted, wherein the substituents can be selected from the group
  halogen,
  C_1-C_4 alkyl, which is unsubstituted and can optionally be up to quintuply halogenated or else substituted with –OH, -CN or -CO_2H,

$-OR^9$, $-OC(O)R^9$, $-S(O)_nR^9$, wherein n = 0, 1 or 2,
$-SO_2NHR^9$, $-SO_2NHC(O)R^9$, NR^9R^{10}, $-NHC(O)R^9$,
-CN, $-CO_2-R^9$, $-C(O)-N-R^9R^{10}$, $-C(O)R^9$ or
$-C(OH)R^9R^{10}$,

wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group,

R^6, R^7 mean a hydrogen,
an unsubstituted C_1-C_6 alkyl group, which can optionally be up to quintuply halogenated,
an unsubstituted C_3-C_8 cycloalkyl group,
an unsubstituted 5-6-membered aryl or heteroaryl ring, which can optionally be singly or multiply substituted, wherein the substituents can be selected from the group
-halogen,
-cyano,
R^9, $-OR^9$, $-OC(O)R^9$, $-S(O)_nR^9$, wherein n = 0, 1 or 2,
$-SO_2NHR^9$, - NR^9R^{10}, $-NHC(O)R^9$, $-CO_2-R^9$ or
$-C(O)-N-R^9R^{10}$,
wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group, or

R^6, R^7 together form a 3-8-membered ring,

R^9, R^{10} independently of each other mean hydrogen, a C_1-C_4 alkyl group, which is unsubstituted or can optionally be up to quintuply fluorinated,

an unsubstituted C_2-C_4 alkenyl group, which can optionally be up to triply fluorinated,
an unsubstituted C_2-C_4 alkynyl group, which can optionally be singly fluorinated,
an unsubstituted C_3-C_6 cycloalkyl group,
an unsubstituted 5-6-membered aryl or heteroaryl ring, which can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl ring, which can optionally be up to doubly substituted with fluorine, chlorine or trifluoromethyl, or

R^9, R^{10} together form a 3-8-membered ring.

Likewise preferred are the compounds of the general formula I, wherein

X and Z mean a nitrogen residue,

Y means a carbon residue –C-R^8,

R^8 means a hydrogen,

R^1 means a phenyl, thiophen-2-yl, thiophen-3-yl, furan-2-yl, furan-3-yl, pyrid-3-yl or pyrid-4-yl ring, which is optionally singly to triply substituted,

wherein the substituents can be selected from the group halogen, -C_1-C_4 alkyl, which can be unsubstituted or optionally substituted,
-OR^6, -$OC(O)R^6$, -$S(O)_nR^6$, wherein n = 0, 1 or 2,
-SO_2NHR^6, -$SO_2NHC(O)R^6$, NR^6R^7, -$NHC(O)R^6$, -CN,
-CO_2-R^6, -C(O)-N-R^6R^7, -$C(O)R^6$ or -$C(OH)R^6R^7$,

R^2 means a hydrogen residue,

R^3 - R^5 independently of each other mean a hydrogen, halogen, cyano, or

- an OR^6, $OC(O)R^6$, $S(O)_nR^6$, wherein n = 0, 1 or 2, SO_2NHR^6, $SO_2NHC(O)R^6$, NR^6R^7, $NHC(O)R^6$, $CH_2NR^6R^7$, $CH_2NHC(O)R^6$, $C(OH)R^6R^7$, $C(O)R^6$, CO_2R^6 or $C(O)NR^6R^{7-}$ group,
- an unsubstituted C_1-C_6 alkyl group, which can optionally be up to quintuply halogenated or else substituted with -CN or $-CO_2H$,
- an unsubstituted C_3-C_{10} cycloalkyl ring,
- an unsubstituted C_2-C_6 alkenyl group, which can optionally be up to triply halogenated or else substituted with –CN or $-CO_2H$,
- an unsubstituted C_2-C_6 alkynyl group, which can optionally be singly halogenated or else substituted with –CN or $-CO_2H$, and
- an unsubstituted 5-6-membered aryl or heteroaryl ring, which is optionally singly or multiply substituted,

wherein the substituents can be selected from the group

-halogen,

-C_1-C_4 alkyl, which is unsubstituted and can optionally be up to quintuply halogenated or else substituted with –OH, -CN or $-CO_2H$,

$-OR^9$, $-OC(O)R^9$, $-S(O)_nR^9$, wherein n = 0, 1 or 2, $-SO_2NHR^9$, $-SO_2NHC(O)R^9$, NR^9R^{10}, $-NHC(O)R^9$, -CN, $-CO_2-R^9$, $-C(O)-N-R^9R^{10}$, $-C(O)R^9$ or $-C(OH)R^9R^{10}$,

wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group,

R^6, R^7 mean a hydrogen,
a C_1-C_6 alkyl group, which can be unsubstituted or optionally up to quintuply halogenated,
a C_3-C_8 cycloalkyl group,
a 5-6-membered aryl or heteroaryl ring, which can optionally be singly or multiply substituted, wherein the substituents can be selected from the group
halogen,
cyano,
an unsubstituted C_3-C_8 cycloalkyl group,
R^9, $-OR^9$, $-OC(O)R^9$, $-S(O)_nR^9$, wherein n = 0, 1 or 2,
$-SO_2NHR^9$, $-NR^9R^{10}$, $-NHC(O)R^9$, $-CO_2-R^9$ or
$-C(O)-N-R^9R^{10}$,
wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group, or

R^6, R^7 together form a 3-8-membered ring,

R^9, R^{10} independently of each other mean hydrogen, a C_1-C_4 alkyl group, which is unsubstituted or can optionally be up to quintuply fluorinated,
an unsubstituted C_2-C_4 alkenyl group, which can optionally be up to triply fluorinated,
an unsubstituted C_2-C_4 alkynyl group, which can optionally be singly fluorinated,
an unsubstituted C_3-C_6 cycloalkyl group,
an unsubstituted 5-6-membered aryl or heteroaryl ring, which can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl

ring, which can optionally be up to doubly substituted with fluorine, chlorine or trifluoromethyl, or

R^9, R^{10} together form a 3-8-membered ring.

Likewise preferred are the compounds of the general formula I, wherein

X and Y mean a carbon residue –C-R^8,

Z means a nitrogen residue,

R^8 means a hydrogen,

R^1 means a phenyl, thiophen-2-yl, thiophen-3-yl, furan-2-yl, furan-3-yl, pyrid-3-yl or pyrid-4-yl ring, which is optionally singly to triply substituted,

wherein the substituents can be selected from the group halogen, -C_1-C_4 alkyl, which can be unsubstituted or optionally substituted,
-OR^6, -$OC(O)R^6$, -$S(O)_nR^6$, wherein n = 0, 1 or 2,
-SO_2NHR^6, -$SO_2NHC(O)R^6$, NR^6R^7, -$NHC(O)R^6$, -CN,
-CO_2-R^6, -C(O)-N-R^6R^7, -$C(O)R^6$ or -$C(OH)R^6R^7$,

R^2 means a hydrogen residue,

R^3 - R^5 independently of each other mean a hydrogen, halogen, cyano, or

- an OR^6, $OC(O)R^6$, $S(O)_nR^6$, wherein n = 0, 1 or 2, SO_2NHR^6, $SO_2NHC(O)R^6$, NR^6R^7, $NHC(O)R^6$, $CH_2NR^6R^7$, $CH_2NHC(O)R^6$, $C(OH)R^6R^7$, $C(O)R^6$, CO_2R^6 or $C(O)NR^6R^{7-}$ group,

- an unsubstituted C_1-C_6 alkyl group, which can optionally be up to quintuply halogenated or else substituted with -CN or $-CO_2H$,
- an unsubstituted C_3-C_{10} cycloalkyl ring,
- an unsubstituted C_2-C_6 alkenyl group, which can optionally be up to triply halogenated or else substituted with –CN or $-CO_2H$,
- an unsubstituted C_2-C_6 alkynyl group, which can optionally be singly halogenated or else substituted with –CN or $-CO_2H$ and,
- an unsubstituted 5-6-membered aryl or heteroaryl ring, which is optionally singly or multiply substituted, wherein the substituents can be selected from the group
  - -halogen,
  - $-C_1$-C_4 alkyl, which is unsubstituted and can optionally be up to quintuply halogenated or else substituted with –OH, -CN or $-CO_2H$,
  - $-OR^9$, $-OC(O)R^9$, $-S(O)_nR^9$, wherein n = 0, 1 or 2, $-SO_2NHR^9$, $-SO_2NHC(O)R^9$, NR^9R^{10}, $-NHC(O)R^9$, -CN, $-CO_2-R^9$, $-C(O)-N-R^9R^{10}$, $-C(O)R^9$ or $-C(OH)R^9R^{10}$,

wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group,

R^6, R^7 mean a hydrogen,
a C_1-C_6 alkyl group, which is unsubstituted or can optionally be up to quintuply halogenated,
a 5-6-membered aryl or heteroaryl ring, which can optionally be singly or multiply substituted, wherein the substituents can be selected from the group
halogen,

cyano,
a C_3-C_8 cycloalkyl group,
R^9, $-OR^9$, $-OC(O)R^9$, $-S(O)_nR^9$, wherein n = 0, 1 or 2,
$-SO_2NHR^9$, $-NR^9R^{10}$, $-NHC(O)R^9$, $-CO_2-R^9$ or
$-C(O)-N-R^9R^{10}$,
wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group, or

R^6, R^7 together form a 3-8-membered ring,

R^9, R^{10} independently of each other mean hydrogen, a C_1-C_4 alkyl group, which is unsubstituted or can optionally be up to quintuply fluorinated,
an unsubstituted C_2-C_4 alkenyl group, which can optionally be up to triply fluorinated,
an unsubstituted C_2-C_4 alkynyl group, which can optionally be singly fluorinated,
an unsubstituted C_3-C_6 cycloalkyl group,
an unsubstituted 5-6-membered aryl or heteroaryl ring, which can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl ring, which can optionally be up to doubly substituted with fluorine, chlorine or trifluoromethyl, or

R^9, R^{10} together form a 3-8-membered ring.

The following compounds according to the present invention are quite especially preferred:

- 1-[1-(7-chloro-quinolin-4-yl)-piperidin-4-yl]-3-(4-methylsulfanyl-phenyl)-thiourea
- 1-[1-(7-chloro-quinolin-4-yl)-piperidin-4-yl]-3-phenyl-thiourea
- 1-(3-chloro-phenyl)-3-[1-(7-chloro-quinolin-4-yl)-piperidin-4-yl]-thiourea
- 1-(2-chloro-phenyl)-3-[1-(7-chloro-quinolin-4-yl)-piperidin-4-yl]-thiourea
- 1-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(4-methoxy-phenyl)-thiourea
- 1-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-3-p-tolyl-thiourea
- 1-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-3-o-tolyl-thiourea
- 1-(2-bromo-phenyl)-3-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-thiourea
- 1-(3-bromo-phenyl)-3-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-thiourea
- 1-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(3-methoxy-phenyl)-thiourea
- methyl 4-(3-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-thioureido)-benzoate
- 1-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(3-cyano-phenyl)-thiourea
- 1-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(4-cyano-phenyl)-thiourea
- 1-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(2-methylsulfanyl-phenyl)-thiourea
- 1-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(2,3-dichloro-phenyl)-thiourea
- 1-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(3-methylsulfanyl-phenyl)-thiourea
- methyl 3-(3-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-thioureido)-benzoate
- 1-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(2-trifluoromethoxy-phenyl)-thiourea
- 1-[1-(8-chloro-quinolin-4-yl)-piperidin-4-yl]-3-(4-methylsulfanyl-phenyl)-thiourea
- 1-[1-(8-chloro-quinolin-4-yl)-piperidin-4-yl]-3-phenyl-thiourea
- 1-(3-chloro-phenyl)-3-[1-(8-chloro-quinolin-4-yl)-piperidin-4-yl]-thiourea
- 1-(2-chloro-phenyl)-3-[1-(8-chloro-quinolin-4-yl)-piperidin-4-yl]-thiourea
- 1-(1-(8-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(4-methoxy-phenyl)-thiourea
- 1-(1-(8-chloro-quinolin-4-yl)-piperidin-4-yl)-3-p-tolyl-thiourea
- 1-(1-(8-chloro-quinolin-4-yl)-piperidin-4-yl)-3-o-tolyl-thiourea
- 1-(2-bromo-phenyl)-3-(1-(8-chloro-quinolin-4-yl)-piperidin-4-yl)-thiourea
- 1-(3-bromo-phenyl)-3-(1-(8-chloro-quinolin-4-yl)-piperidin-4-yl)-thiourea

- 1-(1-(8-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(3-methoxy-phenyl)-thiourea
- methyl 4-(3-(1-(8-chloro-quinolin-4-yl)-piperidin-4-yl)-thioureido)-benzoate
- 1-(1-(8-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(3-cyano-phenyl)-thiourea
- 1-(1-(8-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(4-cyano-phenyl)-thiourea
- 1-(1-(8-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(2-methylsulfanyl-phenyl)-thiourea
- 1-(1-(8-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(2,3-dichloro-phenyl)-thiourea
- 1-(1-(8-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(3-methylsulfanyl-phenyl)-thiourea
- methyl 3-(3-(1-(8-chloro-quinolin-4-yl)-piperidin-4-yl)-thioureido)-benzoate
- 1-(1-(8-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(2-trifluoromethoxy-phenyl)-thiourea
- 1-[1-(6-chloro-quinolin-4-yl)-piperidin-4-yl]-3-(4-methylsulfanyl-phenyl)-thiourea
- 1-[1-(6-chloro-quinolin-4-yl)-piperidin-4-yl]-3-phenyl-thiourea
- 1-(3-chloro-phenyl)-3-[1-(6-chloro-quinolin-4-yl)-piperidin-4-yl]-thiourea
- 1-(2-chloro-phenyl)-3-[1-(6-chloro-quinolin-4-yl)-piperidin-4-yl]-thiourea
- 1-(1-(6-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(4-methoxy-phenyl)-thiourea
- 1-(1-(6-chloro-quinolin-4-yl)-piperidin-4-yl)-3-p-tolyl-thiourea
- 1-(1-(6-chloro-quinolin-4-yl)-piperidin-4-yl)-3-o-tolyl-thiourea
- 1-(2-bromo-phenyl)-3-(1-(6-chloro-quinolin-4-yl)-piperidin-4-yl)-thiourea
- 1-(3-bromo-phenyl)-3-(1-(6-chloro-quinolin-4-yl)-piperidin-4-yl)-thiourea
- 1-(1-(6-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(3-methoxy-phenyl)-thiourea
- methyl 4-(3-(1-(6-chloro-quinolin-4-yl)-piperidin-4-yl)-thioureido)-benzoate
- 1-(1-(6-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(3-cyano-phenyl)-thiourea
- 1-(1-(6-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(4-cyano-phenyl)-thiourea
- 1-(1-(6-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(2-methylsulfanyl-phenyl)-thiourea
- 1-(1-(6-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(2,3-dichloro-phenyl)-thiourea
- 1-(1-(6-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(3-methylsulfanyl-phenyl)-thiourea

- methyl 3-(3-(1-(6-chloro-quinolin-4-yl)-piperidin-4-yl)-thioureido)-benzoate
- 1-(1-(6-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(2-trifluoromethoxy-phenyl)-thiourea
- 1-[1-(6-bromo-phthalazin-1-yl)-piperidin-4-yl]-3-(4-methylsulfanyl-phenyl)-thiourea
- 1-[1-(6-bromo-phthalazin-1-yl)-piperidin-4-yl]-3-phenyl-thiourea
- 1-(3-chloro-phenyl)-3-[1-(6-bromo-phthalazin-1-yl)-piperidin-4-yl]-thiourea
- 1-(2-chloro-phenyl)-3-[1-(6-bromo-phthalazin-1-yl)-piperidin-4-yl]-thiourea
- 1-(1-(6-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-(4-methoxy-phenyl)-thiourea
- 1-(1-(6-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-p-tolyl-thiourea
- 1-(1-(6-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-o-tolyl-thiourea
- 1-(2-bromo-phenyl)-3-(1-(6-bromo-phthalazin-1-yl)-piperidin-4-yl)-thiourea
- 1-(3-bromo-phenyl)-3-(1-(6-bromo-phthalazin-1-yl)-piperidin-4-yl)-thiourea
- 1-(1-(6-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-(3-methoxy-phenyl)-thiourea
- methyl 4-(3-(1-(6-bromo-phthalazin-1-yl)-piperidin-4-yl)-thioureido)-benzoate
- 1-(1-(6-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-(3-cyano-phenyl)-thiourea
- 1-(1-(6-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-(4-cyano-phenyl)-thiourea
- 1-(1-(6-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-(2-methylsulfanyl-phenyl)-thiourea
- 1-(1-(6-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-(2,3-dichloro-phenyl)-thiourea
- 1-(1-(6-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-(3-methylsulfanyl-phenyl)-thiourea
- methyl 3-(3-(1-(6-bromo-phthalazin-1-yl)-piperidin-4-yl)-thioureido)-benzoate
- 1-(1-(6-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-(2-trifluoromethoxy-phenyl)-thiourea
- 1-[1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl]-3-(4-methylsulfanyl-phenyl)-thiourea
- 1-[1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl]-3-phenyl-thiourea

- 1-(3-chloro-phenyl)-3-[1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl]-thiourea
- 1-(2-chloro-phenyl)-3-[1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl]-thiourea
- 1-(1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-(4-methoxy-phenyl)-thiourea
- 1-(1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-p-tolyl-thiourea
- 1-(1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-o-tolyl-thiourea
- 1-(2-bromo-phenyl)-3-(1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl)-thiourea
- 1-(3-bromo-phenyl)-3-(1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl)-thiourea
- 1-(1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-(3-methoxy-phenyl)-thiourea
- methyl 4-(3-(1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl)-thioureido)-benzoate
- 1-(1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-(3-cyano-phenyl)-thiourea
- 1-(1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-(4-cyano-phenyl)-thiourea
- 1-(1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-(2-methylsulfanyl-phenyl)-thiourea
- 1-(1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-(2,3-dichloro-phenyl)-thiourea
- 1-(1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-(3-methylsulfanyl-phenyl)-thiourea
- methyl 3-(3-(1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl)-thioureido)-benzoate
- 1-(1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-(2-trifluoromethoxy-phenyl)-thiourea
- 1-[1-(7-chloro-quinazolin-4-yl)-piperidin-4-yl]-3-(4-methylsulfanyl-phenyl)-thiourea
- 1-[1-(7-chloro-quinazolin-4-yl)-piperidin-4-yl]-3-phenyl-thiourea
- 1-(3-chloro-phenyl)-3-[1-(7-chloro-quinazolin-4-yl)-piperidin-4-yl]-thiourea
- 1-(2-chloro-phenyl)-3-[1-(7-chloro-quinazolin-4-yl)-piperidin-4-yl]-thiourea
- 1-(1-(7-chloro-quinazolin-4-yl)-piperidin-4-yl)-3-(4-methoxy-phenyl)-thiourea
- 1-(1-(7-chloro-quinazolin-4-yl)-piperidin-4-yl)-3-p-tolyl-thiourea
- 1-(1-(7-chloro-quinazolin-4-yl)-piperidin-4-yl)-3-o-tolyl-thiourea

- 1-(2-bromo-phenyl)-3-(1-(7-chloro-quinazolin-4-yl)-piperidin-4-yl)-thiourea
- 1-(3-bromo-phenyl)-3-(1-(7-chloro-quinazolin-4-yl)-piperidin-4-yl)-thiourea
- 1-(1-(7-chloro-quinazolin-4-yl)-piperidin-4-yl)-3-(3-methoxy-phenyl)-thiourea
- methyl 4-(3-(1-(7-chloro-quinazolin-4-yl)-piperidin-4-yl)-thioureido)-benzoate
- 1-(1-(7-chloro-quinazolin-4-yl)-piperidin-4-yl)-3-(3-cyano-phenyl)-thiourea
- 1-(1-(7-chloro-quinazolin-4-yl)-piperidin-4-yl)-3-(4-cyano-phenyl)-thiourea
- 1-(1-(7-chloro-quinazolin-4-yl)-piperidin-4-yl)-3-(2-methylsulfanyl-phenyl)-thiourea
- 1-(1-(7-chloro-quinazolin-4-yl)-piperidin-4-yl)-3-(2,3-dichloro-phenyl)-thiourea
- 1-(1-(7-chloro-quinazolin-4-yl)-piperidin-4-yl)-3-(3-methylsulfanyl-phenyl)-thiourea
- methyl 3-(3-(1-(7-chloro-quinazolin-4-yl)-piperidin-4-yl)-thioureido)-benzoate
- 1-(1-(7-chloro-quinazolin-4-yl)-piperidin-4-yl)-3-(2-trifluoromethoxy-phenyl)-thiourea
- 1-(1-isoquinolin-1-yl-piperidin-4-yl)-3-(4-methylsulfanyl-phenyl)-thiourea
- 1-(1-isoquinolin-1-yl-piperidin-4-yl)-3-phenyl-thiourea
- 1-(3-chloro-phenyl)-3-(1-isoquinolin-1-yl-piperidin-4-yl)-thiourea
- 1-(2-chloro-phenyl)-3-(1-isoquinolin-1-yl-piperidin-4-yl)-thiourea
- 1-(1-isoquinolin-1-yl-piperidin-4-yl)-3-(4-methoxy-phenyl)-thiourea
- 1-(1-isoquinolin-1-yl-piperidin-4-yl)-3-p-tolyl-thiourea
- 1-(1-isoquinolin-1-yl-piperidin-4-yl)-3-o-tolyl-thiourea
- 1-(2-bromo-phenyl)-3-(1-isoquinolin-1-yl-piperidin-4-yl)-thiourea
- 1-(3-bromo-phenyl)-3-(1-isoquinolin-1-yl-piperidin-4-yl)-thiourea
- 1-(1-isoquinolin-1-yl-piperidin-4-yl)-3-(3-methoxy-phenyl)-thiourea
- methyl 4-(3-(1-isoquinolin-1-yl-piperidin-4-yl)-thioureido)-benzoate
- 1-(1-isoquinolin-1-yl-piperidin-4-yl)-3-(3-cyano-phenyl)-thiourea
- 1-(1-isoquinolin-1-yl-piperidin-4-yl)-3-(4-cyano-phenyl)-thiourea
- 1-(1-isoquinolin-1-yl-piperidin-4-yl)-3-(2-methylsulfanyl-phenyl)-thiourea
- 1-(1-isoquinolin-1-yl-piperidin-4-yl)-3-(2,3-dichloro-phenyl)-thiourea

- 1-(1-isoquinolin-1-yl-piperidin-4-yl)-3-(3-methylsulfanyl-phenyl)-thiourea
- methyl 3-(3-(1-isoquinolin-1-yl-piperidin-4-yl)-thioureido)-benzoate
- 1-(1-isoquinolin-1-yl-piperidin-4-yl)-3-(2-trifluoromethoxy-phenyl)-thiourea

An object of the present invention is the use of the compounds according to the invention for the production of drugs which contain at least one of the compounds according to formula I.

Also an object of the present invention are drugs which contain the compounds according to the invention with suitable formulation and carrier substances.

In comparison to known prostaglandin E_2 ligands, the new EP_2 agonists and antagonists are characterized by greater selectivity and stability.

An object of the present invention are drugs for the treatment and prophylaxis of diseases which include fertility disorders, infectious diseases, cancer, viral infections, cardiovascular diseases, elevated intraocular pressure, glaucoma, diseases of the skeletal system, angiogenic diseases, uterine contraction disorders, pain, neuroinflammatory diseases, immunomodulatory infections and nephrological diseases.

Fertility disorders should be understood to mean diseases which have the effect that no ovulation takes place, that nidation of a fertilized ovum does not occur and no decidualization takes place, infectious diseases to mean diseases caused by unicellular parasites, cancer to mean solid tumors and leukemia, viral infections to mean for example cytomegalus infections, hepatitis, hepatitis B and C and HIV diseases, immunomodulatory infections to mean for example avian influenza, cardiovascular diseases to mean ischemic reperfusion disease, stenosis, arteriosclerosis and restenosis, angiogenic diseases to mean for example endometriosis and fibrosis, elevated intraocular pressure to mean glaucoma, uterine contraction disorders to mean for example menstrual problems, diseases of the skeletal system to mean osteoporosis,

neuroinflammatory diseases to mean multiple sclerosis, Alzheimers disease and pain, and nephrological diseases to mean glomerulonephritis.

Also an object of the present invention are drugs for the treatment and prophylaxis of the diseases listed above which contain at least one compound according to the general formula I, and drugs with suitable formulation and carrier substances.

For the use of the compounds according to the invention as drugs, these are made into the form of a pharmaceutical preparation, which in addition to the active substance contains pharmaceutical, organic or inorganic inert carrier materials suitable for enteral or parenteral administration, such as for example water, gelatin, gum arabic, lactose, starch, magnesium stearate, talc, plant oils, polyalkylene glycols and the like. The pharmaceutical preparations can be in solid form, for example as tablets, dragees, suppositories or capsules, in semisolid form, for example as ointments, creams, gels, suppositories or emulsions or in liquid form, for example as solutions, suspensions or emulsions.

If necessary, they contain additives which are for example intended to function as fillers, binders, disintegrants, lubricants, solvents, solubilizers, flavor correctors, colorant and emulsifiers. Examples of types of additive in the sense of the invention are saccharides (mono-, di-, tri-, oligo-, and/or polysaccharides), fats, waxes, oils, hydrocarbons and anionic, nonionic, cationic, natural, synthetic or semisynthetic surfactants. If necessary, they further contain additives such as preservatives, stabilizers, wetting agents or emulsifiers, and salts to modify the osmotic pressure or buffers.

These pharmaceutical preparations are also an object of the present invention.

For inhalation, it is expedient to prepare aerosol solutions.

For oral use, tablets, dragees or capsules with talc and/or hydrocarbon carriers or binders, such as for example lactose or maize or potato starch, are

particularly suitable. They can also be used in liquid form, for example as a syrup, to which a sweetener is added if necessary. For the oral use of such compounds, clathrates are also suitable, and for example the clathrates with alpha, beta or gamma-cyclodextrin or also beta-hydroxypropylcyclodextrin may be mentioned.

For parenteral administration, sterile, injectable, aqueous or oily solutions are used. Particularly suitable are injection solutions or suspensions, in particular aqueous solutions of the active compounds in polyethoxylated castor oil.

For vaginal administration, for example suppositories, tampons or intrauterine devices are suitable and customary.

For intra-articular injection, suitably prepared crystal suspensions can be used.

For intramuscular injection, aqueous and oily injection solutions or suspensions and appropriate depot preparations can be used.

For rectal administration, the new compounds can be used in the form of suppositories, capsules, solutions (e.g. in the form of enemas) and ointments both for systemic and also for local therapy.

For pulmonary administration of the new compounds, these can be used in the form of aerosols and inhalation formulations.

For local use on eyes, external auditory canal, middle ear, nostrils and sinuses, the new compounds can be used as drops, ointments and tinctures in appropriate pharmaceutical preparations.

For topical application, formulations in gels, ointments, greasy ointments, creams, pastes, powders, milk and tinctures are possible. The dosage of the compounds of the general formula I in these preparations should be 0.01% - 20% in order to achieve an adequate pharmacological effect.

As carrier systems, surfactant additives, such as salts of the bile acids or animal or plant phospholipids, but also mixtures thereof and liposomes or components thereof can also be used.

The dosage of the active substances can vary depending on the administration route, age and weight of the patient, nature and severity of the disease to be treated and similar factors. The treatment can be effected by single doses or by a large number of doses over a longer period. The daily dosage is 0.5-1000 mg, preferably 50-200 mg, and the dosage can be given as a single dose to be administered once or subdivided into 2 or more daily doses.

The formulations and presentations described above are also an object of the present invention.

As carrier systems, surfactant additives, such as salts of the bile acids or animal or plant phospholipids, but also mixtures thereof and liposomes or components thereof can also be used.

The administration of the compounds according to the invention can be effected by any conventional method, including oral and parenteral, for example by subcutaneous or intramuscular injections. The enteral, parenteral, vaginal and oral administrations are also an object of the present invention.

The compounds according to the invention of the general formula I bind to the EP_2 receptor and have an agonistic or antagonistic action. It is possible to determine whether there is an agonistic or antagonistic action by means of an agonism test (see Example 1.2.1. of the biological examples) or by means of an antagonism test (see Example 1.2.2. of the biological examples).

Antagonists should be understood to mean molecules which bind to their corresponding receptors and usually compete with the naturally occurring ligand

of the receptor for binding to the receptor and which inhibit the initiation of the signal transduction route coupled to the receptor.

Receptor antagonists typically bind selectively to their particular receptor and not to other receptors. They normally display a higher binding affinity than the natural ligand. Although antagonists which have a higher affinity to the receptor than the natural ligand are preferred, antagonists with a lower affinity can also be used.

The antagonists preferably bind reversibly to their corresponding receptors.

The EP_2 receptor antagonist has a preferential affinity for the EP_2 receptor compared to every other EP receptor. The antagonism is measured in the presence of the natural agonist (PGE_2).

Agonists should be understood to mean molecules which bind to their corresponding receptors and usually compete with the naturally occurring ligand of the receptor for binding to the receptor and which stimulate the initiation of the signal transduction route coupled to the receptor. Agonists can also assist the binding of the natural ligand.

Receptor agonists typically bind selectively to their particular receptor and not to other receptors. They normally have a higher binding affinity than the natural ligand. Although agonists which have a higher affinity to the receptor than the natural ligand are preferred, agonists with a lower affinity can also be used.

The agonists preferably bind reversibly to their corresponding receptors.

Agonists are tested via the initiation of the signal transduction mediated by the corresponding receptor and/or their physiological action.

The compounds or low molecular weight substances which bind to a receptor are described as ligands. Their binding is usually reversible. Through the

binding of a ligand to the corresponding receptor, the signal transduction route coupled to the receptor is activated or inactivated. In this manner, the ligand mediates its intracellular action. Ligands should be understood to mean agonists and antagonists of a receptor.

The substance according to Example 8 displays no inhibition in the cellular agonism test, but displays good activity (IC_{50} = 3.8 x 10 E-6) in the antagonism test.

Also an object of the present invention is the use of the substances according to the invention as EP_2 receptor antagonists for the treatment of diseases which are caused by disorders in the signal transduction chain in which the EP_2 receptor is involved, such as for example pain and fertility disorders, as well as the use of such substances for fertility control.

The compounds according to the invention of the general formula I have a fertility promoting action. In the pre-ovulatory antral follicle, the ovum is surrounded by cumulus cells, which form a dense cell border around the ovum. After the luteinizing hormone peak (LH peak) a series of processes is activated, which results in pronounced morphological modification of this border of cumulus cells. During this, the cumulus cells form an extracellular matrix which leads to the so-called cumulus expansion (Vanderhyden *et al.* Dev Biol. 1990 Aug; 140 (2): 307-317). This cumulus expansion is an important component of the ovulatory process and the subsequent possibility of fertilization.

During cumulus expansion, prostaglandins, and here prostaglandin E_2, whose synthesis is induced by the LH peak, are of decisive importance. Prostanoid EP_2 knockout mice (Hizaki *et al.*. Proc Natl Acad Sci USA. 1999 Aug 31; 96 (18): 10501-6.) display markedly decreased cumulus expansion and pronounced subfertility, which demonstrates the importance of the prostanoid EP_2 receptor for this process.

The substances according to the invention have inhibitory effects in the cumulus expansion tests.

An object of the present invention is the use of the substances according to the invention for fertility control.

While the EP_2 receptor antagonist AH 6809 only suppresses the expansion of the cumulus by ca. 30% and only at a concentration of 100-200 µM, in the presence of the substance according to Example 8 a 20% suppression of cumulus expansion can be achieved at a 10 times lower concentration. In these experiments, the test substances compete with the natural EP_2 receptor agonist PGE_2.

An object of the present invention is the use of the substances according to the invention for the inhibition of cumulus expansion, and thereby ovulation and fertilization, for contraception.

Prostaglandins play an important part in angiogenesis (Sales, Jabbour, 2003, Reproduction 126, 559 – 567).

Endometriosis is a chronic disease which is caused by disorders of the blood vessels. About 10% of women suffer regularly from heavy bleeding during menstruation, caused by changes in the blood vessels of the endometrium. In addition, structural differences have been observed in the blood vessels, such as for example incomplete development of the smooth muscle layer (Abberton *et al.*, 1999, Hum. Reprod. 14, 1072-1079). Since the blood loss during menstruation is partly regulated by constriction of the blood vessels, it is obvious that the defects in the smooth musculature contribute significantly to the bleeding.

An object of the present invention is the use of the substances of the general formula I for the treatment of endometriosis.

Prostaglandins play an important part in uterine contraction; excessively strong contractions are responsible for menstrual problems (Sales, Jabbour, 2003, Reproduction 126, 559 – 567).

An object of the present invention is the use of the substances of the general formula I for the treatment of menstrual problems.

Prostaglandins play an important part in the onset and course of various cancer diseases (S.W. Han, Biochemical and Biophysical Research Communications 314 (2004) 1093–1099; S.-H. Chang; Cancer Research 65 (2005); 4496-9; M. D. Castellone, Science 310 (2005) 1504 – 1510).

An object of the present invention is the use of the substances of the general formula I for the treatment and prevention of cancer diseases.

Prostaglandins also play an important part in the processes which counteract bone loss. Hence an object of the present invention is the use of the substances according to the invention for the treatment of bone loss.

Reinold *et al.* (J. Clin. Invest. 115, 673-679 (2005)) describe PGE_2 receptors of the EP_2 subtype as the key signal components in inflammatory hyperalgesia. Mice which no longer carry this receptor ($EP_2^{-/-}$) do not feel spinal inflammatory pain. There are indications that inflammatory increased pain sensitivity can be treated by targeted modulation of EP_2 receptors.

An object of the present invention is the use of the substances according to the invention for the treatment of inflammatory hyperalgesia.

Insofar as the production of the starting compounds is not described, these are known or preparable analogously to known compounds or processes described here. It is also possible to carry out all reactions described here in parallel reactors or by means of combinatorial working techniques.

The salts are prepared in the usual manner, by treating a solution of the solution of the formula I with the equivalent quantity or an excess of a base or acid, which if necessary is in solution, and separating the precipitate or working up the solution in the usual manner.

The invention thus also relates to drugs based on the compounds of the general formula I and the usual additives or carriers.

The compounds according to the invention of the general formula I can be prepared as described in the examples. By an analogous procedure using reagents homologous to the reagents described in the examples, the further compounds of the general formula I can be obtained.

Starting from the compounds of the general formula IVa-d, the compounds according to the invention of the general formula I can be prepared by reaction with N-piperidin-4-yl-(het)arylthioureas of the general formula V by processes known to the person skilled in the art. Likewise, the compounds according to the invention of the general formula I can be prepared by conversion of compounds of the general formula IVa-d to compounds of the general formula IIIa-d and then formula IIa-d by processes known to the person skilled in the art. By an analogous procedure using reagents homologous to the reagents described in the examples, the further compounds of the general formula I can be obtained.

The residues R^2-R^5 of the compounds of the general formula I obtained in this way can be further converted to many functional groups and thus to further compounds of the general formula I by methods known to the person skilled in the art.

For example, by means of palladium(0)-catalyzed reactions by methods known to the person skilled in the art, a bromide can be replaced by an aryl or heteroaryl ring, a substituted alkene or alkyne, amine or a cyano group.

A carboxy function, cyano group or an amine functioning as R^2-R^5 can for example be converted by methods known to the person skilled in the art into esters and amides of the general formula I.

Likewise for example, after reduction to the aldehyde, ester functions or a cyano group in compounds of the general formula I can be converted by methods known to the person skilled in the art into further olefins or secondary alcohols substituted with alkyl or aryl residues. Likewise, a cyano group in compounds of the general formula I can be converted by methods known to the person skilled in the art into ketones substituted with alkyl or aryl residues, which can then be reduced to the corresponding secondary alcohols or else be converted by methods known to the person skilled in the art into tertiary alcohols substituted with alkyl or aryl residues.

The conversions of the residues R^2-R^5 in the compounds according to the invention of the general formula I just described by way of example can also be performed in the same manner by a person skilled in the art on compounds of the general formula IIa-d and IIIa-d. The compounds of the general formula IIa-d and IIIa-d thus obtained can then be converted as described into those of the formula I.

The compounds of the general formula IVa-d used for the preparation of the compounds according to the invention of the general formula I can be prepared by processes known to the person skilled in the art depending on the residues X, Y, Z and W.

In the case where X = carbon, Y = CH, Z = nitrogen and W = hydrogen this occurs by processes known to the person skilled in the art, for example starting from the phthalides of the general formula X via the 2-carboxymethylbenzoic acids of the general formula IX and alkoxymethyliden-isochroman-1,3-diones of the general formula VIII to the isoquinolinones of the general formulae VII and further to compounds thereof of the general formula IVd.

In the case where Y = CH, and X and Z each = nitrogen, this occurs by processes known to the person skilled in the art, for example starting from 2-aminobenzoic acids of the general formula XII via the quinazolinones of the general formulae XI and further to compounds thereof of the general formula IVc.

In the case where X = carbon, Y and Z each = nitrogen and W = hydrogen, this occurs by processes known to the person skilled in the art, for example starting from the phthalides of the general formula X or phthalic anhydrides of the general formula XVII via the phthalazine of the general formulae XIII to those of the general formula IVb. In the case where W = C_1-C_3 alkyl, this occurs starting from the phthalic anhydrides of the general formula XVII via the 3-hydroxy-3-alkyl-3H-isobenzofuran-1-ones of the general formula XV or the 3-alkyliden-3H-isobenzofuran-1-ones of the general formula XVI to the phthalazines of the general formulae XIII and further to those of the general formula IVb.

In the case where Y and Z each = CH and X = nitrogen, this occurs by processes known to the person skilled in the art, for example starting from anilines of the general formula XXII via the compounds of the general formula XXI and the 3-carboxyquinolines of the general formula XX to those of the general formula XIX. These are converted by processes known to the person skilled in the art to quinolines of the general formulae XVIII and further to compounds thereof of the general formula IVa.

The N-piperidin-4-yl-(het)arylthioureas of the general formula V used for the preparation of the compounds according to the invention of the general formula I can be prepared by methods known to the person skilled in the art starting from tert.-butyl 4-amino-piperidin-1-carboxylate via the thioureas of the general formula VI.

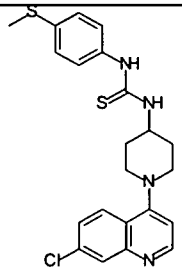
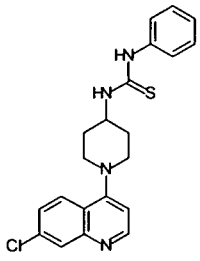
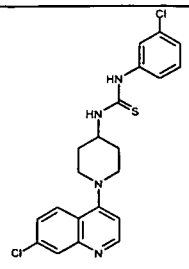
Commonly used abbreviations:

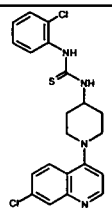
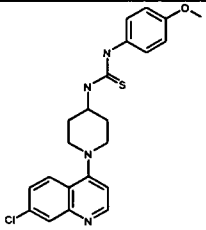
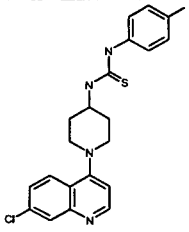
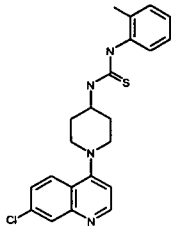
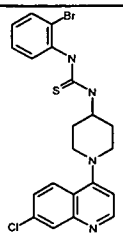
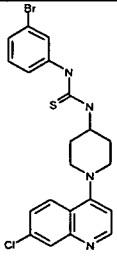
DMF N,N-dimethylformamide

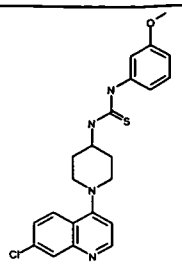
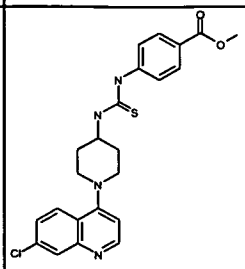
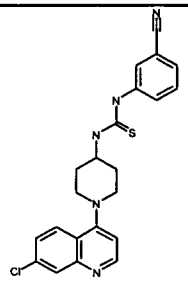
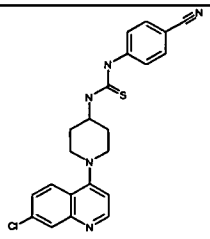
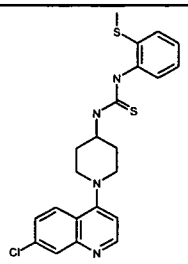
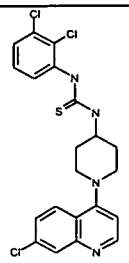
equiv.	equivalents
DMAP	4-dimethylaminopyridine

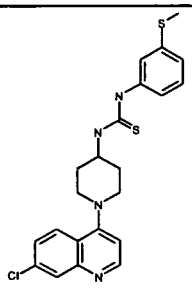
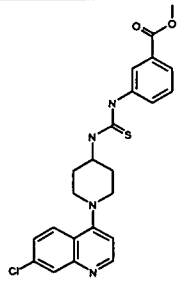
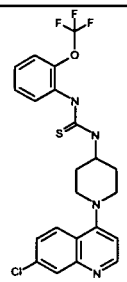
General synthetic procedure

The appropriate amine IIa-d (1 equiv.) is taken and treated with DMF (2 ml/mmol). To this are successively added the appropriate isothiocyanate (1.1 equiv.) in DMF (2 ml/mmol) and DMAP (1.1 equiv.) in DMF (1 mL/mmol) and the mixture is stirred for 12 hrs at 100°C bath temperature. For the workup, this is cooled, treated with methanol (5 mL/mmol) and concentrated in vacuo. The residue is purified by preparative HPLC-MS and the products are characterized by analytical HPLC-MS [method 1: column HiBar RT 125-4 (125x4.5 mm, RP18e, 5 µm), gradient 5-95% acetonitrile (0.1% trifluoroacetic acid) in water (0.1% trifluoroacetic acid) (10 min.), flow rate 1.0 mL/min, MS ES+; method 2: column Aquity UPLC BEH (2,1x50mm C18 1.7 um), gradient: start 98% A (water + 0.05% formic acid) + 2% B (acetonitrile + 0.05% formic acid), in 1.7 min to 10% A + 90% B, 0.2 min isocratic, flow rate: 1.3 ml/min, MS ES+].

Example	Structure	Name	MW calc.	MW ES+	RT [min., (method)]
1		1-[1-(7-chloro-quinolin-4-yl)-piperidin-4-yl]-3-(4-methylsulfanyl-phenyl)-thiourea	443.036	443	0.94 (2)
2		1-[1-(7-chloro-quinolin-4-yl)-piperidin-4-yl]-3-phenyl-thiourea	396.943	397	0,86 (2)
3		1-(3-chloro-phenyl)-3-[1-(7-chloro-quinolin-4-yl)-piperidin-4-yl]-thiourea	431.388	431	7.62 (1)

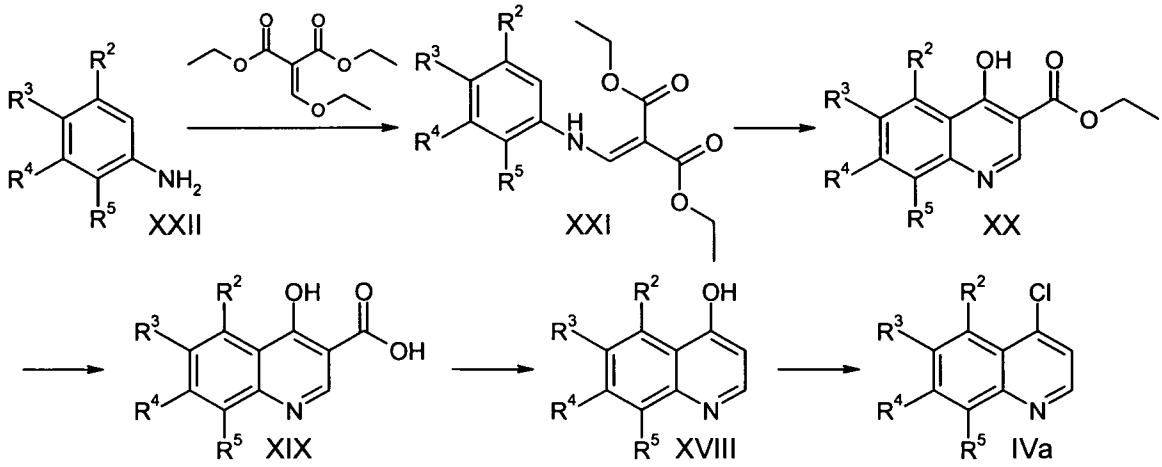
Example	Structure	Name	MW calc.	MW ES+	RT [min., (method)]
4		1-(2-chloro-phenyl)-3-[1-(7-chloro-quinolin-4-yl)-piperidin-4-yl]-thiourea	431.388	431	7.24 (1)
5		1-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(4-methoxy-phenyl)-thiourea	426.97	427	6.90 (1)
6		1-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-3-p-tolyl-thiourea	410.97	411	7.24 (1)
7		1-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-3-o-tolyl-thiourea	410.97	411	6.99 (1)
8		1-(2-bromo-phenyl)-3-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-thiourea	475.839	477	7.19 (1)
9		1-(3-bromo-phenyl)-3-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-thiourea	475.839	477	7.70 (1)

Example	Structure	Name	MW calc.	MW ES+	RT [min., (method)]
10		1-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(3-methoxy-phenyl)-thiourea	426.97	427	7.12 (1)
11		methyl 4-(3-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-thioureido)-benzoate	454.98	455	7.22 (1)
12		1-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(3-cyano-phenyl)-thiourea	421.953	422	7.09 (1)
13		1-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(4-cyano-phenyl)-thiourea	421.953	422	7.16 (1)
14		1-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(2-methylsulfanyl-phenyl)-thiourea	443.036	443	7.18 (1)
15		1-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(2,3-dichloro-phenyl)-thiourea	465.833	467	7.76 (1)

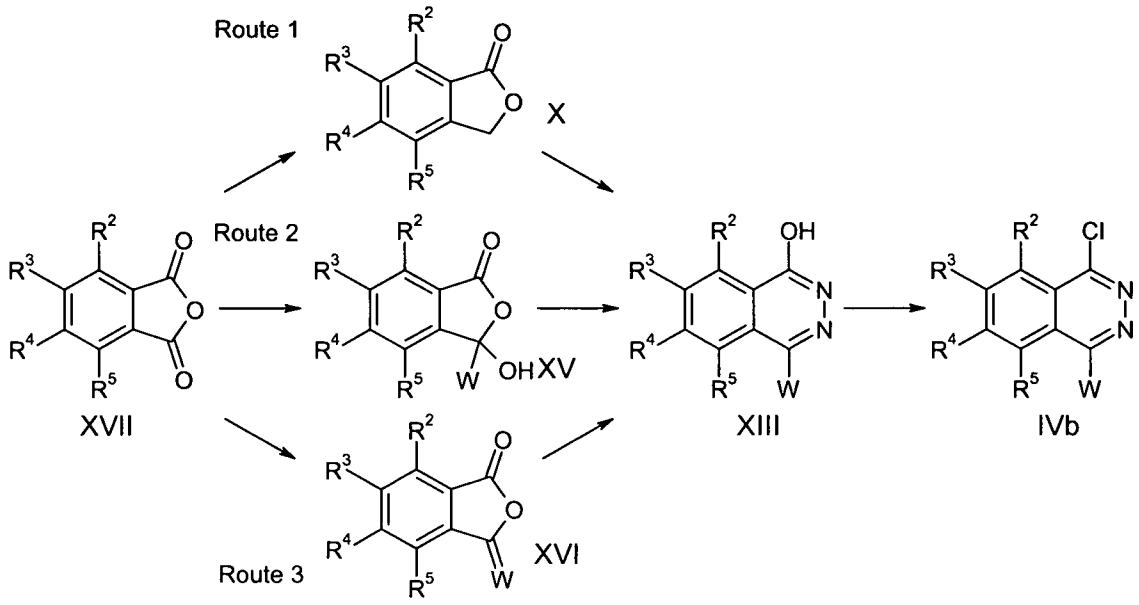
Example	Structure	Name	MW calc.	MW ES+	RT [min., (method)]
16		1-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(3-methylsulfanyl-phenyl)-thiourea	443.036	443	7.47 (1)
17		methyl 3-(3-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-thioureido)-benzoate	454.98	455	7.14 (1)
18		1-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(2-trifluoro-methoxy-phenyl)-thiourea	480.941	481	7.70 (1)

Synthesis schemes

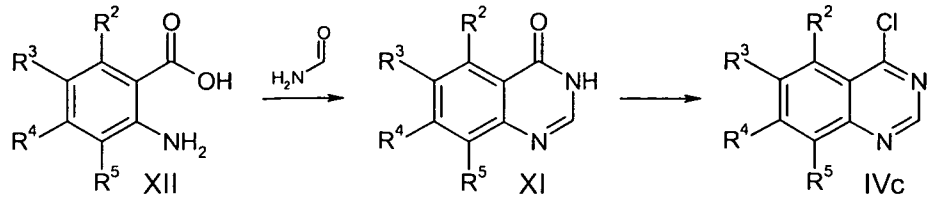
Scheme 1



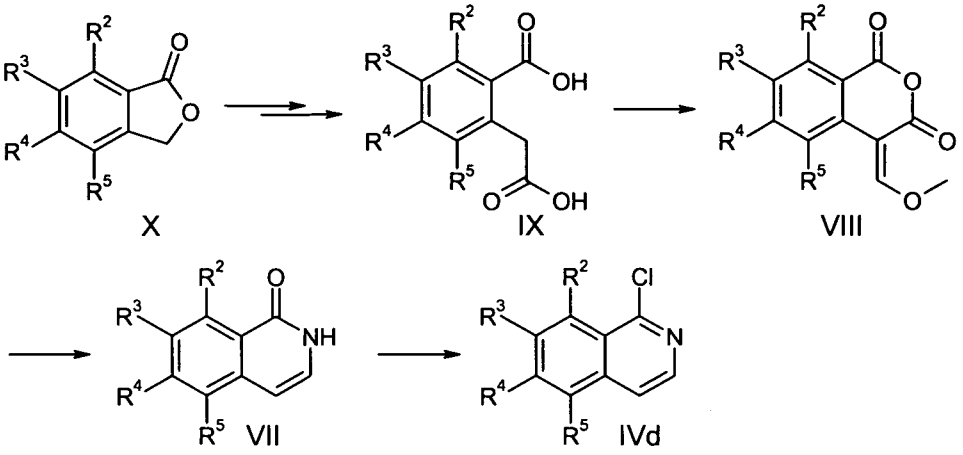
Scheme 2



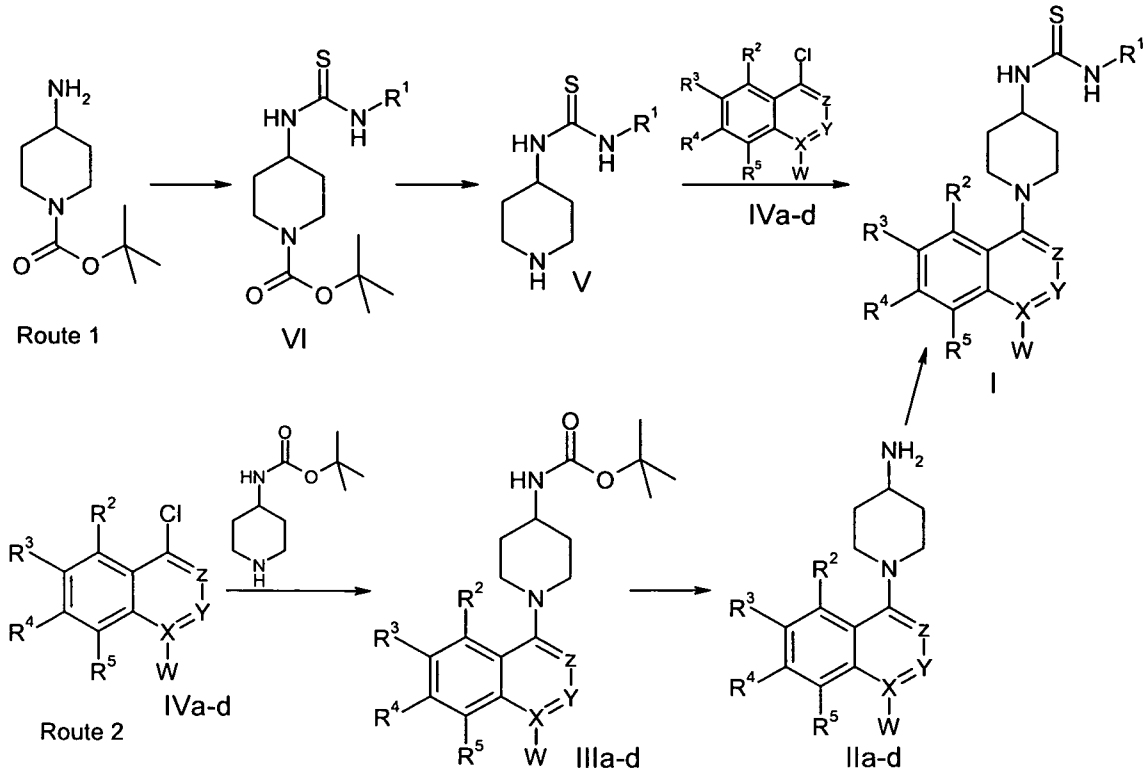
Scheme 3



Scheme 4



Scheme 5



Biological Examples:

1. Detection of antagonism of the human prostaglandin E_2 (subtype EP_2) receptor signal

1. 1 Detection principle

The binding of PGE_2 to the EP_2 subtype of the human PGE_2 receptor induces the activation of membrane adenylate cyclases and leads to the formation of cAMP. In the presence of the phosphodiesterase inhibitor IBMX, the cAMP accumulated through this stimulation and released by cell lysis is used in a competitive detection process. In this test, the cAMP in the lysate competes with cAMP-XL665 for the binding of an Eu cryptate-labeled anti-cAMP antibody. Here in the absence of cellular cAMP a maximal signal is produced, which is due to the coupling of this antibody to the cAMP-XL665 molecule. As a result, after excitation at 337 nm, a long-lasting emission signal at 665 nm (and at 620 nm) based on FRET (fluorescence resonance energy transfer) is produced. Both signals are measured in a suitable measuring instrument with time delay, i.e. after the background fluorescence has died away. Any increase in the low FRET signal (measured as wavelength ratio change = $emission_{665nm}/emission_{620nm}$ * 10000) caused by administration of prostaglandin E_2 demonstrates the action of antagonists.

1.2. Detection procedure

1.2.1. Test for antagonism (data per well of a 384-well plate):

The substance solutions (0.75 µl) which contain 30% DMSO are placed in a test plate and are dissolved in 16 µl of a KRSB+IBMX stimulation solution (1 X cancer Ringer bicarbonate buffer; Sigma-Aldrich # K-4002; including 750 µM 3-isobutyl-1-methylxanthine Sigma-Aldrich # I-7018), then 15 µl of this are transferred into a media-free cell culture plate which has been washed with KRSB shortly beforehand.

After a 30-minute preincubation at room temperature (RT), 5 µl of a 4xPGE_2 solution (11 nM) are added and incubated in the presence of the agonist for a

further 60 mins at RT (volume: ~20 µl), before the reaction is then stopped by addition of 5 µl of lysis buffer and the mixture is incubated for a further 20 mins at RT (volume: ~25 µl). The cell lysate is then transferred onto an assay plate and assayed in accordance with the manufacturer's instructions (cyclic AMP kit Cisbio International # 62AMPPEC).

1.2.2. Test for agonism (data per well of a 384-well plate):

The substance solutions (0.75 µl) placed in a test plate and 30% DMSO are dissolved in 16 µl of a KRSB+IBMX stimulation solution (1 X cancer Ringer bicarbonate buffer; Sigma-Aldrich # K-4002; including 750 µM 3-isobutyl-1-methylxanthine Sigma-Aldrich # I-7018), then 15 µl of this are transferred into a media-free cell culture plate which has been washed with KRSB shortly beforehand.

After a 60-minute preincubation at room temperature (RT; volume: ~15 µl), the reaction is then stopped by addition of 5 µl of lysis buffer and the mixture is incubated for a further 20 mins at RT (volume: ~20 µl). The cell lysate is then transferred onto an assay plate and assayed in accordance with the manufacturer's instructions (cyclic AMP kit Cisbio International # 62AMPPEC).

2. The EP_2 subtype of the PGE_2 receptor and pre-ovulatory cumulus expansion

2.1. Background:

In the pre-ovulatory antral follicle, the ovum is surrounded by cumulus cells, which form a dense cell border around the ovum. After the LH peak (luteinizing hormone), a series of processes is activated, which results in pronounced morphological modification of this cell border of cumulus cells. During this, the cumulus cells form an extracellular matrix which leads to the so-called cumulus expansion (Vanderhyden *et al.* Dev Biol. 1990 Aug; 140 (2): 307-317). This cumulus expansion is an important component of the ovulatory process and the subsequent possibility of fertilization.

During cumulus expansion, prostaglandins, and here prostaglandin E_2, whose synthesis is induced by the LH peak, are of decisive importance. Prostanoid EP_2

knockout mice (Hizaki *et al.*. Proc Natl Acad Sci USA. 1999 Aug 31; 96 (18): 10501-6.) display markedly decreased cumulus expansion and pronounced subfertility, which demonstrates the importance of the prostanoid EP_2 receptor for this process.

2.2. Cumulus expansion test *in vitro*

In immature female mice (strain: CD1 (ICR) von Charles River), folliculogenesis is induced at an age of 14 - 18 days by a single administration (intraperitoneal) of 10 I.U. of PMSG (Pregnant Mare Serum Gonadotropin; Sigma G-4877, Lot 68H0909). 47-50 hours after the injection, the ovaries are removed and the cumulus-ovum complexes removed. At this stage, the cumulus complex is not yet expanded.

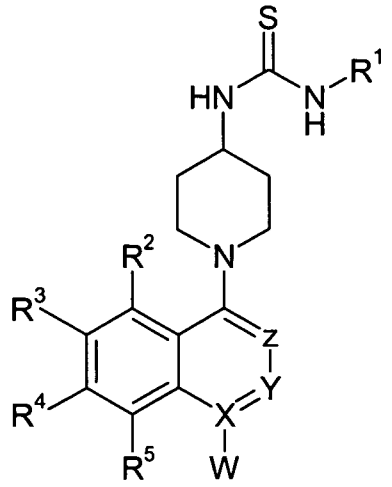
The cumulus-ovum complexes are now incubated for 20-24 hours with prostaglandin E_2 (PGE_2) (1 µM), vehicle control (ethanol) or test substances. Medium: alpha-MEM medium with 0.1 mM IBMX, pyruvate (0.23 mM) glutamine (2 mM), pen/strep 100 IU/ml pen. and 100 µg/ml strep.) and HSA (8 mg/ml)). The cumulus expansion is then assessed by classification into four stages (after Vanderhyden *et al.* Dev Biol. 1990 Aug;140(2):307-317).

Table 1: Example of the biological activity of the compounds according to the invention (measured by cAMP antagonism test):

Substance according to example	Antagonism [IC_{50}, µM]
8	3.8
1	2.7
14	3.4

Claims

1. Compounds of the general formula I



(I)

wherein

X, Y, Z independently of each other mean a nitrogen residue or a carbon residue –C-R^8, wherein R^8 can be hydrogen or a C_1-C_4 alkyl residue,

under the condition that at least one, but at most 2 of the groups X, Y and Z is a nitrogen residue,

R^1 means a 5-12-membered, mono- or bicyclic aryl or heteroaryl ring, which can be unsubstituted or optionally singly to triply substituted,

R^2 - R^5 independently of each other mean a hydrogen, halogen, cyano,

- or a OR^6, $OC(O)R^6$, $S(O)_nR^6$, wherein n = 0, 1 or 2, SO_2NHR^6, $SO_2NHC(O)R^6$, NR^6R^7, $NHC(O)R^6$, $CH_2NR^6R^7$, $CH_2NHC(O)R^6$, $C(OH)R^6R^7$, $C(O)R^6$, CO_2R^6 or $C(O)NR^6R^7$ group,
- a C_1-C_6 alkyl group, which can be unsubstituted or optionally substituted

- a C_3-C_{10} cycloalkyl ring, which can be unsubstituted or optionally substituted,
- a C_2-C_6 alkenyl or C_2-C_6 alkynyl group, which can be unsubstituted or optionally substituted,
- a 5-12-membered, mono- or bicyclic aryl or heteroaryl ring, which can be unsubstituted or optionally substituted,

R^6, R^7 mean a hydrogen, a C_1-C_6 alkyl, a C_3-C_{10} cycloalkyl ring, a 5-12-membered mono- or bicyclic aryl or heteroaryl ring, wherein the alkyl, cycloalkyl and (het)aryl groups can be unsubstituted or optionally substituted or

R^6, R^7 together form a 3-8-membered ring,

and isomers and salts thereof and cyclodextrin clathrates thereof, which can overcome known disadvantages and achieve better selectivity for the EP_2 receptor and thus better efficacy and longer duration of action.

2. The compounds as claimed in claim 1, wherein

X means a nitrogen residue,

Y, Z mean a carbon residue –C-R^8,

R^8 means a hydrogen or a C_1-C_4 alkyl residue,

R^1 means a 5-12-membered, mono- or bicyclic, aryl or heteroaryl ring, which can be unsubstituted and optionally singly to triply substituted,

R^2 - R^5 independently of each other mean a hydrogen, halogen, cyano,

- or a OR^6, $OC(O)R^6$, $S(O)_nR^6$, wherein n = 0, 1 or 2, SO_2NHR^6, $SO_2NHC(O)R^6$, NR^6R^7, $NHC(O)R^6$, $CH_2NR^6R^7$, $CH_2NHC(O)R^6$, $C(OH)R^6R^7$, $C(O)R^6$, CO_2R^6 or $C(O)NR^6R^7$ group,
- a C_1-C_6 alkyl group, which is unsubstituted or can optionally be substituted,
- a C_3-C_{10} cycloalkyl ring, which is unsubstituted or can optionally be substituted,
- a C_2-C_6 alkenyl- or C_2-C_6 alkynyl group, which is unsubstituted or can optionally be substituted,
- a 5-12-membered mono- or bicyclic aryl or heteroaryl ring, which is unsubstituted or can optionally be substituted,

R^6, R^7 mean a hydrogen, a C_1-C_6 alkyl, a C_3-C_{10} cycloalkyl ring, a 5-12-membered mono- or bicyclic aryl or heteroaryl ring, wherein the alkyl, cycloalkyl and (het)aryl groups are unsubstituted or can optionally be substituted or

R^6, R^7 together form a 3-8-membered ring.

3. The compounds as claimed in claim 1, wherein

Y and Z mean a nitrogen residue,

X means a carbon residue –C-R^8,

R^8 means a hydrogen or a C_1-C_4 alkyl residue,

R^1 means a 5-12-membered mono or bicyclic aryl or heteroaryl ring, which is unsubstituted or can optionally be singly to triply substituted,

R^2-R^5 independently of each other mean a hydrogen, halogen, cyano,

- or a OR^6, $OC(O)R^6$, $S(O)_nR^6$, wherein n = 0, 1 or 2, SO_2NHR^6, $SO_2NHC(O)R^6$, NR^6R^7, $NHC(O)R^6$, $CH_2NR^6R^7$, $CH_2NHC(O)R^6$, $C(OH)R^6R^7$, $C(O)R^6$, CO_2R^6 or $C(O)NR^6R^7$ group,
- a C_1-C_6 alkyl group, which is unsubstituted or can optionally be substituted,
- a C_3-C_{10} cycloalkyl ring, which is unsubstituted or can optionally be substituted,
- a C_2-C_6 alkenyl or C_2-C_6 alkynyl group, which is unsubstituted or can optionally be substituted,
- a 5-12-membered mono- or bicyclic aryl or heteroaryl ring, which is unsubstituted or can optionally be substituted,

R^6, R^7 mean a hydrogen, a C_1-C_6 alkyl, a C_3-C_{10} cycloalkyl ring, a 5-12-membered mono- or bicyclic aryl or heteroaryl ring, wherein the alkyl, cycloalkyl and (het)aryl groups are unsubstituted or can optionally be substituted or

R^6, R^7 together form a 3-8-membered ring.

4. The compounds as claimed in claim 1, wherein

X and Z each mean a nitrogen residue,

Y means a carbon residue –C-R^8,

R^8 means a hydrogen or a C_1-C_4 alkyl residue,

R^1 means a 5-12-membered mono- or bicyclic aryl or heteroaryl ring, which is unsubstituted and can optionally be singly to triply substituted,

R^2 - R^5 independently of each other mean a hydrogen, halogen, cyano,

- or a OR^6, $OC(O)R^6$, $S(O)_nR^6$, wherein n = 0, 1 or 2, SO_2NHR^6, $SO_2NHC(O)R^6$, NR^6R^7, $NHC(O)R^6$, $CH_2NR^6R^7$, $CH_2NHC(O)R^6$, $C(OH)R^6R^7$, $C(O)R^6$, CO_2R^6 or $C(O)NR^6R^7$ group,
- a C_1-C_6 alkyl group, which is unsubstituted or can optionally be substituted,
- a C_3-C_{10} cycloalkyl ring, which is unsubstituted or can optionally be substituted,
- a C_2-C_6 alkenyl or C_2-C_6 alkynyl group, which is unsubstituted or can optionally be substituted,
- a 5-12-membered mono- or bicyclic aryl or heteroaryl ring, which is unsubstituted or can optionally be substituted,

R^6, R^7 mean a hydrogen, a C_1-C_6 alkyl, a C_3-C_{10} cycloalkyl ring, a 5-12-membered, mono- or bicyclic aryl or heteroaryl ring, wherein the alkyl, cycloalkyl and (het)aryl groups are unsubstituted or can optionally be substituted or

R^6, R^7 together form a 3-8-membered ring.

5. The compounds as claimed in claim 1, wherein

X and Y each mean a carbon residue –C-R^8,

Z means a nitrogen residue,

R^8 means a hydrogen or a C_1-C_4 alkyl residue,

R^1 means a 5-12-membered or mono- or bicyclic aryl or heteroaryl ring, which is unsubstituted or can optionally be singly to triply substituted,

R^2 - R^5 independently of each other mean a hydrogen, halogen, cyano,

- or a OR^6, $OC(O)R^6$, $S(O)_nR^6$, wherein n = 0, 1 or 2, SO_2NHR^6, $SO_2NHC(O)R^6$, NR^6R^7, $NHC(O)R^6$, $CH_2NR^6R^7$, $CH_2NHC(O)R^6$, $C(OH)R^6R^7$, $C(O)R^6$, CO_2R^6 or $C(O)NR^6R^7$ group,
- a C_1-C_6 alkyl group, which is unsubstituted or can optionally be substituted,
- a C_3-C_{10} cycloalkyl ring, which is unsubstituted or can optionally be substituted,
- a C_2-C_6 alkenyl or C_2-C_6 alkynyl group, which is unsubstituted or can optionally be substituted,
- a 5-12-membered mono- or bicyclic aryl or heteroaryl ring, which is unsubstituted or can optionally be substituted,

R^6, R^7 mean a hydrogen, a C_1-C_6 alkyl, a C_3-C_{10} cycloalkyl ring, a 5-12-membered, mono- or bicyclic aryl or heteroaryl ring, wherein the alkyl, cycloalkyl and (het)aryl groups are unsubstituted or can optionally be substituted or

R^6, R^7 together form a 3-8-membered ring.

6. The compounds as claimed in claims 1 and 2, wherein

X means a nitrogen residue,

Y, Z mean a carbon residue –C-R^8,

R^8 means a hydrogen,

R^1 means an unsubstituted 5-12-membered mono- or bicyclic aryl or heteroaryl ring, which is optionally singly to triply substituted,

wherein the substituents can be selected from the group
halogen,
-C_1-C_4 alkyl, which is unsubstituted and can optionally be substituted,
-OR^6, -$OC(O)R^6$, -$S(O)_nR^6$, wherein n = 0, 1 or 2,
-SO_2NHR^6, -$SO_2NHC(O)R^6$, NR^6R^7, -$NHC(O)R^6$, -CN,
-CO_2-R^6, -C(O)-N-R^6R^7, -$C(O)R^6$ or -$C(OH)R^6R^7$,

wherein the 5-12-membered mono- or bicyclic aryl or heteroaryl ring can for example, but not exclusively, be a naphthyl, quinolinyl, isoquinolinyl, phthalazinyl, quinazolinyl, quinoxalinyl, cinnolinyl, benzothiophenyl, 1,3-benzodioxolyl, 2,1,3-benzothiadiazolyl, phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl, tetrazolyl, indolyl, benzofuranyl or benzimidazolyl group,

R^2 means a hydrogen,

R^3 - R^5 independently of each other mean a hydrogen, halogen, cyano, or a OR^6, $OC(O)R^6$, $S(O)_nR^6$ wherein n = 0, 1 or 2, SO_2NHR^6, $SO_2NHC(O)R^6$, NR^6R^7, $NHC(O)R^6$, $CH_2NR^6R^7$, $CH_2NHC(O)R^6$, $C(OH)R^6R^7$, $C(O)R^6$, CO_2R^6 or $C(O)NR^6R^7$ group,
a C_1-C_6 alkyl group, which is optionally unsubstituted or substituted,
a C_3-C_{10} cycloalkyl ring, which is optionally unsubstituted or substituted,
a C_2-C_6 alkenyl or C_2-C_6 alkynyl group, which is optionally substituted or unsubstituted,
a 5-12-membered mono- or bicyclic aryl or heteroaryl ring, which is optionally singly or multiply substituted,
wherein the substituents can be selected from the group
- halogen,

- $-C_1$-C_4 alkyl, which is unsubstituted and can optionally be substituted,
- $-OR^9$, $-OC(O)R^9$, $-S(O)_nR^9$, wherein n = 0, 1 or 2, $-SO_2NHR^9$, $-SO_2NHC(O)R^9$, NR^9R^{10}, $-NHC(O)R^9$, $-CN$, $-CO_2-R^9$, $-C(O)-N-R^9R^{10}$, $-C(O)R^9$ or $-C(OH)R^9R^{10}$,

wherein the 5-12-membered mono or bicyclic aryl or heteroaryl ring can for example, but not exclusively, be a naphthyl, quinolinyl, isoquinolinyl, phthalazinyl, quinazolinyl, quinoxalinyl, cinnolinyl, benzothiophenyl, 1,3-benzodioxolyl, 2,1,3-benzothiadiazolyl, phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl, tetrazolyl, indolyl, benzofuranyl or benzimidazolyl group,

R^6, R^7 mean a hydrogen, a C_1-C_6 alkyl group, which is unsubstituted or can optionally be up to quintuply halogenated,
a C_3-C_8 cycloalkyl residue,
a 5-12-membered, mono or bicyclic aryl or heteroaryl ring, which is optionally singly or multiply substituted,

wherein the substituents can be selected from the group

- halogen,
- cyano,
- R^9, $-OR^9$, $-OC(O)R^9$, $-S(O)_nR^9$, wherein n = 0, 1 or 2, $-SO_2NHR^9$, NR^9R^{10}, $-NHC(O)R^9$, $-CO_2-R^9$ or $-C(O)-N-R^9R^{10}$,

wherein the 5-12-membered mono- or bicyclic aryl or heteroaryl ring can for example, but not exclusively, be a naphthyl, quinolinyl, isoquinolinyl, phthalazinyl, quinazolinyl, quinoxalinyl, cinnolinyl, benzothiophenyl, 1,3-benzodioxolyl, 2,1,3-benzothiadiazolyl, phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl,

pyridazinyl, triazolyl, tetrazolyl, indolyl, benzofuranyl or benzimidazolyl group, or

R^6, R^7 together form a 3-8-membered ring,

R^9, R^{10} independently of each other mean hydrogen,

- a C_1-C_4 alkyl group, which is unsubstituted or can optionally be up to quintuply fluorinated,
- a C_2-C_4 alkenyl group, which is unsubstituted or can optionally be up to triply fluorinated,
- a C_2-C_4 alkynyl group, which is unsubstituted or can optionally be singly fluorinated,
- a C_3-C_6 cycloalkyl group,
- a 5-6-membered aryl or heteroaryl ring, which can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl ring, which is unsubstituted or can be up to doubly substituted with fluorine, chlorine or trifluoromethyl, or

R^9, R^{10} together form a 3-8-membered ring.

7. The compounds as claimed in claims 1 and 3, wherein

Y and Z mean a nitrogen residue,

X means a carbon residue –C-R^8,

R^8 means a hydrogen or a methyl group,

R^1 means a 5-12-membered mono- or bicyclic aryl or heteroaryl ring, which is optionally singly to triply substituted,

wherein the substituents can be selected from the group halogen,

$-C_1$-C_4 alkyl, which is unsubstituted and can optionally be substituted,

$-OR^6$, $-OC(O)R^6$, $-S(O)_nR^6$, wherein n = 0, 1 or 2,

$-SO_2NHR^6$, $-SO_2NHC(O)R^6$, NR^6R^7, $-NHC(O)R^6$, -CN,

$-CO_2$-R^6, -C(O)-N-R^6R^7, $-C(O)R^6$ or $-C(OH)R^6R^7$,

wherein the 5-12-membered mono- or bicyclic aryl or heteroaryl ring can for example, but not exclusively, be a naphthyl, quinolinyl, isoquinolinyl, phthalazinyl, quinazolinyl, quinoxalinyl, cinnolinyl, benzothiophenyl, 1,3-benzodioxolyl, 2,1,3-benzothiadiazolyl, phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl, tetrazolyl, indolyl, benzofuranyl or benzimidazolyl group,

R^2 means a hydrogen,

R^3- R^5 independently of each other mean a hydrogen, halogen, cyano,

- or a OR^6, $OC(O)R^6$, $S(O)_nR^6$, wherein n = 0, 1 or 2, SO_2NHR^6, $SO_2NHC(O)R^6$, NR^6R^7, $NHC(O)R^6$, $CH_2NR^6R^7$, $CH_2NHC(O)R^6$, $C(OH)R^6R^7$, $C(O)R^6$, CO_2R^6 or $C(O)NR^6R^7$ group,
- a C_1-C_6 alkyl group, which is unsubstituted or can optionally be substituted,
- a C_3-C_{10} cycloalkyl ring, which is unsubstituted or can optionally be substituted,
- a C_2-C_6 alkenyl or C_2-C_6 alkynyl group, which is unsubstituted or can optionally be substituted,

- an unsubstituted 5-12-membered mono- or bicyclic aryl or heteroaryl ring, which can optionally be singly or multiply substituted,
wherein the substituents can be selected from the group
halogen,
-C_1-C_4 alkyl, which is unsubstituted and can optionally be substituted,
-OR^9, -$OC(O)R^9$, -$S(O)_nR^9$ wherein n = 0, 1 or 2,
-SO_2NHR^9, -$SO_2NHC(O)R^9$, NR^9R^{10}, -$NHC(O)R^9$, -CN,
-CO_2-R^9, -C(O)-N-R^9R^{10}, -$C(O)R^9$ or -$C(OH)R^9R^{10}$,

wherein the 5-12-membered mono- or bicyclic aryl or heteroaryl ring can for example, but not exclusively, be a naphthyl, quinolinyl, isoquinolinyl, phthalazinyl, quinazolinyl, quinoxalinyl, cinnolinyl, benzothiophenyl, 1,3-benzodioxolyl, 2,1,3-benzothiadiazolyl, phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl, tetrazolyl, indolyl, benzofuranyl or benzimidazolyl group,

R^6, R^7 mean a hydrogen, an unsubstituted C_1-C_6 alkyl group, which can optionally be up to quintuply halogenated,
a C_3-C_8 cycloalkyl residue,
an unsubstituted 5-12-membered, mono or bicyclic aryl or heteroaryl ring, which can optionally be singly or multiply substituted, wherein the substituents can be selected from the group

- halogen,
- cyano,
- R^9, -OR^9, -$OC(O)R^9$, -$S(O)_nR^9$, wherein n = 0, 1 or 2, -SO_2NHR^9, NR^9R^{10}, -$NHC(O)R^9$, -CO_2-R^9 or -C(O)-N-R^9R^{10},

wherein the 5-12-membered mono or bicyclic aryl or heteroaryl ring can for example, but not exclusively, be a naphthyl, quinolinyl, isoquinolinyl, phthalazinyl, quinazolinyl, quinoxalinyl, cinnolinyl, benzothiophenyl, 1,3-benzodioxolyl, 2,1,3-benzothiadiazolyl, phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl, tetrazolyl, indolyl, benzofuranyl or benzimidazolyl group, or

R^6, R^7 together form a 3-8-membered ring,

R^9, R^{10} independently of each other mean hydrogen,

- a C_1-C_4 alkyl group, which is unsubstituted or can optionally be up to quintuply fluorinated,
- a C_2-C_4 alkenyl group, which is unsubstituted or can optionally be up to triply fluorinated,
- a C_2-C_4 alkynyl group, which is unsubstituted or can optionally be singly fluorinated,
- a C_3-C_6 cycloalkyl group,
- a 5-6-membered aryl or heteroaryl ring, which can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl ring, which is unsubstituted or can be up to doubly substituted with fluorine, chlorine or trifluoromethyl, or

R^9, R^{10} together form a 3-8-membered ring.

8. The compounds as claimed in claims 1 and 4, wherein

X and Z each mean a nitrogen residue,

Y means a carbon residue –C-R^8,

R^8 means a hydrogen,

R^1 means an unsubstituted 5-12-membered mono or bicyclic aryl or heteroaryl ring, which is optionally singly to triply substituted,
wherein the substituents can be selected from the group
halogen,
-C_1-C_4 alkyl, which is unsubstituted and can optionally be substituted,
-OR^6, -$OC(O)R^6$, -$S(O)_nR^6$, wherein n = 0, 1 or 2,
-SO_2NHR^6, -$SO_2NHC(O)R^6$, NR^6R^7, -$NHC(O)R^6$, -CN,
-CO_2-R^6, -C(O)-N-R^6R^7, -$C(O)R^6$ or -$C(OH)R^6R^7$,
wherein the 5-12-membered mono or bicyclic aryl or heteroaryl ring can for example, but not exclusively, be a naphthyl, quinolinyl, isoquinolinyl, phthalazinyl, quinazolinyl, quinoxalinyl, cinnolinyl, benzothiophenyl, 1,3-benzodioxolyl, 2,1,3-benzothiadiazolyl, phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl, tetrazolyl, indolyl, benzofuranyl or benzimidazolyl group,

R^2 means a hydrogen,

R^3 - R^5 independently of each other mean a hydrogen, halogen, cyano,
- or a OR^6, $OC(O)R^6$, $S(O)_nR^6$, wherein n = 0, 1 or 2, SO_2NHR^6, $SO_2NHC(O)R^6$, NR^6R^7, $NHC(O)R^6$, $CH_2NR^6R^7$, $CH_2NHC(O)R^6$, $C(OH)R^6R^7$, $C(O)R^6$, CO_2R^6 or $C(O)NR^6R^7$ group,
- an unsubstituted C_1-C_6 alkyl group, which can be substituted,

- an unsubstituted C_3-C_{10} cycloalkyl ring, which can optionally be substituted,
- an unsubstituted C_2-C_6 alkenyl or C_2-C_6 alkynyl group, which can optionally be substituted,
- an unsubstituted 5-12-membered, mono- or bicyclic aryl or heteroaryl ring, which can optionally be singly or multiply substituted,
  wherein the substituents can be selected from the group halogen, -C_1-C_4 alkyl, which is unsubstituted and can optionally be substituted,
  -OR^9, -$OC(O)R^9$, -$S(O)_nR^9$, wherein = 0, 1 or 2, -SO_2NHR^9, -$SO_2NHC(O)R^9$, NR^9R^{10}, -$NHC(O)R^9$, -CN, -CO_2-R^9, -C(O)-N-R^9R^{10}, -$C(O)R^9$ or -$C(OH)R^9R^{10}$,

wherein the 5-12-membered mono- or bicyclic aryl or heteroaryl ring can for example, but not exclusively, be a naphthyl, quinolinyl, isoquinolinyl, phthalazinyl, quinazolinyl, quinoxalinyl, cinnolinyl, benzothiophenyl, 1,3-benzodioxolyl, 2,1,3-benzothiadiazolyl, phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl, tetrazolyl, indolyl, benzofuranyl or benzimidazolyl group,

R^6, R^7 mean a hydrogen, a C_1-C_6 alkyl group, which can be unsubstituted or optionally up to quintuply halogenated,
an unsubstituted C_3-C_8 cycloalkyl residue,
an unsubstituted 5-12-membered mono- or bicyclic aryl or heteroaryl ring, which can optionally be singly or multiply substituted, wherein the substituents can be selected from the group

- halogen,
- cyano,

- R^9, $-OR^9$, $-OC(O)R^9$, $-S(O)_nR^9$, wherein n = 0, 1 or 2, $-SO_2NHR^9$, NR^9R^{10}, $-NHC(O)R^9$, $-CO_2-R^9$ or $-C(O)-N-R^9R^{10}$,

wherein the 5-12-membered mono- or bicyclic aryl or heteroaryl ring can for example, but not exclusively, be a naphthyl, quinolinyl, isoquinolinyl, phthalazinyl, quinazolinyl, quinoxalinyl, cinnolinyl, benzothiophenyl, 1,3-benzodioxolyl, 2,1,3-benzothiadiazolyl, phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl, tetrazolyl, indolyl, benzofuranyl or benzimidazolyl group, or

R^6, R^7 together form a 3-8-membered ring,

R^9, R^{10} independently of each other mean hydrogen,

- an unsubstituted C_1-C_4 alkyl group, which can optionally be up to quintuply fluorinated,
- an unsubstituted C_2-C_4 alkenyl group, which can optionally be up to triply fluorinated,
- an unsubstituted C_2-C_4 alkynyl group, which can optionally be singly fluorinated,
- an unsubstituted C_3-C_6 cycloalkyl group,
- an unsubstituted 5-6-membered aryl or heteroaryl ring, which can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl ring, which can optionally be up to doubly substituted with fluorine, chlorine or trifluoromethyl, or

R^9, R^{10} together form a 3-8-membered ring.

9. The compounds as claimed in claims 1 and 5, wherein

X and Y each mean a carbon residue –C-R^8,

Z means a nitrogen residue,

R^8 means a hydrogen or methyl group,

R^1 means an unsubstituted 5-12-membered, mono- or bicyclic aryl or heteroaryl ring, which is optionally singly to triply substituted,
wherein the substituents can be selected from the group
halogen, -C_1-C_4 alkyl, which is unsubstituted or can optionally be substituted,
-OR^6, -$OC(O)R^6$, -$S(O)_nR^6$, wherein n = 0, 1 or 2,
-SO_2NHR^6, -$SO_2NHC(O)R^6$, NR^6R^7, -$NHC(O)R^6$, -CN,
-CO_2-R^6, -C(O)-N-R^6R^7, -$C(O)R^6$ or -$C(OH)R^6R^7$,
wherein the 5-12-membered mono- or bicyclic aryl or heteroaryl ring can for example, but not exclusively, be a naphthyl, quinolinyl, isoquinolinyl, phthalazinyl, quinazolinyl, quinoxalinyl, cinnolinyl, benzothiophenyl, 1,3-benzodioxolyl, 2,1,3-benzothiadiazolyl, phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl, tetrazolyl, indolyl, benzofuranyl or benzimidazolyl group,

R^2 means a hydrogen,

R^3 - R^5 independently of each other mean a hydrogen, halogen, cyano, or

- an OR^6, $OC(O)R^6$, $S(O)_nR^6$, wherein n = 0, 1 or 2, SO_2NHR^6, $SO_2NHC(O)R^6$, NR^6R^7, $NHC(O)R^6$, $CH_2NR^6R^7$, $CH_2NHC(O)R^6$, $C(OH)R^6R^7$, $C(O)R^6$, CO_2R^6 or $C(O)NR^6R^7$ group,

- an unsubstituted C_1-C_6 alkyl group, which can optionally be substituted,
- an unsubstituted C_3-C_{10} cycloalkyl ring, which can optionally be substituted,
- an unsubstituted C_2-C_6 alkenyl or C_2-C_6 alkynyl group, which can optionally be substituted,
- an unsubstituted 5-12-membered mono- or bicyclic aryl or heteroaryl ring, which is optionally singly or multiply substituted,

wherein the substituents can be selected from the group halogen, -C_1-C_4 alkyl, which is unsubstituted or can optionally be substituted,
-OR^9, -$OC(O)R^9$, -$S(O)_nR^9$ wherein n = 0, 1 or 2,
-SO_2NHR^9, -$SO_2NHC(O)R^9$, NR^9R^{10}, -$NHC(O)R^9$, -CN,
-CO_2-R^9, -C(O)-N-R^9R^{10}, -$C(O)R^9$ or -$C(OH)R^9R^{10}$,

wherein the 5-12-membered mono- or bicyclic aryl or heteroaryl ring can for example, but not exclusively, be a naphthyl, quinolinyl, isoquinolinyl, phthalazinyl, quinazolinyl, quinoxalinyl, cinnolinyl, benzothiophenyl, 1,3-benzodioxolyl, 2,1,3-benzothiadiazolyl, phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl, tetrazolyl, indolyl, benzofuranyl or benzimidazolyl group,

R^6, R^7 mean a hydrogen, a C_1-C_6 alkyl group, which is unsubstituted or can optionally be up to quintuply halogenated,
an unsubstituted C_3-C_8 cycloalkyl residue,
an unsubstituted 5-12-membered, mono- or bicyclic aryl or heteroaryl ring, which can optionally be singly or multiply substituted, wherein the substituents can be selected from the group

halogen,
cyano,

R^9, $-OR^9$, $-OC(O)R^9$, $-S(O)_nR^9$ wherein n = 0, 1 or 2, $-SO_2NHR^9$, $-SO_2NHC(O)R^9$, NR^9R^{10}, $-NHC(O)R^9$, $-CO_2-R^9$ or $-C(O)-N-R^9R^{10}$,

wherein the 5-12-membered mono- or bicyclic aryl or heteroaryl ring can for example, but not exclusively, be a naphthyl, quinolinyl, isoquinolinyl, phthalazinyl, quinazolinyl, quinoxalinyl, cinnolinyl, benzothiophenyl, 1,3-benzodioxolyl, 2,1,3-benzothiadiazolyl, phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl, tetrazolyl, indolyl, benzofuranyl or benzimidazolyl group, or

R^6, R^7 together form a 3-8-membered ring,

R^9, R^{10} independently of each other mean hydrogen,

- an unsubstituted C_1-C_4 alkyl group, which can optionally be up to quintuply fluorinated,
- an unsubstituted C_2-C_4 alkenyl group, which can optionally be up to triply fluorinated,
- an unsubstituted C_2-C_4 alkynyl group, which can optionally be singly fluorinated,
- an unsubstituted C_3-C_6 cycloalkyl group,
- an unsubstituted 5-6-membered aryl or heteroaryl ring, which can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl ring, which can optionally be up to doubly substituted with fluorine, chlorine or trifluoromethyl, or

R^9, R^{10} together form a 3-8-membered ring.

10. The compounds as claimed in claims 1, 2 and 6, wherein

X means a nitrogen residue,

Y and Z mean a carbon residue –C-R^8,

R^8 means a hydrogen,

R^1 means an unsubstituted 5-6-membered aryl or heteroaryl ring, which is optionally singly to triply substituted,

wherein the substituents can be selected from the group halogen, -C_1-C_4 alkyl, which is unsubstituted or can optionally be substituted,

-OR^6, -$OC(O)R^6$, -$S(O)_nR^6$, wherein n = 0, 1 or 2,

-SO_2NHR^6, -$SO_2NHC(O)R^6$, NR^6R^7, -$NHC(O)R^6$, -CN,

-CO_2-R^6, -C(O)-N-R^6R^7, -$C(O)R^6$ or -$C(OH)R^6R^7$,

wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group,

R^2 means a hydrogen residue,

R^3 - R^5 independently of each other mean a hydrogen, halogen, cyano, or

- an OR^6, $OC(O)R^6$, $S(O)_nR^6$, wherein n = 0, 1 or 2, SO_2NHR^6, $SO_2NHC(O)R^6$, NR^6R^7, $NHC(O)R^6$, $CH_2NR^6R^7$, $CH_2NHC(O)R^6$, $C(OH)R^6R^7$, $C(O)R^6$, CO_2R^6 or $C(O)NR^6R^{7-}$ group,
- an unsubstituted C_1-C_6 alkyl group, which can optionally be substituted,
- an unsubstituted C_3-C_{10} cycloalkyl ring, which can optionally be substituted,

- an unsubstituted C_2-C_6 alkenyl or C_2-C_6 alkynyl group, which can optionally be substituted,
- an unsubstituted 5-6-membered aryl or heteroaryl ring, which is optionally singly or multiply substituted,

wherein the substituents can be selected from the group

halogen,

-C_1-C_4 alkyl, which is unsubstituted and can also optionally be halogenated or else substituted with –OH, -CN or -CO_2H,

-OR^9, -$OC(O)R^9$, -$S(O)_nR^9$, wherein n = 0, 1 or 2, -SO_2NHR^9, -$SO_2NHC(O)R^9$, NR^9R^{10}, -$NHC(O)R^9$, -CN, -CO_2-R^9, -C(O)-N-R^9R^{10}, -$C(O)R^9$ or -$C(OH)R^9R^{10}$,

wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group,

R^6, R^7 mean a hydrogen,
an unsubstituted C_1-C_6 alkyl group, which can optionally be up to quintuply halogenated,
an unsubstituted C_3-C_8 cycloalkyl residue,
an unsubstituted 5-6-membered aryl or heteroaryl ring, which can optionally be singly or multiply substituted, wherein the substituents can be selected from the group

halogen, cyano, -R^9, -OR^9, -$OC(O)R^9$, -$S(O)_nR^9$ wherein n = 0, 1 or 2, -SO_2NHR^9, NR^9R^{10}, -$NHC(O)R^9$, -CO_2-R^9 or -C(O)-N-R^9R^{10},

wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group or

R^6, R^7 together form a 3-8-membered ring,

R^9, R^{10} independently of each other mean hydrogen, a C_1-C_4 alkyl group, which is unsubstituted or can optionally be up to quintuply fluorinated,
an unsubstituted C_2-C_4 alkenyl group, which can optionally be up to triply fluorinated,
an unsubstituted C_2-C_4 alkynyl group, which can optionally be singly fluorinated,
an unsubstituted C_3-C_6 cycloalkyl group,
an unsubstituted 5-6-membered aryl or heteroaryl ring, which can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl ring, which can optionally be up to doubly substituted with fluorine, chlorine or trifluoromethyl, or

R^9, R^{10} together form a 3-8-membered ring.

11. The compounds as claimed in claims 1, 3 and 7, wherein

Y and Z mean a nitrogen residue,

X means a carbon residue –C-R^8,

R^8 means a hydrogen,

R^1 means a 5-6-membered aryl or heteroaryl ring, which is optionally singly to triply substituted,

wherein the substituents can be selected from the group halogen, -C_1-C_4 alkyl, which is unsubstituted or can optionally be substituted,
-OR^6, -$OC(O)R^6$, -$S(O)_nR^6$, wherein n = 0, 1 or 2,
-SO_2NHR^6, -$SO_2NHC(O)R^6$, NR^6R^7, -$NHC(O)R^6$, -CN,
-CO_2-R^6, -C(O)-N-R^6R^7, -$C(O)R^6$ or -$C(OH)R^6R^7$,
wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group,

R^2 means a hydrogen residue,

R^3 - R^5 independently of each other mean a hydrogen, halogen, cyano, or

- an OR^6, $OC(O)R^6$, $S(O)_nR^6$, wherein n = 0, 1 or 2, SO_2NHR^6, $SO_2NHC(O)R^6$, NR^6R^7, $NHC(O)R^6$, $CH_2NR^6R^7$, $CH_2NHC(O)R^6$, $C(OH)R^6R^7$, $C(O)R^6$, CO_2R^6 or $C(O)NR^6R^7$ group,
- an unsubstituted C_1-C_6 alkyl group, which can optionally be substituted,
- an unsubstituted C_3-C_{10} cycloalkyl ring, which can optionally be substituted,
- an unsubstituted C_2-C_6 alkenyl or C_2-C_6 alkynyl group, which can optionally be substituted,
- an unsubstituted 5-6-membered aryl or heteroaryl ring, which is optionally singly or multiply substituted,
  wherein the substituents can be selected from the group
  halogen,
  -C_1-C_4 alkyl, which is unsubstituted and can optionally be halogenated or else substituted with –OH, -CN or -CO_2H,

$-OR^9$, $-OC(O)R^9$, $-S(O)_nR^9$ wherein n = 0, 1 or 2, $-SO_2NHR^9$, $-SO_2NHC(O)R^9$, NR^9R^{10}, $-NHC(O)R^9$, -CN, $-CO_2-R^9$, $-C(O)-N-R^9R^{10}$, $-C(O)R^9$ or $-C(OH)R^9R^{10}$,

wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group,

R^6, R^7 mean a hydrogen,

an unsubstituted C_1-C_6 alkyl group, which can optionally be up to quintuply halogenated,

an unsubstituted C_3-C_8 cycloalkyl residue,

an unsubstituted 5-6-membered aryl or heteroaryl ring, which can optionally be singly or multiply substituted, wherein the substituents can be selected from the group

halogen, cyano, $-R^9$ $-OR^9$, $-OC(O)R^9$, $-S(O)_nR^9$ wherein n = 0, 1 or 2, $-SO_2NHR^9$, NR^9R^{10}, $-NHC(O)R^9$, $-CO_2-R^9$ or $-C(O)-N-R^9R^{10}$,

wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group, or

R^6, R^7 together form a 3-8-membered ring,

R^9, R^{10} independently of each other mean hydrogen, a C_1-C_4 alkyl group, which can be unsubstituted or optionally up to quintuply fluorinated,

- an unsubstituted C_2-C_4 alkenyl group, which can optionally be up to triply fluorinated,
- an unsubstituted C_2-C_4 alkynyl group, which can optionally be singly fluorinated,

- an unsubstituted C_3-C_6 cycloalkyl group,
- an unsubstituted 5-6-membered aryl or heteroaryl ring, which can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl ring, which can optionally be up to doubly substituted with fluorine, chlorine or trifluoromethyl, or

R^9, R^{10} together form a 3-8-membered ring.

12. The compounds as claimed in claims 1, 4 and 8, wherein

X and Z mean a nitrogen residue,

Y and Z mean a carbon residue –C-R^8,

R^8 means a hydrogen,

R^1 means an unsubstituted 5-6-membered aryl or heteroaryl ring, which is optionally singly to triply substituted,
wherein the substituents can be selected from the group halogen, -C_1-C_4 alkyl, which is unsubstituted or can optionally be substituted,
-OR^6, -$OC(O)R^6$, -$S(O)_nR^6$, wherein n = 0, 1 or 2,
-SO_2NHR^6, -$SO_2NHC(O)R^6$, NR^6R^7, -$NHC(O)R^6$, -CN,
-CO_2-R^6, -C(O)-N-R^6R^7, -$C(O)R^6$ or -$C(OH)R^6R^7$,
wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group,

R^2 means a hydrogen residue,

R^3 - R^5 independently of each other mean a hydrogen, halogen, cyano, or

- an OR^6, $OC(O)R^6$, $S(O)_nR^6$, wherein n = 0, 1 or 2, SO_2NHR^6, $SO_2NHC(O)R^6$, NR^6R^7, $NHC(O)R^6$, $CH_2NR^6R^7$, $CH_2NHC(O)R^6$, $C(OH)R^6R^7$, $C(O)R^6$, CO_2R^6 or $C(O)NR^6R^7$ group,
- an unsubstituted C_1-C_6 alkyl group, which can optionally be substituted,
- an unsubstituted C_3-C_{10} cycloalkyl ring, which can optionally be substituted,
- an unsubstituted C_2-C_6 alkenyl or C_2-C_6 alkynyl group, which can optionally be substituted,
- an unsubstituted 5-6-membered aryl or heteroaryl ring, which is optionally singly or multiply substituted, wherein the substituents can be selected from the group
  halogen,
  -C_1-C_4 alkyl, which is unsubstituted and can optionally also be halogenated or else substituted with –OH, -CN or -CO_2H,
  -OR^9, -$OC(O)R^9$, -$S(O)_nR^9$ wherein n = 0, 1 or 2, -SO_2NHR^9, -$SO_2NHC(O)R^9$, NR^9R^{10}, -$NHC(O)R^9$, -CN, -CO_2-R^9, -C(O)-N-R^9R^{10}, -$C(O)R^9$ or -$C(OH)R^9R^{10}$,
  wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group,

R^6, R^7 mean a hydrogen,
an unsubstituted C_1-C_6 alkyl group, which can optionally be up to quintuply halogenated,

an unsubstituted C_3-C_8 cycloalkyl residue,
an unsubstituted 5-6-membered aryl or heteroaryl ring, which can optionally be singly or multiply substituted, wherein the substituents can be selected from the group
halogen, cyano, -R^9 -OR^9, -$OC(O)R^9$, -$S(O)_nR^9$ wherein n = 0, 1 or 2, -SO_2NHR^9, NR^9R^{10}, -$NHC(O)R^9$, -CO_2-R^9 or -C(O)-N-R^9R^{10},
wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group, or

R^6, R^7 together form a 3-8-membered ring,

R^9, R^{10} independently of each other mean hydrogen, a C_1-C_4 alkyl group, which can be unsubstituted or optionally up to quintuply fluorinated,
- an unsubstituted C_2-C_4 alkenyl group, which can optionally be up to triply fluorinated,
- an unsubstituted C_2-C_4 alkynyl group, which can optionally be singly fluorinated, a C_3-C_6 cycloalkyl group,
- an unsubstituted 5-6-membered aryl or heteroaryl ring, which can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl ring, which can optionally be up to doubly substituted with fluorine, chlorine or trifluoromethyl, or

R^9, R^{10} together form a 3-8-membered ring.

13. The compounds as claimed in claims 1, 5 and 9, wherein

X and Y mean a carbon residue –C-R^8,

Z means a nitrogen residue,

R^8 means a hydrogen,

R^1 means an unsubstituted 5-6-membered aryl or heteroaryl ring, which is optionally singly to triply substituted,

wherein the substituents can be selected from the group

halogen,

-C_1-C_4 alkyl, which is unsubstituted or can optionally be substituted,

-OR^6, -$OC(O)R^6$, -$S(O)_nR^6$, wherein n = 0, 1 or 2,

-SO_2NHR^6, -$SO_2NHC(O)R^6$, NR^6R^7, -$NHC(O)R^6$, -CN,

-CO_2-R^6, -C(O)-N-R^6R^7, -$C(O)R^6$ or -$C(OH)R^6R^7$,

wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group,

R^2 means a hydrogen residue,

R^3 - R^5 independently of each other mean a hydrogen, halogen, cyano, or

- an OR^6, $OC(O)R^6$, $S(O)_nR^6$, wherein n = 0, 1 or 2, SO_2NHR^6, $SO_2NHC(O)R^6$, NR^6R^7, $NHC(O)R^6$, $CH_2NR^6R^7$, $CH_2NHC(O)R^6$, $C(OH)R^6R^7$, $C(O)R^6$, CO_2R^6 or $C(O)NR^6R^7$ group,
- an unsubstituted C_1-C_6 alkyl group, which can optionally be substituted,
- an unsubstituted C_3-C_{10} cycloalkyl ring, which can optionally be substituted,

- an unsubstituted C_2-C_6 alkenyl or C_2-C_6 alkynyl group, which can optionally be substituted,
- an unsubstituted 5-6-membered aryl or heteroaryl ring, which is optionally singly or multiply substituted,

wherein the substituents can be selected from the group

halogen,

-C_1-C_4 alkyl, which is unsubstituted and can optionally also be halogenated or else substituted with –OH, -CN or -CO_2H,

-OR^9, -$OC(O)R^9$, -$S(O)_nR^9$ wherein n = 0, 1 or 2, -SO_2NHR^9, -$SO_2NHC(O)R^9$, NR^9R^{10}, -$NHC(O)R^9$, -CN, -CO_2-R^9, -C(O)-N-R^9R^{10}, -$C(O)R^9$ or -$C(OH)R^9R^{10}$,

wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group,

R^6, R^7 mean a hydrogen,

an unsubstituted C_1-C_6 alkyl group, which can optionally be up to quintuply halogenated,

an unsubstituted C_3-C_8 cycloalkyl residue,

an unsubstituted 5-6-membered aryl or heteroaryl ring, which can optionally be singly or multiply substituted, wherein the substituents can be selected from the group

halogen, cyano, -R^9 -OR^9, -$OC(O)R^9$, -$S(O)_nR^9$ wherein n = 0, 1 or 2, -SO_2NHR^9, NR^9R^{10}, -$NHC(O)R^9$, -CO_2-R^9 or -C(O)-N-R^9R^{10},

wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group, or

R^6, R^7 together form a 3-8-membered ring,

R^9, R^{10} independently of each other mean hydrogen, a C_1-C_4 alkyl group, which can be unsubstituted or optionally up to quintuply fluorinated,

- an unsubstituted C_2-C_4 alkenyl group, which can optionally be up to triply fluorinated,
- an unsubstituted C_2-C_4 alkynyl group, which can optionally be singly fluorinated,
- an unsubstituted C_3-C_6 cycloalkyl group,
- an unsubstituted 5-6-membered aryl or heteroaryl ring, which can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl ring, which can optionally be up to doubly substituted with fluorine, chlorine or trifluoromethyl, or

R^9, R^{10} together form a 3-8-membered ring.

14. The compounds as claimed in claims 1, 2, 6 and 10, wherein

X means a nitrogen residue,

Y and Z mean a carbon residue –C-R^8,

R^8 means a hydrogen,

R^1 means a phenyl, thiophen-2-yl, thiophen-3-yl, furan-2-yl, furan-3-yl, pyrid-3-yl or pyrid-4-yl ring, which is optionally singly to triply substituted,

wherein the substituents can be selected from the group
halogen,
-C_1-C_4 alkyl, which can be unsubstituted or optionally substituted,
-OR^6, -$OC(O)R^6$, -$S(O)_nR^6$, wherein n = 0, 1 or 2,
-SO_2NHR^6, -$SO_2NHC(O)R^6$, NR^6R^7, -$NHC(O)R^6$, -CN,
-CO_2-R^6, -C(O)-N-R^6R^7, -$C(O)R^6$ or -$C(OH)R^6R^7$,

R^2 means a hydrogen residue,

R^3 - R^5 independently of each other mean a hydrogen, halogen, cyano, or

- an OR^6, $OC(O)R^6$, $S(O)_nR^6$, wherein n = 0, 1 or 2, SO_2NHR^6, $SO_2NHC(O)R^6$, NR^6R^7, $NHC(O)R^6$, $CH_2NR^6R^7$, $CH_2NHC(O)R^6$, $C(OH)R^6R^7$, $C(O)R^6$, CO_2R^6 or $C(O)NR^6R^7$ group,
- an unsubstituted C_1-C_6 alkyl group, which can optionally be up to quintuply halogenated or else substituted with, -CN or -CO_2H,
- an unsubstituted C_3-C_{10} cycloalkyl ring,
- an unsubstituted C_2-C_6 alkenyl group, which can optionally be up to triply halogenated or else substituted with, –CN or -CO_2H,
- an unsubstituted C_2-C_6 alkynyl group, which can optionally be singly halogenated or else substituted with –CN or -CO_2H and,
- an unsubstituted 5-6-membered aryl or heteroaryl ring, which is optionally singly or multiply substituted, wherein the substituents can be selected from the group
  halogen,
  -C_1-C_4 alkyl, which is unsubstituted and can optionally be up to quintuply halogenated or else substituted with –OH, -CN or -CO_2H,

$-OR^9$, $-OC(O)R^9$, $-S(O)_nR^9$, wherein n = 0, 1 or 2,
$-SO_2NHR^9$, $-SO_2NHC(O)R^9$, NR^9R^{10}, $-NHC(O)R^9$,
-CN, $-CO_2-R^9$, $-C(O)-N-R^9R^{10}$, $-C(O)R^9$ or
$-C(OH)R^9R^{10}$,

wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group,

R^6, R^7 mean a hydrogen,
an unsubstituted C_1-C_6 alkyl group, which can optionally be up to quintuply halogenated,
an unsubstituted C_3-C_8 cycloalkyl group,
an unsubstituted 5-6-membered aryl or heteroaryl ring, which can optionally be singly or multiply substituted, wherein the substituents can be selected from the group
halogen,
cyano,
R^9 $-OR^9$, $-OC(O)R^9$, $-S(O)_nR^9$, wherein n = 0, 1 or 2,
$-SO_2NHR^9$, $-NR^9R^{10}$, $-NHC(O)R^9$, $-CO_2-R^9$ or
$-C(O)-N-R^9R^{10}$,
wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group, or

R^6, R^7 together form a 3-8-membered ring,

R^9, R^{10} independently of each other mean hydrogen, a C_1-C_4 alkyl group, which is unsubstituted or can optionally be up to quintuply fluorinated,

an unsubstituted C_2-C_4 alkenyl group, which can optionally be up to triply fluorinated,
an unsubstituted C_2-C_4 alkynyl group, which can optionally be singly fluorinated,
an unsubstituted C_3-C_6 cycloalkyl group,
an unsubstituted 5-6-membered aryl or heteroaryl ring, which can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl ring, which can optionally be up to doubly substituted with fluorine, chlorine or trifluoromethyl, or

R^9, R^{10} together form a 3-8-membered ring.

15. The compounds as claimed in claims 1, 3, 7 and 11, wherein

Y and Z mean a nitrogen residue,

X means a carbon residue –C-R^8,

R^8 means a hydrogen,

R^1 means a phenyl, thiophen-2-yl, thiophen-3-yl, furan-2-yl, furan-3-yl, pyrid-3-yl or pyrid-4-yl ring, which is optionally singly to triply substituted,

wherein the substituents can be selected from the group halogen, -C_1-C_4 alkyl, which can be unsubstituted or optionally substituted,
-OR^6, -$OC(O)R^6$, -$S(O)_nR^6$, wherein n = 0, 1 or 2,
-SO_2NHR^6, -$SO_2NHC(O)R^6$, NR^6R^7, -$NHC(O)R^6$, -CN,
-CO_2-R^6, -C(O)-N-R^6R^7, -$C(O)R^6$ or -$C(OH)R^6R^7$,

R^2 means a hydrogen residue,

R^3 - R^5 independently of each other mean a hydrogen, halogen, cyano, or

- an OR^6, $OC(O)R^6$, $S(O)_nR^6$, wherein n = 0, 1 or 2, SO_2NHR^6, $SO_2NHC(O)R^6$, NR^6R^7, $NHC(O)R^6$, $CH_2NR^6R^7$, $CH_2NHC(O)R^6$, $C(OH)R^6R^7$, $C(O)R^6$, CO_2R^6 or $C(O)NR^6R^7$ group,
- an unsubstituted C_1-C_6 alkyl group, which can optionally be up to quintuply halogenated or else substituted with -CN or $-CO_2H$,
- an unsubstituted C_3-C_{10} cycloalkyl ring,
- an unsubstituted C_2-C_6 alkenyl group, which can optionally be up to triply halogenated or else substituted with –CN or $-CO_2H$,
- an unsubstituted C_2-C_6 alkynyl group, which can optionally be singly halogenated or else substituted with –CN or $-CO_2H$ and,
- an unsubstituted 5-6-membered aryl or heteroaryl ring, which is optionally singly or multiply substituted, wherein the substituents can be selected from the group
  halogen,
  C_1-C_4 alkyl, which is unsubstituted and can optionally be up to quintuply halogenated or else substituted with –OH, -CN or $-CO_2H$,
  $-OR^9$, $-OC(O)R^9$, $-S(O)_nR^9$, wherein n = 0, 1 or 2, $-SO_2NHR^9$, $-SO_2NHC(O)R^9$, NR^9R^{10}, $-NHC(O)R^9$, -CN, $-CO_2-R^9$, $-C(O)-N-R^9R^{10}$, $-C(O)R^9$ or $-C(OH)R^9R^{10}$,

wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group,

R^6, R^7 mean a hydrogen,
an unsubstituted C_1-C_6 alkyl group, which can optionally be up to quintuply halogenated,
an unsubstituted C_3-C_8 cycloalkyl group,
an unsubstituted 5-6-membered aryl or heteroaryl ring, which can optionally be singly or multiply substituted, wherein the substituents can be selected from the group
-halogen,
-cyano,
R^9, $-OR^9$, $-OC(O)R^9$, $-S(O)_nR^9$, wherein n = 0, 1 or 2,
$-SO_2NHR^9$, $-NR^9R^{10}$, $-NHC(O)R^9$, $-CO_2-R^9$ or
$-C(O)-N-R^9R^{10}$,
wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group, or

R^6, R^7 together form a 3-8-membered ring,

R^9, R^{10} independently of each other mean hydrogen, a C_1-C_4 alkyl group, which is unsubstituted or can optionally be up to quintuply fluorinated,
an unsubstituted C_2-C_4 alkenyl group, which can optionally be up to triply fluorinated,
an unsubstituted C_2-C_4 alkynyl group, which can optionally be singly fluorinated,
an unsubstituted C_3-C_6 cycloalkyl group,
an unsubstituted 5-6-membered aryl or heteroaryl ring, which can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl

ring, which can optionally be up to doubly substituted with fluorine, chlorine or trifluoromethyl, or

R^9, R^{10} together form a 3-8-membered ring.

16. The compounds as claimed in claims 1, 4, 8 and 12, wherein

X and Z mean a nitrogen residue,

Y means a carbon residue –C-R^8,

R^8 means a hydrogen,

R^1 means a phenyl, thiophen-2-yl, thiophen-3-yl, furan-2-yl, furan-3-yl, pyrid-3-yl or pyrid-4-yl ring, which is optionally singly to triply substituted,

wherein the substituents can be selected from the group halogen, -C_1-C_4 alkyl, which can be unsubstituted or optionally substituted,
-OR^6, -$OC(O)R^6$, -$S(O)_nR^6$, wherein n = 0, 1 or 2,
-SO_2NHR^6, -$SO_2NHC(O)R^6$, NR^6R^7, -$NHC(O)R^6$, -CN,
-CO_2-R^6, -C(O)-N-R^6R^7, -$C(O)R^6$ or -$C(OH)R^6R^7$,

R^2 means a hydrogen residue,

R^3 - R^5 independently of each other mean a hydrogen, halogen, cyano, or

- an OR^6, $OC(O)R^6$, $S(O)_nR^6$, wherein n = 0, 1 or 2, SO_2NHR^6, $SO_2NHC(O)R^6$, NR^6R^7, $NHC(O)R^6$, $CH_2NR^6R^7$, $CH_2NHC(O)R^6$, $C(OH)R^6R^7$, $C(O)R^6$, CO_2R^6 or $C(O)NR^6R^7$ group,

- an unsubstituted C_1-C_6 alkyl group, which can optionally be up to quintuply halogenated or else substituted with -CN or $-CO_2H$,
- an unsubstituted C_3-C_{10} cycloalkyl ring,
- an unsubstituted C_2-C_6 alkenyl group, which can optionally be up to triply halogenated or else substituted with –CN or $-CO_2H$,
- an unsubstituted C_2-C_6 alkynyl group, which can optionally be singly halogenated or else substituted with –CN or $-CO_2H$, and
- an unsubstituted 5-6-membered aryl or heteroaryl ring, which is optionally singly or multiply substituted, wherein the substituents can be selected from the group
  - -halogen,
  - $-C_1$-C_4 alkyl, which is unsubstituted and can optionally be up to quintuply halogenated or else substituted with –OH, -CN or $-CO_2H$,
  - $-OR^9$, $-OC(O)R^9$, $-S(O)_nR^9$, wherein n = 0, 1 or 2, $-SO_2NHR^9$, $-SO_2NHC(O)R^9$, NR^9R^{10}, $-NHC(O)R^9$, -CN, $-CO_2-R^9$, $-C(O)-N-R^9R^{10}$, $-C(O)R^9$ or $-C(OH)R^9R^{10}$,

wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group,

R^6, R^7 means a hydrogen,
a C_1-C_6 alkyl group, which can be unsubstituted or optionally up to quintuply halogenated,
a C_3-C_8 cycloalkyl group,
a 5-6-membered aryl or heteroaryl ring, which can optionally be singly or multiply substituted, wherein the substituents can be selected from the group

halogen,
cyano,
an unsubstituted C_3-C_8 cycloalkyl group,
R^9, $-OR^9$, $-OC(O)R^9$, $-S(O)_nR^9$, wherein n = 0, 1 or 2,
$-SO_2NHR^9$, $-NR^9R^{10}$, $-NHC(O)R^9$, $-CO_2-R^9$ or
$-C(O)-N-R^9R^{10}$,
wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group, or

R^6, R^7 together form a 3-8-membered ring,

R^9, R^{10} independently of each other mean hydrogen, a C_1-C_4 alkyl group, which is unsubstituted or can optionally be up to quintuply fluorinated,
an unsubstituted C_2-C_4 alkenyl group, which can optionally be up to triply fluorinated,
an unsubstituted C_2-C_4 alkynyl group, which can optionally be singly fluorinated,
an unsubstituted C_3-C_6 cycloalkyl group,
an unsubstituted 5-6-membered aryl or heteroaryl ring, which can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl ring, which can optionally be up to doubly substituted with fluorine, chlorine or trifluoromethyl, or

R^9, R^{10} together form a 3-8-membered ring.

17. The compounds as claimed in claims 1, 5, 9 and 13, wherein

X and Y mean a carbon residue $-C-R^8$,

Z means a nitrogen residue,

R^8 means a hydrogen,

R^1 means a phenyl, thiophen-2-yl, thiophen-3-yl, furan-2-yl, furan-3-yl, pyrid-3-yl or pyrid-4-yl ring, which is optionally singly to triply substituted,

wherein the substituents can be selected from the group halogen, -C_1-C_4 alkyl, which can be unsubstituted or optionally substituted,
-OR^6, -$OC(O)R^6$, -$S(O)_nR^6$, wherein n = 0, 1 or 2,
-SO_2NHR^6, -$SO_2NHC(O)R^6$, NR^6R^7, -$NHC(O)R^6$, -CN,
-CO_2-R^6, -C(O)-N-R^6R^7, -$C(O)R^6$ or -$C(OH)R^6R^7$,

R^2 means a hydrogen residue,

R^3 - R^5 independently of each other mean a hydrogen, halogen, cyano, or

- an OR^6, $OC(O)R^6$, $S(O)_nR^6$, wherein n = 0, 1 or 2, SO_2NHR^6, $SO_2NHC(O)R^6$, NR^6R^7, $NHC(O)R^6$, $CH_2NR^6R^7$, $CH_2NHC(O)R^6$, $C(OH)R^6R^7$, $C(O)R^6$, CO_2R^6 or $C(O)NR^6R^{7-}$ group,
- an unsubstituted C_1-C_6 alkyl group, which can optionally be up to quintuply halogenated or else substituted with -CN or -CO_2H,
- an unsubstituted C_3-C_{10} cycloalkyl ring,
- an unsubstituted C_2-C_6 alkenyl group, which can optionally be up to triply halogenated or else substituted with –CN or -CO_2H,
- an unsubstituted C_2-C_6 alkynyl group, which can optionally be singly halogenated or else substituted with –CN or -CO_2H and,

- an unsubstituted 5-6-membered aryl or heteroaryl ring, which is optionally singly or multiply substituted, wherein the substituents can be selected from the group
  -halogen,
  -C_1-C_4 alkyl, which is unsubstituted and can optionally be up to quintuply halogenated or else substituted with –OH, -CN or -CO_2H,
  -OR^9, -$OC(O)R^9$, -$S(O)_nR^9$, wherein n = 0, 1 or 2,
  -SO_2NHR^9, -$SO_2NHC(O)R^9$, NR^9R^{10}, -$NHC(O)R^9$,
  -CN, -CO_2-R^9, -C(O)-N-R^9R^{10}, -$C(O)R^9$ or
  -$C(OH)R^9R^{10}$,

wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group,

R^6, R^7 mean a hydrogen,
a C_1-C_6 alkyl group, which is unsubstituted or can optionally be up to quintuply halogenated,
a 5-6-membered aryl or heteroaryl ring, which can optionally be singly or multiply substituted, wherein the substituents can be selected from the group
  halogen,
  cyano,
  a C_3-C_8 cycloalkyl group,
  R^9, -OR^9, -$OC(O)R^9$, -$S(O)_nR^9$, wherein n = 0, 1 or 2,
  -SO_2NHR^9, - NR^9R^{10}, -$NHC(O)R^9$, -CO_2-R^9 or
  -C(O)-N-R^9R^{10},

wherein the 5-6-membered aryl or heteroaryl ring can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl group, or

R^6, R^7 together form a 3-8-membered ring,

R^9, R^{10} independently of each other mean hydrogen, a C_1-C_4 alkyl group, which is unsubstituted or can optionally be up to quintuply fluorinated,
an unsubstituted C_2-C_4 alkenyl group, which can optionally be up to triply fluorinated,
an unsubstituted C_2-C_4 alkynyl group, which can optionally be singly fluorinated,
an unsubstituted C_3-C_6 cycloalkyl group,
an unsubstituted 5-6-membered aryl or heteroaryl ring, which can for example, but not exclusively, be a phenyl, pyridinyl, pyrimidinyl, furanyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, pyrrolyl, pyrazolyl, imidazolyl, pyrazinyl, pyridazinyl, triazolyl or tetrazolyl ring, which can optionally be up to doubly substituted with fluorine, chlorine or trifluoromethyl, or

R^9, R^{10} together form a 3-8-membered ring.

18. The compounds as claimed in claims 1 - 17, selected from a group which contains the following compounds:

- 1-[1-(7-chloro-quinolin-4-yl)-piperidin-4-yl]-3-(4-methylsulfanyl-phenyl)-thiourea
- 1-[1-(7-chloro-quinolin-4-yl)-piperidin-4-yl]-3-phenyl-thiourea
- 1-(3-chloro-phenyl)-3-[1-(7-chloro-quinolin-4-yl)-piperidin-4-yl]-thiourea
- 1-(2-chloro-phenyl)-3-[1-(7-chloro-quinolin-4-yl)-piperidin-4-yl]-thiourea
- 1-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(4-methoxy-phenyl)-thiourea
- 1-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-3-p-tolyl-thiourea
- 1-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-3-o-tolyl-thiourea
- 1-(2-bromo-phenyl)-3-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-thiourea
- 1-(3-bromo-phenyl)-3-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-thiourea
- 1-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(3-methoxy-phenyl)-thiourea

- methyl 4-(3-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-thioureido)-benzoate
- 1-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(3-cyano-phenyl)-thiourea
- 1-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(4-cyano-phenyl)-thiourea
- 1-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(2-methylsulfanyl-phenyl)-thiourea
- 1-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(2,3-dichloro-phenyl)-thiourea
- 1-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(3-methylsulfanyl-phenyl)-thiourea
- methyl 3-(3-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-thioureido)-benzoate
- 1-(1-(7-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(2-trifluoromethoxy-phenyl)-thiourea
- 1-[1-(8-chloro-quinolin-4-yl)-piperidin-4-yl]-3-(4-methylsulfanyl-phenyl)-thiourea
- 1-[1-(8-chloro-quinolin-4-yl)-piperidin-4-yl]-3-phenyl-thiourea
- 1-(3-chloro-phenyl)-3-[1-(8-chloro-quinolin-4-yl)-piperidin-4-yl]-thiourea
- 1-(2-chloro-phenyl)-3-[1-(8-chloro-quinolin-4-yl)-piperidin-4-yl]-thiourea
- 1-(1-(8-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(4-methoxy-phenyl)-thiourea
- 1-(1-(8-chloro-quinolin-4-yl)-piperidin-4-yl)-3-p-tolyl-thiourea
- 1-(1-(8-chloro-quinolin-4-yl)-piperidin-4-yl)-3-o-tolyl-thiourea
- 1-(2-bromo-phenyl)-3-(1-(8-chloro-quinolin-4-yl)-piperidin-4-yl)-thiourea
- 1-(3-bromo-phenyl)-3-(1-(8-chloro-quinolin-4-yl)-piperidin-4-yl)-thiourea
- 1-(1-(8-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(3-methoxy-phenyl)-thiourea
- methyl 4-(3-(1-(8-chloro-quinolin-4-yl)-piperidin-4-yl)-thioureido)-benzoate
- 1-(1-(8-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(3-cyano-phenyl)-thiourea
- 1-(1-(8-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(4-cyano-phenyl)-thiourea
- 1-(1-(8-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(2-methylsulfanyl-phenyl)-thiourea
- 1-(1-(8-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(2,3-dichloro-phenyl)-thiourea
- 1-(1-(8-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(3-methylsulfanyl-phenyl)-thiourea
- methyl 3-(3-(1-(8-chloro-quinolin-4-yl)-piperidin-4-yl)-thioureido)-benzoate

- 1-(1-(8-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(2-trifluoromethoxy-phenyl)-thiourea
- 1-[1-(6-chloro-quinolin-4-yl)-piperidin-4-yl]-3-(4-methylsulfanyl-phenyl)-thiourea
- 1-[1-(6-chloro-quinolin-4-yl)-piperidin-4-yl]-3-phenyl-thiourea
- 1-(3-chloro-phenyl)-3-[1-(6-chloro-quinolin-4-yl)-piperidin-4-yl]-thiourea
- 1-(2-chloro-phenyl)-3-[1-(6-chloro-quinolin-4-yl)-piperidin-4-yl]-thiourea
- 1-(1-(6-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(4-methoxy-phenyl)-thiourea
- 1-(1-(6-chloro-quinolin-4-yl)-piperidin-4-yl)-3-p-tolyl-thiourea
- 1-(1-(6-chloro-quinolin-4-yl)-piperidin-4-yl)-3-o-tolyl-thiourea
- 1-(2-bromo-phenyl)-3-(1-(6-chloro-quinolin-4-yl)-piperidin-4-yl)-thiourea
- 1-(3-bromo-phenyl)-3-(1-(6-chloro-quinolin-4-yl)-piperidin-4-yl)-thiourea
- 1-(1-(6-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(3-methoxy-phenyl)-thiourea
- methyl 4-(3-(1-(6-chloro-quinolin-4-yl)-piperidin-4-yl)-thioureido)-benzoate
- 1-(1-(6-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(3-cyano-phenyl)-thiourea
- 1-(1-(6-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(4-cyano-phenyl)-thiourea
- 1-(1-(6-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(2-methylsulfanyl-phenyl)-thiourea
- 1-(1-(6-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(2,3-dichloro-phenyl)-thiourea
- 1-(1-(6-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(3-methylsulfanyl-phenyl)-thiourea
- methyl 3-(3-(1-(6-chloro-quinolin-4-yl)-piperidin-4-yl)-thioureido)-benzoate
- 1-(1-(6-chloro-quinolin-4-yl)-piperidin-4-yl)-3-(2-trifluoromethoxy-phenyl)-thiourea
- 1-[1-(6-bromo-phthalazin-1-yl)-piperidin-4-yl]-3-(4-methylsulfanyl-phenyl)-thiourea
- 1-[1-(6-bromo-phthalazin-1-yl)-piperidin-4-yl]-3-phenyl-thiourea
- 1-(3-chloro-phenyl)-3-[1-(6-bromo-phthalazin-1-yl)-piperidin-4-yl]-thiourea
- 1-(2-chloro-phenyl)-3-[1-(6-bromo-phthalazin-1-yl)-piperidin-4-yl]-thiourea
- 1-(1-(6-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-(4-methoxy-phenyl)-thiourea
- 1-(1-(6-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-p-tolyl-thiourea

- 1-(1-(6-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-o-tolyl-thiourea
- 1-(2-bromo-phenyl)-3-(1-(6-bromo-phthalazin-1-yl)-piperidin-4-yl)-thiourea
- 1-(3-bromo-phenyl)-3-(1-(6-bromo-phthalazin-1-yl)-piperidin-4-yl)-thiourea
- 1-(1-(6-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-(3-methoxy-phenyl)-thiourea
- methyl 4-(3-(1-(6-bromo-phthalazin-1-yl)-piperidin-4-yl)-thioureido)-benzoate
- 1-(1-(6-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-(3-cyano-phenyl)-thiourea
- 1-(1-(6-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-(4-cyano-phenyl)-thiourea
- 1-(1-(6-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-(2-methylsulfanyl-phenyl)-thiourea
- 1-(1-(6-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-(2,3-dichloro-phenyl)-thiourea
- 1-(1-(6-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-(3-methylsulfanyl-phenyl)-thiourea
- methyl 3-(3-(1-(6-bromo-phthalazin-1-yl)-piperidin-4-yl)-thioureido)-benzoate
- 1-(1-(6-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-(2-trifluoromethoxy-phenyl)-thiourea
- 1-[1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl]-3-(4-methylsulfanyl-phenyl)-thiourea
- 1-[1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl]-3-(4-methylsulfanyl-phenyl)-thiourea
- 1-[1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl]-3-phenyl-thiourea
- 1-(3-chloro-phenyl)-3-[1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl]-thiourea
- 1-(2-chloro-phenyl)-3-[1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl]-thiourea
- 1-(1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-(4-methoxy-phenyl)-thiourea
- 1-(1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-p-tolyl-thiourea
- 1-(1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-o-tolyl-thiourea
- 1-(2-bromo-phenyl)-3-(1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl)-thiourea
- 1-(3-bromo-phenyl)-3-(1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl)-thiourea

- 1-(1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-(3-methoxy-phenyl)-thiourea
- methyl 4-(3-(1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl)-thioureido)-benzoate
- 1-(1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-(3-cyano-phenyl)-thiourea
- 1-(1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-(4-cyano-phenyl)-thiourea
- 1-(1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-(2-methylsulfanyl-phenyl)-thiourea
- 1-(1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-(2,3-dichloro-phenyl)-thiourea
- 1-(1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-(3-methylsulfanyl-phenyl)-thiourea
- methyl 3-(3-(1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl)-thioureido)-benzoate
- 1-(1-(7-bromo-phthalazin-1-yl)-piperidin-4-yl)-3-(2-trifluoromethoxy-phenyl)-thiourea
- 1-[1-(7-chloro-quinazolin-4-yl)-piperidin-4-yl]-3-(4-methylsulfanyl-phenyl)-thiourea
- 1-[1-(7-chloro-quinazolin-4-yl)-piperidin-4-yl]-3-phenyl-thiourea
- 1-(3-chloro-phenyl)-3-[1-(7-chloro-quinazolin-4-yl)-piperidin-4-yl]-thiourea
- 1-(2-chloro-phenyl)-3-[1-(7-chloro-quinazolin-4-yl)-piperidin-4-yl]-thiourea
- 1-(1-(7-chloro-quinazolin-4-yl)-piperidin-4-yl)-3-(4-methoxy-phenyl)-thiourea
- 1-(1-(7-chloro-quinazolin-4-yl)-piperidin-4-yl)-3-p-tolyl-thiourea
- 1-(1-(7-chloro-quinazolin-4-yl)-piperidin-4-yl)-3-o-tolyl-thiourea
- 1-(2-bromo-phenyl)-3-(1-(7-chloro-quinazolin-4-yl)-piperidin-4-yl)-thiourea
- 1-(3-bromo-phenyl)-3-(1-(7-chloro-quinazolin-4-yl)-piperidin-4-yl)-thiourea
- 1-(1-(7-chloro-quinazolin-4-yl)-piperidin-4-yl)-3-(3-methoxy-phenyl)-thiourea
- methyl 4-(3-(1-(7-chloro-quinazolin-4-yl)-piperidin-4-yl)-thioureido)-benzoate
- 1-(1-(7-chloro-quinazolin-4-yl)-piperidin-4-yl)-3-(3-cyano-phenyl)-thiourea
- 1-(1-(7-chloro-quinazolin-4-yl)-piperidin-4-yl)-3-(4-cyano-phenyl)-thiourea

- 1-(1-(7-chloro-quinazolin-4-yl)-piperidin-4-yl)-3-(2-methylsulfanyl-phenyl)-thiourea
- 1-(1-(7-chloro-quinazolin-4-yl)-piperidin-4-yl)-3-(2,3-dichloro-phenyl)-thiourea
- 1-(1-(7-chloro-quinazolin-4-yl)-piperidin-4-yl)-3-(3-methylsulfanyl-phenyl)-thiourea
- methyl 3-(3-(1-(7-chloro-quinazolin-4-yl)-piperidin-4-yl)-thioureido)-benzoate
- 1-(1-(7-chloro-quinazolin-4-yl)-piperidin-4-yl)-3-(2-trifluoromethoxy-phenyl)-thiourea
- 1-(1-isoquinolin-1-yl-piperidin-4-yl)-3-(4-methylsulfanyl-phenyl)-thiourea
- 1-(1-isoquinolin-1-yl-piperidin-4-yl)-3-phenyl-thiourea
- 1-(3-chloro-phenyl)-3-(1-isoquinolin-1-yl-piperidin-4-yl)-thiourea
- 1-(2-chloro-phenyl)-3-(1-isoquinolin-1-yl-piperidin-4-yl)-thiourea
- 1-(1-isoquinolin-1-yl-piperidin-4-yl)-3-(4-methoxy-phenyl)-thiourea
- 1-(1-isoquinolin-1-yl-piperidin-4-yl)-3-p-tolyl-thiourea
- 1-(1-isoquinolin-1-yl-piperidin-4-yl)-3-o-tolyl-thiourea
- 1-(2-bromo-phenyl)-3-(1-isoquinolin-1-yl-piperidin-4-yl)-thiourea
- 1-(3-bromo-phenyl)-3-(1-isoquinolin-1-yl-piperidin-4-yl)-thiourea
- 1-(1-isoquinolin-1-yl-piperidin-4-yl)-3-(3-methoxy-phenyl)-thiourea
- methyl 4-(3-(1-isoquinolin-1-yl-piperidin-4-yl)-thioureido)-benzoate
- 1-(1-isoquinolin-1-yl-piperidin-4-yl)-3-(3-cyano-phenyl)-thiourea
- 1-(1-isoquinolin-1-yl-piperidin-4-yl)-3-(4-cyano-phenyl)-thiourea
- 1-(1-isoquinolin-1-yl-piperidin-4-yl)-3-(2-methylsulfanyl-phenyl)-thiourea
- 1-(1-isoquinolin-1-yl-piperidin-4-yl)-3-(2,3-dichloro-phenyl)-thiourea
- 1-(1-isoquinolin-1-yl-piperidin-4-yl)-3-(3-methylsulfanyl-phenyl)-thiourea
- methyl 3-(3-(1-isoquinolin-1-yl-piperidin-4-yl)-thioureido)-benzoate
- 1-(1-isoquinolin-1-yl-piperidin-4-yl)-3-(2-trifluoromethoxy-phenyl)-thiourea

19. A use of the compounds as claimed in claims 1 - 18 for the production of drugs which contain at least one of the compounds of the formula I.

20. A drug as claimed in claim 19 with suitable formulation and carrier substances.

21. The use of the drug as claimed in claim 19 and 20, characterized in that the drug is used for the treatment and prophylaxis of diseases.

22. The use as claimed in claim 21, for the treatment and prophylaxis of diseases which are connected with the EP_2 receptor.

23. The use as claimed in claim 21 for the treatment and prophylaxis of fertility disorders.

24. The use as claimed in claim 21 for the treatment and prophylaxis of menstrual problems.

25. The use as claimed in claim 21 for the treatment and prophylaxis of endometriosis.

26. The use of the compounds as claimed in claims 1 - 18 for the modulation of the EP_2 receptor.

27. The use as claimed in claim 21 for the treatment and prophylaxis of pain.

28. The use of the compounds as claimed in claims 1 - 18 and of the drugs as claimed in claim 19 and 20 for fertility control.

29. The use as claimed in claim 21 for the treatment and prophylaxis of osteoporosis.

30. The use as claimed in claim 21 for the treatment and prophylaxis of cancer.

31. The use of the compounds of the general formula I, as claimed in claims 1-18, in the form of a pharmaceutical preparation for enteral, parenteral, vaginal and oral administration.

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2007/008082

A. CLASSIFICATION OF SUBJECT MATTER
INV. C07D401/04 A61K31/4709 A61K31/4725 A61K31/502 A61K31/517
A61P15/00

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 A61K

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

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 03/040126 A (ALLERGAN INC [US]) 15 May 2003 (2003-05-15) page 20, line 13 - page 22, line 1; claims	1-31
A	WOS J A, LUNDY M W: "Patent developments in anabolic agents for treatment of bone diseases" EXPERT OPINION ON THERAPEUTIC PATENTS, vol. 13, no. 8, 2003, pages 1141-1156, XP002420166 page 1149 - page 1150; figure 7; compounds 34-38	1-31
A	DE 25 30 894 A1 (PFIZER) 5 February 1976 (1976-02-05) page 1; claims 1-8,30; examples 16,19,41,43	1-31

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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 document but published on or after the international filing date

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

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

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

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

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

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

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
10 October 2007	18/10/2007

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Hanisch, Inken

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2007/008082

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 1 382 603 A1 (EISAI CO LTD [JP]) 21 January 2004 (2004-01-21) claims 1,12,15,23,25; examples 331,1033	1-31
A	WO 2004/024710 A (GLAXO GROUP LTD [GB]; MACDONALD GREGOR JAMES [GB]; MOSS STEPHEN FREDER) 25 March 2004 (2004-03-25) Ansprüche 1,4,5,10; Tabelle 1	1-31

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2007/008082

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

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

Although claims 26,28 and 31 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.

2. [ ] Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

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

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

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

1. [ ] As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. [ ] As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. [ ] As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. [ ] No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

[ ] The additional search fees were accompanied by the applicant's protest.

[ ] No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2007/008082

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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