SUBSTITUTED OXINDOLE DERIVATIVES AND THEIR USE AS VASOPRESSIN RECEPTOR LIGANDS

The present invention relates to novel substituted oxindole derivatives, to medicaments comprising them and to their use for treating diseases.

Vasopressin is an endogenous hormone which exerts widely diverse effects on organs and tissues. It is suspected that the vasopressin system is involved in various pathological states such as, for example, heart failure and high blood pressure. At present three receptors (V1a, V1b or V3 and V2) via which vasopressin mediates its numerous effects are known. Antagonists of these receptors are therefore being investigated as possible novel therapeutic approaches to the treatment of diseases (M. Thibonnier, Exp.Opin. Invest. Drugs 1998, 7(5), 729-740).

The present application describes novel substituted oxindoles carrying an arylsulphonyl group in position 1. 1-Phenylsulphonyl-1,3-dihydro-2*H*-indol-2-ones have previously been described as ligands of vasopressin receptors. WO 93/15051, WO95/18105, WO 98/25901, WO 01/55130, WO 01/55134, WO 01/64668 and WO 01/98295 describe derivatives derived from the oxindole skeleton and having arylsulphonyl groups in position 1. These compounds differ essentially in the substitution in position 3.

In particular, WO 93/15051 and WO 98/25901 describe 1-phenylsulphonyl-1,3-dihydro-2*H*-indol-2-ones in which the oxindole structure is substituted in position 3 by two alkyl radicals which may also together form a cycloalkyl radical (spiro linkage) as ligands of vasopressin receptors. Alternatively, the spiro ring may comprise heteroatoms, such as oxygen and nitrogen (optionally with substituents).

WO 95/18105 describes 1-phenylsulphonyl-1,3-dihydro-2H-indol-2-ones having a nitrogen atom in position 3 as ligands of vasopressin receptors. In addition, radicals which are selected from the group consisting of alkyl, cycloalkyl, phenyl and benzyl are attached in position 3 (in each case optionally with substituents).

WO 03/008407 describes 1-phenylsulphonyloxindoles in which pyridylpiperazines are attached via an oxycarbonyl group to the oxindole in position 3.

WO 2005/030755 describes as Example 108, the carbamate compound 4-(1-

methylpiperidin-4-yl)piperazine-1-carboxylic acid 5-cyano-1-(2,4-dimethoxy-phenylsulphonyl)-3-(2-methoxypyridin-3-yl)-2-oxo-2,3-dihydro-1H-indol-3-yl ester (according to IUPAC nomenclature: 5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-methoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl 4-(1-methylpiperidin-4-yl)piperazine-1-carboxylate).

WO 06/005609 describes the 2-ethoxyphenyl urea compounds *N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxyphenyl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-methylpiperidin-4-yl)piperazine-1-carboxamide (as Example 119) and *N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxyphenyl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-methylpiperazin-1-yl)piperidine-1-carboxamide (as Example 128).

In addition to the binding affinity to the vasopressin V1b receptor, further properties may be advantageous in the treatment and/or prophylaxis of vasopressin-dependent disorders, such as, for example:

1.) a selectivity for the vasopressin V1b receptor over the vasopressin V1a receptor, i.e. the quotient of the binding affinity to the V1a receptor (Ki(V1a) (determined in the unit "nanomolar (nM)") and the binding affinity to the V1b receptor (Ki(V1b)) (determined in the unit "nanomolar (nM)"). The greater the quotient Ki(V1a)/Ki(V1b), the greater the V1b selectivity;

2.) a selectivity for the vasopressin V1b receptor over the vasopressin V2 receptor, i.e. the quotient of the binding affinity to the V2 receptor (Ki(V2) (determined in the unit "nanomolar (nM)") and the binding affinity to the V1b receptor (Ki(V1b)) (determined in the unit "nanomolar (nM)"). The greater the quotient Ki(V2)/Ki(V1b), the greater the V1b selectivity;

3.) a selectivity for the vasopressin V1b receptor over the oxytocin OT receptor, i.e. the quotient of the binding affinity to the OT receptor (Ki(OT) (determined in the unit "nanomolar (nM)") and the binding affinity to the V1b receptor (Ki(V1b)) (determined in the unit "nanomolar (nM)"). The greater the quotient Ki(OT)/Ki(V1b), the greater the V1b selectivity;

4.) the metabolic stability, determined, for example, using the half-life determined in vitro in liver microsomes of various species (for example rat or human);

5.) only minor, if any, inhibition of cytochrom P450 (CYP) enzymes: cytochrom P450 (CYP) is the name for a superfamily of haem proteins having enzymatic activity (oxidases). They are also of particular importance for the degradation (metabolism) of foreign substances, such as pharmaceutics or xenobiotics, in mammalian organisms. The most important representatives of the types and subtypes of CYP in the human organism are: CYP 1A2, CYP 2C9, CYP 2D6 and CYP 3A4. When CYP 3A4 inhibitors (for example grapefruit juice, cimetidine, erythromycin) and medicaments which are degraded via this enzyme system and which thus compete for the same binding site at the enzyme are administered simultaneously, their degradation may be slowed down, and actions and side-effects of the medicament administered may be enhanced in an unwanted manner;

6.) suitable solubility in water (in mg/ml);

7.) suitable pharmacokinetics (temporal profile of the concentration of the compound according to the invention in the plasma or in tissues, for example brain). Pharmacokinetics may be described by the following parameters: half-life, distribution volume, plasma clearance, AUC ("area under the curve", area under the concentration-time curve), oral bioavailability, the brain/plasma ratio;

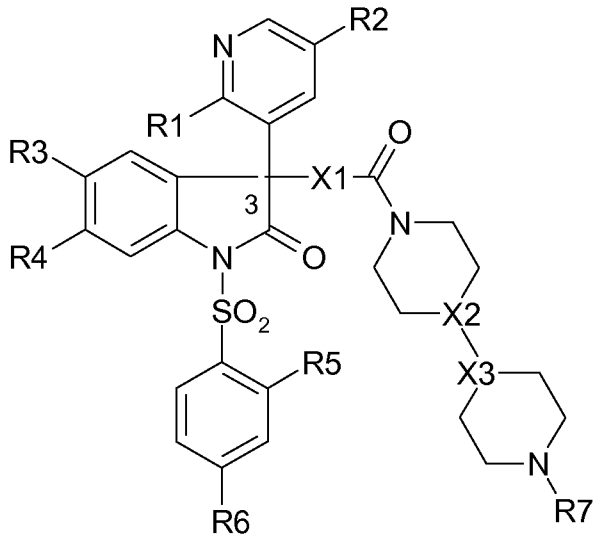
8.) a certain proportion of the active substance is present attached to plasma proteins (drug/plasma protein binding (PPB) value);

9.) no or only minor blockage of the hERG channel: compounds which block the hERG channel may prolong the QT interval, thus leading to serious irregularities of pulse (for example “torsade de pointes”). Using a displacement assay described in the literature with radioactively labelled dofetilide (G.J. Diaz et al., Journal of Pharmacological and Toxicological Methods, 50 (2004), 187-199), it is possible to determine the potential of compounds of blocking the hERG channels. The lower the IC50 in this “dofetilide assay”, the more likely a potent hERG blockage. In addition, the blockage of the hERG channel may be measured by electrophysical experiments using cells transfected with the hERG channel, by “whole-cell patch clamping” (G.J. Diaz et al., Journal of Pharmacological and Toxicological Methods, 50 (2004), 187-199).

It is an object of the present invention to provide a compound with high and selective activity, preferably in particular for the vasopressin V1b receptor, for the treatment or

prophylaxis of various vasopressin-dependent diseases. In addition, the substance according to the invention should have one or more of the advantages 1.) to 9.) mentioned above, in particular a suitable selectivity for the V1b receptor over the V1a receptor.

This object is achieved by compounds of the general formula (I)



(I)

in which

R1 is ethoxy;

R2 is hydrogen;

R3 is cyano;

R4 is hydrogen;

R5 is hydrogen, methoxy or ethoxy;

R6 is hydrogen or methoxy;

R7 is hydrogen, methyl, ethyl, n-propyl or isopropyl;

X1 is -NH-;

X2 is N or CH;

X3 is N or CH;

where **X2** and **X3** are not simultaneously N (that is to say are a nitrogen atom);
and by the pharmaceutically acceptable salts, tautomeric forms, and prodrugs thereof.

Accordingly, the present invention relates to compounds of the general formula (I) (also

"compounds (I)" below), including the tautomeric forms thereof, and the pharmaceutically acceptable salts of the compounds (I) and the prodrugs of the compounds (I).

A preferred subject-matter of the invention are compounds of the general formula (I) in which

R1 is ethoxy;
R2 is hydrogen;
R3 is cyano;
R4 is hydrogen;
R5 is hydrogen or methoxy, in particular methoxy;
R6 is hydrogen or methoxy, in particular methoxy;
R7 is hydrogen, methyl, ethyl, n-propyl or isopropyl;
X1 is -NH-;
X2 is N or CH;
X3 is N or CH;
where **X2** and **X3** are not simultaneously a nitrogen atom;
and the pharmaceutically acceptable salts, tautomeric forms, and prodrugs thereof.

A particularly preferred subject-matter of the invention are compounds of the general formula (I) in which

R1 is ethoxy;
R2 is hydrogen;
R3 is cyano;
R4 is hydrogen;
R5 is hydrogen or methoxy, in particular methoxy;
R6 is hydrogen or methoxy, in particular methoxy, in particular methyl or ethyl;
R7 is hydrogen, methyl or ethyl;
X1 is -NH-;
X2 is N;
X3 is CH;
and the pharmaceutically acceptable salts, tautomeric forms, and prodrugs thereof.

A further particularly preferred subject-matter of the invention are compounds of the general formula (I) in which

R1 is ethoxy;
R2 is hydrogen;

R3 is cyano;
R4 is hydrogen;
R5 is hydrogen or methoxy, in particular methoxy;
R6 is hydrogen or methoxy, in particular methoxy;
R7 is hydrogen, methyl or ethyl, in particular methyl or ethyl;
X1 is -NH-;
X2 is CH;
X3 is N;
and the pharmaceutically acceptable salts, tautomeric forms, and prodrugs thereof.

A further particularly preferred subject-matter of the invention are compounds of the general formula (I) in which
R1 is ethoxy;
R2 is hydrogen;
R3 is cyano;
R4 is hydrogen;
R5 is hydrogen or methoxy, in particular methoxy;
R6 is hydrogen or methoxy, in particular methoxy;
R7 is hydrogen, methyl or ethyl, in particular methyl or ethyl;
X1 is -NH-;
X2 is CH;
X3 is CH;
and the pharmaceutically acceptable salts, tautomeric forms, and prodrugs thereof.

A further particularly preferred subject-matter of the invention are compounds of the general formula (I) in which
R1 is ethoxy;
R2 is hydrogen;
R3 is cyano;
R4 is hydrogen;
R5 is methoxy;
R6 is methoxy;
R7 is methyl or ethyl;
X1 is -NH-;
X2 is CH and **X3** is N; or
X2 is N and **X3** is CH;

and the pharmaceutically acceptable salts, tautomeric forms, and prodrugs thereof.

Examples of preferred embodiments of the present invention are compounds according to the general formula (I), and the pharmaceutically acceptable salts, tautomeric forms, and prodrugs thereof, in which

R1 is ethoxy,

R2 is hydrogen,

R3 is cyano,

R4 is hydrogen,

X1 is NH,

and in which the radicals X2, X3, R5, R6 and R7 have in each case the meanings listed in one of the rows of Table 1 below.

Table 1:

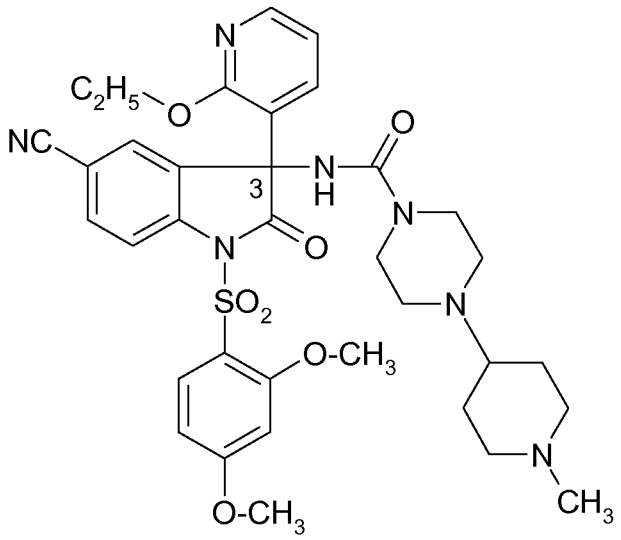
Example No.	**X2**	**X3**	**R5**	**R6**	**R7**
1	N	CH	methoxy	methoxy	methyl
2	N	CH	methoxy	H	methyl
3	N	CH	ethoxy	H	methyl
4	N	CH	H	H	methyl
5	N	CH	H	methoxy	methyl
6	N	CH	ethoxy	methoxy	methyl
7	N	CH	methoxy	methoxy	ethyl
8	N	CH	methoxy	H	ethyl
9	N	CH	ethoxy	H	ethyl
10	N	CH	H	H	ethyl
11	N	CH	H	methoxy	ethyl
12	N	CH	ethoxy	methoxy	ethyl
13	N	CH	methoxy	methoxy	n-propyl
14	N	CH	methoxy	H	n-propyl
15	N	CH	ethoxy	H	n-propyl
16	N	CH	H	H	n-propyl
17	N	CH	H	methoxy	n-propyl
18	N	CH	ethoxy	methoxy	n-propyl
19	N	CH	methoxy	methoxy	isopropyl

Example No.	X2	X3	R5	R6	R7
20	N	CH	methoxy	H	isopropyl
21	N	CH	ethoxy	H	isopropyl
22	N	CH	H	H	isopropyl
23	N	CH	H	methoxy	isopropyl
24	N	CH	ethoxy	methoxy	isopropyl
25	N	CH	methoxy	methoxy	H
26	N	CH	methoxy	H	H
27	N	CH	ethoxy	H	H
28	N	CH	H	H	H
29	N	CH	H	methoxy	H
30	N	CH	ethoxy	methoxy	H
31	CH	N	methoxy	methoxy	methyl
32	CH	N	methoxy	H	methyl
33	CH	N	ethoxy	H	methyl
34	CH	N	H	H	methyl
35	CH	N	H	methoxy	methyl
36	CH	N	ethoxy	methoxy	methyl
37	CH	N	methoxy	methoxy	ethyl
38	CH	N	methoxy	H	ethyl
39	CH	N	ethoxy	H	ethyl
40	CH	N	H	H	ethyl
41	CH	N	H	methoxy	ethyl
42	CH	N	ethoxy	methoxy	ethyl
43	CH	N	methoxy	methoxy	n-propyl
44	CH	N	methoxy	H	n-propyl
45	CH	N	ethoxy	H	n-propyl
46	CH	N	H	H	n-propyl
47	CH	N	H	methoxy	n-propyl
48	CH	N	ethoxy	methoxy	n-propyl
49	CH	N	methoxy	methoxy	isopropyl
50	CH	N	methoxy	H	isopropyl
51	CH	N	ethoxy	H	isopropyl

Example No.	X2	X3	R5	R6	R7
52	CH	N	H	H	isopropyl
53	CH	N	H	methoxy	isopropyl
54	CH	N	ethoxy	methoxy	isopropyl
55	CH	N	methoxy	methoxy	H
56	CH	N	methoxy	H	H
57	CH	N	ethoxy	H	H
58	CH	N	H	H	H
59	CH	N	H	methoxy	H
60	CH	N	ethoxy	methoxy	H
61	CH	CH	methoxy	methoxy	methyl
62	CH	CH	methoxy	H	methyl
63	CH	CH	ethoxy	H	methyl
64	CH	CH	H	H	methyl
65	CH	CH	H	methoxy	methyl
66	CH	CH	ethoxy	methoxy	methyl
67	CH	CH	methoxy	methoxy	ethyl
68	CH	CH	methoxy	H	ethyl
69	CH	CH	ethoxy	H	ethyl
70	CH	CH	H	H	ethyl
71	CH	CH	H	methoxy	ethyl
72	CH	CH	ethoxy	methoxy	ethyl
73	CH	CH	methoxy	methoxy	n-propyl
74	CH	CH	methoxy	H	n-propyl
75	CH	CH	ethoxy	H	n-propyl
76	CH	CH	H	H	n-propyl
77	CH	CH	H	methoxy	n-propyl
78	CH	CH	ethoxy	methoxy	n-propyl
79	CH	CH	methoxy	methoxy	isopropyl
80	CH	CH	methoxy	H	isopropyl
81	CH	CH	ethoxy	H	isopropyl
82	CH	CH	H	H	isopropyl
83	CH	CH	H	methoxy	isopropyl

Example No.	X2	X3	R5	R6	R7
84	CH	CH	ethoxy	methoxy	isopropyl
85	CH	CH	methoxy	methoxy	H
86	CH	CH	methoxy	H	H
87	CH	CH	ethoxy	H	H
88	CH	CH	H	H	H
89	CH	CH	H	methoxy	H
90	CH	CH	ethoxy	methoxy	H

In particular, the present invention relates to the following compound of the formula Ia (which corresponds to compound Example 1 of table 1)



(Ia)

and also the pharmaceutically acceptable salts, tautomeric forms, and prodrugs of Ia.

In particular, the present invention also relates to the compound Example 7 of table 1 and also to the pharmaceutically acceptable salts, tautomeric forms, and prodrugs thereof.

In particular, the present invention also relates to the compound Example 31 of table 1 and also to the pharmaceutically acceptable salts, tautomeric forms, and prodrugs thereof.

In particular, the present invention also relates to the compound Example 37 of table 1 and also to the pharmaceutically acceptable salts, tautomeric forms, and prodrugs thereof.

The compounds (I) or (Ia) of the invention have a centre of chirality in position 3 of the 2-oxindole ring. The compounds according to the invention of the general formula (I) or (Ia) may therefore be present as a 1:1 mixture of enantiomers (racemate), or as a non-racemic mixture of enantiomers in which one of the two enantiomers, i.e. either the (laevorotatory) enantiomer which turns the plane of polarization of linear polarized light to the left ((-)-enantiomer below), or the (dextrorotatory) enantiomer which turns the plane of polarization of linear polarized light to the right ((+)-enantiomer below), is enriched, or as essentially enantiomerically pure compounds (enantiomeric excess ee > 90%), i.e. as essentially enantiomerically pure (-)-enantiomer or (+)-enantiomer. Preferably, the compounds are present as essentially enantiomerically pure compounds. Particular preference is given to compounds which are essentially enantiomerically pure (ee > 90%).

The invention therefore provides the pure enantiomers as well as their mixtures, for example, mixtures in which one enantiomer is present in enriched form, but also the racemates. The invention also provides the pharmaceutically acceptable salts, the tautomers and the prodrugs of the pure enantiomers of (I) or (Ia), and the enantiomer mixtures in the form of the pharmaceutically acceptable salts, the tautomers and the prodrugs of (I) or (Ia).

Preferred embodiments of the invention are compounds of the general formula (I) or (Ia), as defined above, which are characterized in that they are present in optically active form and that they are in each case the enantiomer, which rotates the plane of polarization of polarized light to the left, (i.e. the laevorotatory enantiomer) of the compound of the general formula (I) in question in the form of the free base, or a pharmaceutically acceptable salt, a tautomeric form or a prodrug thereof. Below, the laevorotatory enantiomers of the compounds (I) or (Ia) are also referred to as (-)-enantiomers.

Preferred embodiments of the invention are those compounds of the general formula (I) or (Ia), as defined above, which are characterized in that they are present in optically active form, where the absolute configuration of the chiral C-3 ring carbon atom of these compounds corresponds to the absolute configuration at C-3 of the (-)-enantiomer of the compound of the formula (Ia) in the form of the free base. This configuration is also referred to below as the "preferred configuration". X-Ray structure analyses have shown that the (-)-enantiomer of the compounds of the formula (Ia) has S configuration with respect to the centre of asymmetry at the carbon atom of position 3 of the oxindole ring.

According to the invention, preference is given to compounds of the general formula (I) or (Ia), tautomers thereof, pharmaceutically acceptable salts thereof and prodrugs thereof, as defined above, in which the corresponding (-)-enantiomer is present in an optical purity (enantiomeric excess, ee) of greater than 50%.

According to the invention, preference is given to compounds of the general formula (I) or (Ia), tautomers thereof, pharmaceutically acceptable salts thereof and prodrugs thereof, as defined above, in which the enantiomer having the preferred absolute configuration at the C-3 ring carbon atom is present in an optical purity (enantiomeric excess, ee) of greater than 50%.

According to the invention, preference is given to compounds of the general formula (I) or (Ia), tautomers thereof, pharmaceutically acceptable salts thereof and prodrugs thereof, as defined above, in which the corresponding (-)-enantiomer is present in an optical purity (enantiomeric excess, ee) of greater than 90%.

According to the invention, preference is given to compounds of the general formula (I) or (Ia), tautomers thereof, pharmaceutically acceptable salts thereof and prodrugs thereof, as defined above, in which the enantiomer having the preferred absolute configuration at the C-3 ring carbon atom is present in an optical purity (enantiomeric excess, ee) of greater than 90%.

Likewise preferred embodiments of the invention are compounds of the general formula (I) or (Ia) as defined above, which are characterized in that they are present in optically inactive form, that is to say in the form of the racemate, or in the form of a pharmaceutically acceptable salt, a tautomeric form or a prodrug of the racemate.

A further subject-matter of the present invention relates to medicaments comprising at least one compound of the general formula (I) or (Ia) and/or a pharmaceutically acceptable salt or a prodrug thereof as defined above.

A further subject-matter of the present invention relates to compounds of the general formula (I) or (Ia) and/or a pharmaceutically acceptable salt or a prodrug thereof as defined above for use as a medicament.

A further subject-matter of the present invention relates to the compounds of the formula (I) or (Ia) and/or a pharmaceutically acceptable salt or a prodrug thereof as defined above for use in therapy or prophylaxis of a disease, in particular a vasopressin-dependent disease or a disease mentioned herein.

A further subject-matter of the present invention relates to the use of at least one compound of the general formula (I) or (Ia) and/or a pharmaceutically acceptable salt or a prodrug thereof as defined above for the treatment and/or prophylaxis of at least one vasopressin-dependent disease and/or for the manufacture of a medicament for the treatment and/or a prophylaxis of at least one vasopressin-dependent disease. Vasopressin-dependent diseases are those in which the progression of the disease depends at least in part on vasopressin, i.e. diseases where the vasopressin level, which may contribute directly or indirectly to the disease picture, is elevated.

The present invention also relates to the use of the compounds (I) or (Ia) according to the invention and/or a pharmaceutically acceptable salt or a prodrug thereof for the treatment and/or prophylaxis of diseases in which the progression of the disease depends at least in part on vasopressin, i.e. diseases where the vasopressin level, which may contribute directly or indirectly to the disease picture, is elevated. The present invention also relates to the use of the compounds (I) or (Ia) according to the invention and/or a pharmaceutically acceptable salt or a prodrug thereof for preparing a medicament for the treatment and/or prophylaxis of such a disease.

The present invention relates in particular to the use of at least one compound of the general formula (I) or (Ia) and/or a pharmaceutically acceptable salt or a prodrug thereof as defined above for the treatment and/or prophylaxis of at least one disorder selected from the group consisting of diabetes, in particular diabetes insipidus, insulin resistance, nocturnal enuresis, incontinence, diseases in which blood coagulation disorders occur, and/or for delaying micturition and the use thereof for the manufacture of a medicament for the treatment and/or prophylaxis of at least one of said diseases.

The present invention relates in particular to the use of at least one compound of the general formula (I) or (Ia) and/or a pharmaceutically acceptable salt or a prodrug thereof as defined above for the treatment and/or prophylaxis of at least one disorder selected from the group consisting of hypertension, pulmonary hypertension, heart failure,

myocardial infarction, coronary spasm, unstable angina, PTCA (percutaneous transluminal coronary angioplasty), ischemias of the heart, disorders of the renal system, edemas, renal vasospasm, necrosis of the renal cortex, hyponatremia, hypokalemia, Schwartz-Bartter syndrome, disorders of the gastrointestinal tract, gastritic vasospasm, hepatocirrhosis, gastric and intestinal ulcer, emesis, emesis occurring during chemotherapy, and travel sickness, and the use thereof for the manufacture of a medicament for the treatment and/or prophylaxis of at least one of said diseases.

The compounds (I) or (Ia) of the invention, their salts, their tautomers and their prodrugs can also be used for the treatment of various vasopressin-dependent complaints which exhibit central nervous causes or alterations in the HPA axis (hypothalamic pituitary adrenal axis), for example for affective disorders such as depressive disorders and bipolar disorders. These include for example dythymic disorders, phobias, post-traumatic stress disorders, general anxiety disorders, panic disorders, seasonal depressions and sleep disorders.

The compounds (I) or (Ia) of the invention, their salts, their tautomers and their prodrugs can likewise be employed for treatment in cases of anxiety disorders and stress-dependent anxiety disorders such as, for example, generalized anxiety disorders, phobias, post-traumatic anxiety disorders, panic anxiety disorders, obsessive-compulsive anxiety disorders, acute stress-dependent anxiety disorders and social phobia. The compounds of the invention can further be employed also for the treatment of memory impairments, Alzheimer's disease, psychoses, psychotic disorders, sleep disorders and/or Cushing's syndrome, and all stress-dependent diseases.

A further subject-matter of the invention relates to the use of at least one compound of the general formula (I) or (Ia) and/or a pharmaceutically acceptable salt or a prodrug thereof as defined above for the treatment of affective disorders and/or for the manufacture of a medicament for the treatment of affective disorders.

A further subject-matter of the invention relates to the use of at least one compound of the general formula (I) or (Ia) and/or a pharmaceutically acceptable salt or a prodrug thereof as defined above for the treatment of anxiety disorders and/or stress-dependent anxiety disorders and/or for the manufacture of a medicament for the treatment of anxiety disorders and/or stress-dependent anxiety disorders.

A further subject-matter of the invention relates to the use of at least one compound of the general formula (I) or (Ia) and/or a pharmaceutically acceptable salt or a prodrug thereof as defined above for the treatment of memory impairments and/or Alzheimer's disease and/or for the manufacture of a medicament for the treatment of memory impairments and/or Alzheimer's disease.

A further subject-matter of the invention relates to the use of at least one compound of the general formula (I) or (Ia) and/or a pharmaceutically acceptable salt or a prodrug thereof as defined above for the treatment of psychoses and/or psychotic disorders and/or for the manufacture of a medicament for the treatment of psychoses and/or psychotic disorders.

A further subject-matter of the invention relates to the use of at least one compound of the general formula (I) or (Ia) and/or a pharmaceutically acceptable salt or a prodrug thereof as defined above for the treatment of Cushing's syndrome or other stress-dependent diseases and/or for the manufacture of a medicament for the treatment of Cushing's syndrome or other stress-dependent diseases.

A further subject-matter of the invention relates to the use of at least one compound of the general formula (I) or (Ia) and/or a pharmaceutically acceptable salt or a prodrug thereof as defined above for the treatment of sleep disorders and/or for the manufacture of a medicament for the treatment of sleep disorders.

A further subject-matter of the invention relates to the use of at least one compound of the general formula (I) or (Ia) and/or a pharmaceutically acceptable salt or a prodrug thereof as defined above for the treatment of depressive disorders and/or for the manufacture of a medicament for the treatment of depressive disorders.

A further subject-matter of the invention relates to the use of at least one compound of the general formula (I) or (Ia) and/or a pharmaceutically acceptable salt or a prodrug thereof as defined above for the treatment of childhood onset mood disorders and/or for the manufacture of a medicament for the treatment of childhood onset mood disorders. The term "childhood onset mood disorders" is understood to mean mood disorders and depressions which begin as early as childhood.

A further subject-matter of the invention relates to the use of at least one compound of the general formula (I) or (Ia) and/or a pharmaceutically acceptable salt or a prodrug thereof

as defined above for the treatment of vasomotor symptoms and/or thermoregulatory dysfunctions, such as, for example, the "hot flush" symptom.

A further subject-matter of the invention relates to the use of at least one compound of the general formula (I) or (Ia) and/or a pharmaceutically acceptable salt or a prodrug thereof as defined above for the treatment and/or prophylaxis of drug dependencies, medicament dependencies and/or dependencies mediated by other factors, for the treatment and/or prophylaxis of stress caused by the withdrawal of one or more factors mediating the dependency and/or for the treatment and/or prophylaxis of stress-induced relapses into the drug dependencies, medicament dependencies and/or dependencies mediated by other factors.

A further subject-matter of the invention relates to the use of at least one compound of the general formula (I) or (Ia) and/or a pharmaceutically acceptable salt or a prodrug thereof as defined above for the treatment and/or prophylaxis of schizophrenia and/or psychosis.

A further subject-matter of the invention relates to a method for the treatment and/or prophylaxis of at least one disorder selected from the group consisting of diabetes, in particular diabetes insipidus, insulin resistance, nocturnal enuresis, incontinence, diseases in which blood coagulation disorders occur, and for delaying micturition in a patient, characterized in that an effective amount of at least one compound of the general formula (I) or (Ia) and/or a pharmaceutically acceptable salt or a prodrug thereof is administered to the patient.

A further subject-matter of the invention relates to a method for the treatment and/or prophylaxis of at least one disorder selected from the group consisting of hypertension, pulmonary hypertension, heart failure, myocardial infarction, coronary spasm, unstable angina, PTCA (percutaneous transluminal coronary angioplasty), ischemias of the heart, disorders of the renal system, edemas, renal vasospasm, necrosis of the renal cortex, hyponatremia, hypokalemia, Schwartz-Bartter syndrome, disorders of the gastrointestinal tract, gastritic vasospasm, hepatocirrhosis, gastric and intestinal ulcer, emesis, emesis occurring during chemotherapy, and travel sickness in a patient, characterized in that an effective amount of at least one compound of the general formula (I) or (Ia) and/or a pharmaceutically acceptable salt or a prodrug thereof is administered to the patient.

A further subject-matter of the invention relates to a method for the treatment and/or

prophylaxis of affective disorders in a patient, characterized in that an effective amount of at least one compound of the general formula (I) or (Ia) and/or a pharmaceutically acceptable salt or a prodrug thereof is administered to the patient.

A further subject-matter of the invention relates to a method for the treatment of anxiety disorders and/or stress-dependent anxiety disorders in a patient, characterized in that an effective amount of at least one compound of the general formula (I) or (Ia) and/or a pharmaceutically acceptable salt or a prodrug thereof is administered to the patient.

A further subject-matter of the invention relates to a method for the treatment of memory impairments and/or Alzheimer's disease in a patient, characterized in that an effective amount of at least one compound of the general formula (I) or (Ia) and/or a pharmaceutically acceptable salt or a prodrug thereof is administered to the patient.

A further subject-matter of the invention relates to a method for the treatment of psychoses and/or psychotic disorders in a patient, characterized in that an effective amount of at least one compound of the general formula (I) or (Ia) and/or a pharmaceutically acceptable salt or a prodrug thereof is administered to the patient.

A further subject-matter of the invention relates to a method for the treatment of Cushing's syndrome in a patient, characterized in that an effective amount of at least one compound of the general formula (I) or (Ia) and/or a pharmaceutically acceptable salt or a prodrug thereof is administered to the patient.

A further subject-matter of the invention relates to a method for the treatment of sleep disorders in a patient, characterized in that an effective amount of at least one compound of the general formula (I) or (Ia) and/or a pharmaceutically acceptable salt or a prodrug thereof is administered to the patient.

A further subject-matter of the invention relates to a method for the treatment of depressive disorders in a patient, characterized in that an effective amount of at least one compound of the general formula (I) or (Ia) and/or a pharmaceutically acceptable salt or a prodrug thereof is administered to the patient.

A further subject-matter of the invention relates to a method for the treatment and/or prophylaxis of vasomotor symptoms and/or thermoregulatory dysfunctions, such as, for

example, the "hot flush" symptom, in a patient, characterized in that an effective amount of at least one compound of the general formula (I) or (Ia) and/or a pharmaceutically acceptable salt or a prodrug thereof is administered to the patient.

A further subject-matter of the invention relates to a method for the treatment and/or prophylaxis of drug dependencies, medicament dependencies and/or dependencies mediated by other factors, for the treatment and/or prophylaxis of stress caused by the withdrawal of one or more factors mediating the dependency and/or for the treatment and/or prophylaxis of stress-induced relapses in the drug dependencies, medicament dependencies and/or dependencies mediated by other factors, in a patient, characterized in that an effective amount of at least one compound of the general formula (I) or (Ia) and/or pharmaceutically acceptable salt or a prodrug thereof is administered to the patient.

A further subject-matter of the invention relates to a method for the treatment and/or prophylaxis of schizophrenia and/or psychosis in a patient, characterized in that an effective amount of at least one compound of the general formula (I) or (Ia) and/or a pharmaceutically acceptable salt or a prodrug thereof is administered to the patient.

A further subject-matter of the invention relates to a method as defined above, which is characterized in that the patient is a mammal, preferably a human or a nonhuman mammal or a nonhuman transgenic mammal.

The compounds of the general formula (I) or (Ia), their pharmaceutically acceptable salts and prodrugs as defined above can be prepared by a skilled worker with knowledge of the technical teaching of the invention in implementation and/or in analogous implementation of process steps known per se.

A further preferred embodiment relates to compounds of the general formula (I) or (Ia), their tautomers, their prodrugs thereof and their pharmaceutically acceptable salts as described above, which are characterized in that they are selective for the vasopressin receptor subtype V1b over at least one of the closely related vasopressin/oxytocin receptor subtypes (for example vasopressin V1a, vasopressin V2 and/or oxytocin).

A further preferred embodiment relates to compounds of the general formula (I) or (Ia), their tautomers, their prodrugs thereof and their pharmaceutically acceptable salts as

described above, which are characterized in that they have improved metabolic stability.

The metabolic stability of a compound can be determined, for example, by incubating a solution of this compound with liver microsomes from particular species (for example rat, dog or human) and determining the half-life of the compound under these conditions (RS Obach, Curr Opin Drug Discov Devel. 2001, 4, 36-44). It is possible to conclude from an observed larger half-life that the metabolic stability of the compound is improved. The stability in the presence of human liver microsomes is of particular interest since it makes it possible to predict the metabolic degradation of the compound in the human liver. Compounds with increased metabolic stability (determined in the liver microsome test) are therefore probably also degraded more slowly in the liver. The slower metabolic degradation in the liver can lead to higher and/or longer-lasting concentrations (effective levels) of the compound in the body, so that the elimination half-life of the compounds according to the invention is increased. Increased and/or longer-lasting effective levels may lead to a better efficacy of the compound in the treatment or prophylaxis of various vasopressin-dependent diseases. An improved metabolic stability may additionally lead to an increased bioavailability after oral administration, because the compound is subjected, after being absorbed in the intestine, to less metabolic degradation in the liver (so-called first pass effect). An increased oral bioavailability may, because the concentration (effective level) of the compound is increased, lead to a better efficacy of the compound after oral administration.

A further preferred embodiment relates to compounds of the general formula (I) as described above, characterized in that, in patients or relevant animal models allowing prognostic statements on therapeutic application, they have improved pharmacological activity compared to the oxindole compounds known from the prior art.

Each of the stated preferred definitions of a variable may be combined with any definitions of the remaining variables.

The invention relates in particular to compounds of the general formula (I) which are selected from the group consisting of the examples, listed below, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89 and 90, and also to their tautomeric forms, their prodrugs

and in particular their physiologically acceptable salts, and their non-salt forms such as hydrates and/or solvates. Particular preference is given to providing the abovementioned compounds in the form of the free base or in the form of acid addition salts.

The invention in particular also relates to the (-)-enantiomers of the Examples 1 to 90 in accordance with the general formula (I) selected from the compounds of the examples, listed below, 1B, 2B, 3B, 4B, 5B, 6B, 7B, 8B, 9B, 10B, 11B, 12B, 13B, 14B, 15B, 16B, 17B, 18B, 19B, 20B, 21B, 22B, 23B, 24B, 25B, 26B, 27B, 28B, 29B, 30B, 31B, 32B, 33B, 34B, 35B, 36B, 37B, 38B, 39B, 40B, 41B, 42B, 43B, 44B, 45B, 46B, 47B, 48B, 49B, 50B, 51B, 52B, 53B, 54B, 55B, 56B, 57B, 58B, 59B, 60B, 61B, 62B, 63B, 64B, 65B, 66B, 67B, 68B, 69B, 70B, 71B, 72B, 73B, 74B, 75B, 76B, 77B, 78B, 79B, 80B, 81B, 82B, 83B, 84B, 85B, 86B, 87B, 88B, 89B and 90B, and also to tautomeric forms, prodrugs and in particular physiologically acceptable salts, and non-salt forms such as hydrates and/or solvates of compounds of the formula (I). Particular preference is given to providing the abovementioned compounds in the form of the free base or in the form of acid addition salts.

The term "prodrugs" is to be understood as meaning those compounds which are metabolized in vivo to the compounds according to the invention. Typical examples of prodrugs are described in C.G. Wermeth (Ed.): The Practice of Medicinal Chemistry, Academic Press, San Diego, 1996, pages 671-715. They include, for example, phosphates, carbamates or amino acids, esters and others. In the present invention suitable prodrugs of the compounds of the formual are compounds of the formula I, where the nitrogen atom that carries R7 is part of an amide/peptide group, i.e. the nitrogen carries a acyl group such as C1-C4-alkylcarbonyl e.g. acetyl, propionyl, n-butyryl (n-propylcarbonyl), isobutyryl, n-butylcarbonyl oder tert-butylcarbonyl (pivaloyl), benzoyl, CO bound radical derived from an amino acid such as a CO bound radical derived from glycine, alanine, serine, phenylalanine etc. Suitable prodrugs olso include alkylcarbonyloxyalkylcarbamate, wherein the radical R7 in formula I is a moiety of the formula $-C(=O)-O-CHR^a-O-C(=O)-R^b$ wherein R^a and R^b are independently of each other are selected from C_1-C_4-alkyl. Such carbamates have been generally described by J. Alexander, R. Cargill, S. R. Michelson, H. Schwam, J. Medicinal Chem. 1988, 31(2), 318-322. These groups are cleaved under metabolic conditions to yield a compound of the formula I, wherein R7 is hydrogen.

The invention furthermore relates to the pharmaceutically acceptable salts of compounds

of the formula I, which are also referred to as physiologically acceptable salts. The salts are generally obtainable by reacting the free base of the compounds (I) according to the invention with a suitable acid. Suitable acids are listed, for example, in "Fortschritte der Arzneimittelforschung" [Advances in Drug Research], 1966, Birkhäuser Verlag, Vol.10, pp.224-285. They include, for example, hydrochloric acid, citric acid, tartaric acid, lactic acid, phosphoric acid, methanesulphonic acid, acetic acid, formic acid, maleic acid and fumaric acid.

The compounds of the invention are effective after administration by various routes. The administration can, for example, be carried out intravenously, intramuscularly, subcutaneously, topically, intratracheally, intranasally, transdermally, vaginally, rectally, sublingually, buccally or orally and is frequently carried out intravenously, intramuscularly or in particular orally.

The present invention also relates to pharmaceutical compositions which comprise a compound (I) of the invention, and/or a tautomer, and/or a pharmaceutically acceptable salt and/or a prodrug thereof and suitable pharmaceutical carriers (drug carriers). The amount of compound I in the pharmaceutical composition may depend on the formulation type of the composition and may be e.g. in the range from 0.0001 mg/g to 1 g/g in particular from 0.001 mg/g to 0.5 g/g of the composition.

These drug carriers are chosen according to the pharmaceutical form and the desired mode of administration.

The compounds of the invention of the general formula (I) or, where appropriate, suitable salts of these compounds can be used to manufacture pharmaceutical compositions for oral, sublingual, buccal, subcutaneous, intramuscular, intravenous, topical, intratracheal, intranasal, transdermal, vaginal or rectal administration and be administered to animals or humans in unit dose forms mixed with conventional pharmaceutical carriers for the prophylaxis or treatment of the above disorders or diseases.

Suitable uniform administration forms (unit dose forms) comprise forms for oral administration, such as tablets, gelatin capsules, powders, granules, solutions or suspensions for oral intake, forms for sublingual, buccal, intratracheal or intranasal administration, aerosols, implants, forms of subcutaneous, intramuscular or intravenous

administration and forms of rectal administration.

The compounds of the invention can be used in creams, ointments or lotions for topical administration.

In order to achieve the desired prophylactic or therapeutic effect, the dose of the active compound can vary between 0.01 and 50 mg per kg of body weight and per day.

Each unit dose may comprise from 0.05 to 5000 mg, preferably 1 to 1000 mg, of the active compound in combination with a pharmaceutical carrier. This unit dose can be administered 1 to 5 times a day so that a daily dose of from 0.5 to 25 000 mg, preferably 1 to 5000 mg, is administered.

If a solid composition in the form of tablets is prepared, the active compound is mixed with a pharmaceutical carrier such as gelatin, starch, lactose, magnesium stearate, talc, silicon dioxide or the like.

The tablets can be coated with sucrose, a cellulose derivative or another suitable substance or be treated otherwise in order to display a prolonged or delayed activity and in order to release a predetermined amount of the active compound continuously.

A preparation in the form of gelatin capsules is obtained by mixing the active compound with an extender and taking up the resulting mixture in soft or hard gelatin capsules.

A preparation in the form of a syrup or elixir or for administration in the form of drops may comprise active compounds together with a sweetener which is preferably calorie-free, methylparaben or propylparaben as antiseptics, a flavouring and a suitable colouring.

The water-dispersible powders or granules may comprise the active compounds mixed with dispersants, wetting agents or suspending agents, such as polyvinylpyrrolidones, and sweeteners or taste improvers.

Rectal or vaginal administration is achieved by the use of suppositories which are prepared with binders which melt at the rectal temperature, for example cocoa butter or polyethylene glycols. Parenteral administration is effected by using aqueous suspensions, isotonic salt solutions or sterile and injectable solutions which comprise pharmacologically

suitable dispersants and/or wetting agents, for example propylene glycol or polyethylene glycol.

The active compound can also be formulated as microcapsules or centrosomes, if suitable with one or more carriers or additives.

In addition to the compounds of the general formula (I), or their pharmaceutically acceptable salts or prodrugs, the compositions of the invention may comprise further active compounds which may be beneficial for the treatment of the impairments or disorders indicated above.

The present invention therefore further relates to pharmaceutical compositions which comprise a plurality of active compounds, where at least one of these is a compound (I) according to the invention, a tautomer, a salt or a prodrug thereof.

PREPARATION OF THE COMPOUNDS OF THE INVENTION

Examples of synthetic routes for preparing the oxindole derivatives of the invention are described below.

The preparation of the oxindoles according to the invention can be carried out by different routes as illustrated in synthesis schemes 1 and 2. In these synthesis schemes, the variables have the same meanings as in the general formula (I).

The 3-hydroxy-1,3-dihydroindol-2-ones IV can be obtained by adding metallated heterocycles III to the 3-keto group of the isatins II. The metallated heterocycles, such as, for example, the corresponding Grignard (Mg) or organyllithium compound, can be obtained in a customary manner from halogen or hydrocarbon compounds. Exemplary procedures can be found in Houben-Weyl, Methoden der Organischen Chemie [Methods of organic chemistry], Vol. 13, 1-2, Chap. Mg and Li compounds. The isatins II are either commercially available or were prepared in analogy to methods described in the literature (Advances in Heterocyclic Chemistry, A.R. Katritzky and A.J. Boulton, Academic Press, New York, 1975, 18, 2-58; J. Brazil. Chem. Soc. 12, 273-324, 2001).

Using KCN or $Zn(CN)_2$ with Pd(0) catalysis in solvents such as dimethylformamide or tetrahydrofuran, if appropriate also with addition of bases such as K_2CO_3 or other

carbonates and amines, it is possible to convert, at elevated temperature, the 3-hydroxyoxindoles IV which, in the 6-membered aromatic ring contain, for example as radical R^3 or R^4, an iodine substituent, into the analogous cyano-containing 3-hydroxy-oxindoles IV. Suitable for use as Pd(0) salts are, for example, transition metal complexes prepared in situ from $PdCl_2$ or $PdOAc_2$ by addition of phosphines, such as tris(orthotolyl)phosphine. It is also possible to use commercial palladium complexes, such as, for example, the catalyst tetrakis(triphenylphosphine)palladium(0) and/ or added phosphine ligands.

The 3-hydroxyoxindoles IV can be converted into the compounds V which carry a leaving group LG' in position 3, where the leaving group LG' may be a customary leaving group, such as, for example, halide, mesylate or tosylate. The intermediate V where, for example, LG' = chlorine, can be prepared by treating the alcohol IV with thionyl chloride in the presence of a base, such as, for example, pyridine. Alternatively, it is possible to obtain alcohols IV by conversion into the mesylate using methanesulphonyl chloride in the presence of a base, such as, for example, triethylamine. The compounds V are subsequently reacted with amines, such as, for example, ammonia, which gives the analogous amines VI after the substitution reactions. Compounds such as VI can then, after deprotonation with a strong base, such as, for example, potassium tert-butoxide or sodium hydride, in DMF, be converted into the product VIII by treatment with sulphonyl chlorides VII. The sulphonyl chlorides VII used are either commercially available or can be prepared in a manner analogous to known processes (see, for example, J. Med. Chem. 40, 1149 (1997)).

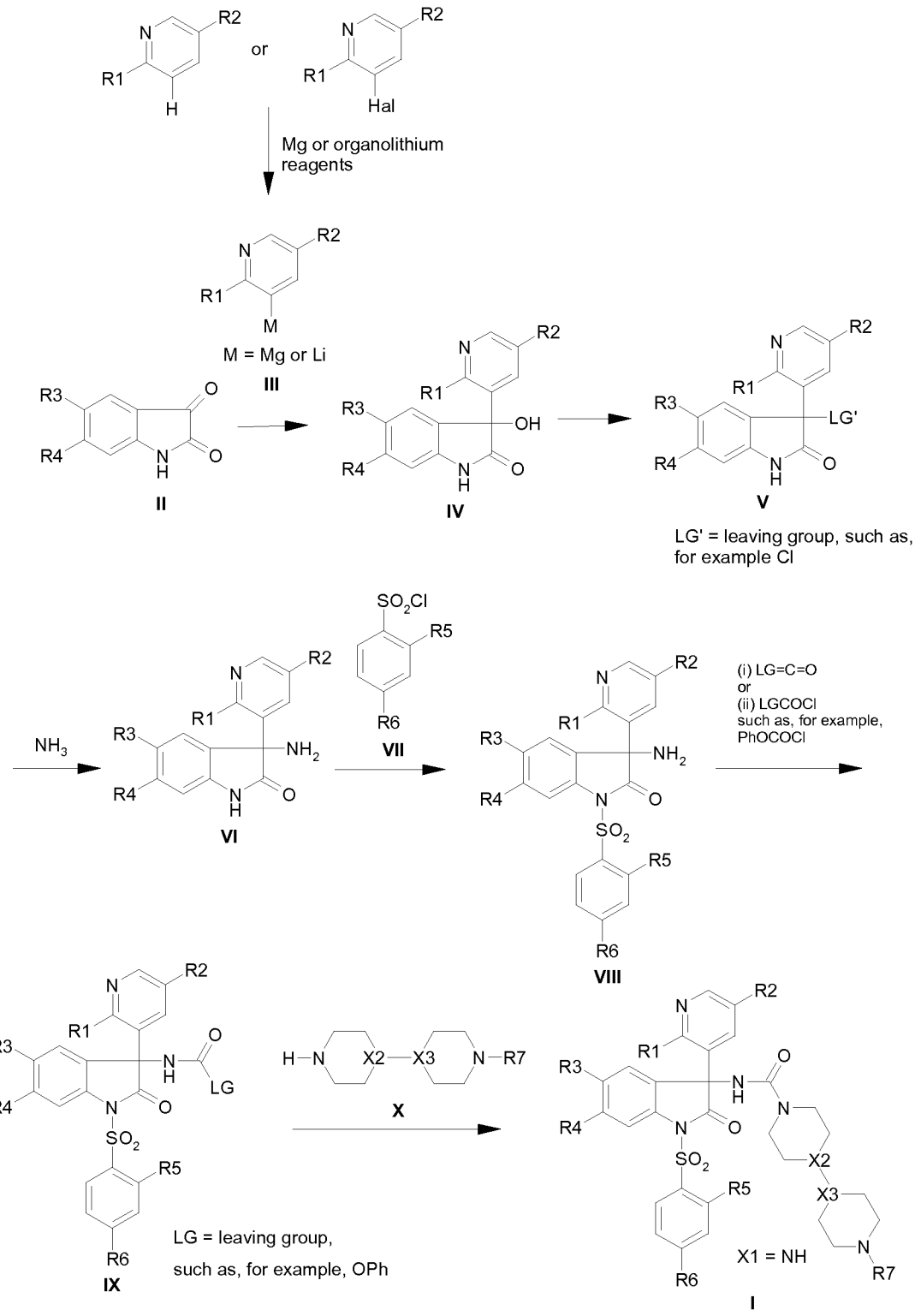
The compounds VIII are converted into compounds IX by reaction with reagents for derivatizing amino groups, such as, for example chloroformates, isocyanates or carbamoyl chlorides, generally using customary methods (see J. March, Advanced Organic Chemistry, 1992, 4th edition., Wiley, New York, pages 417-421; 499; 903). For example, LG as leaving group may be OPhenyl in the compound IX, which is obtained by reacting VIII with phenyl chloroformate in the presence of a base, such as, for example, pyridine.

The subsequent reaction with amines X, if appropriate at elevated temperature and with addition of auxiliary bases, such as, for example, triethylamine or diisopropylethylamine, gives the compounds according to the invention of the general formula (I). The amines X are either commercially available or can be prepared by methods known from the

literature.

A further alternative of preparing the amine X is the reaction of amines with aldehydes or ketones in the presence of reducing agents, such as, for example, sodium cyanoborohydride or sodium acetoxyborohydride, in the sense of a reductive amination (J. March, Advanced Organic Chemistry, 1992, 4th edition., Wiley, New York, pages 411; 898).

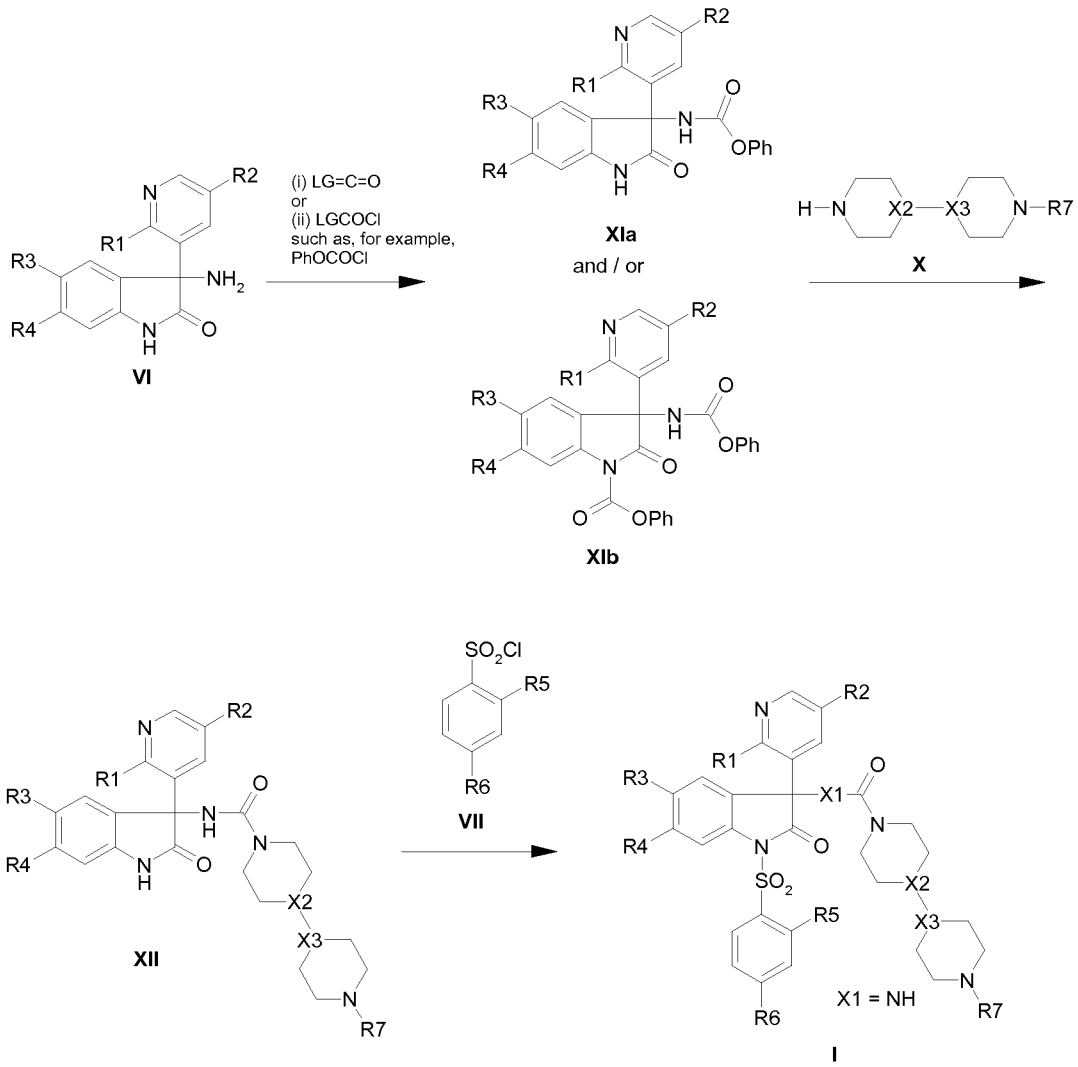
SYNTHESIS SCHEME 1



As described in synthesis scheme 2, the order of the synthesis steps for preparing the compounds I according to the invention may be rearranged, analogously to synthesis scheme 1 above. Thus, initially, the amino group in the compound VI is derivatized using,

for example, phenyl chloroformate, giving the compounds XIa and/or XIb. With excess amine X or else with the aid of an auxiliary base, the urea derivatives XII are generated which can be converted in the subsequent reaction under otherwise customary conditions by deprotonation of compounds XII using a strong base, such as, for example, sodium hydride or potassium *tert*-butoxide, and subsequent treatment with sulphonyl chlorides VII in DMF into the compounds I according to the invention.

SYNTHESIS SCHEME 2



Below, the invention is illustrated in more detail using examples, the examples not being intended to be limiting.

The compounds according to the invention can be prepared via various synthesis routes.

The procedures mentioned, as described accordingly in synthesis schemes 1 and 2, are only described in greater detail by way of example on the basis of the examples mentioned, without being exclusively limited to the synthesis routes 1 or 2 or analogous procedures mentioned.

EXPERIMENTAL PART

EXAMPLE 1

N-[5-Cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1H-indol-3-yl]-4-(1-methylpiperidin-4-yl)piperazine-1-carboxamide

1a) 3-(2-Ethoxypyridin-3-yl)-3-hydroxy-5-iodo-1,3-dihydro-2H-indol-2-one

With ice-bath cooling, 20.86 g (76.40 mmol) of 5-iodoisatin were stirred in 400 ml of anhydrous tetrahydrofuran (THF), and 3.22 g (80.50 mmol, 60% w/w) of sodium hydride were added a little at a time, the temperature being kept between 0-10°C. With ice-bath cooling, the suspension was stirred for one hour, during which the pyridine Grignard reagent was prepared. At room temperature, 20 g (80.30 mmol) of the 2-ethoxy-3-iodopyridine were dissolved in 400 ml of anhydrous THF, and over a period of 5-10 minutes 95.6 ml (1M solution in THF, 95.60 mmol) of ethylmagnesium bromide were added to this solution with cooling, at a temperature between 22 and 15°C. The solution was stirred for 20 minutes, during which time the colour changed from colourless to slightly yellowish.

The solution of the pyridine Grignard reagents was then, over a period of 5-10 minutes, added to the solution, cooled in an ice-bath, of the 5-iodoisatin sodium salt, the temperature fluctuating between 5 and 18°C. After the addition of the Grignard reagent had ended, the ice-bath was removed, and the reaction mixture was stirred at room temperature for another 2 hours. Excess saturated ammonium chloride solution was added, followed by ethyl acetate, and the mixture was stirred for another 5 minutes. The aqueous phase was removed and extracted with ethyl acetate (2 x). The combined organic phases were washed with water (2 x), and the solvent was removed under reduced pressure. Initially, unreacted 5-iodoisatin precipitated from the still dilute solution and was removed, and after further concentration the product, too, crystallized out. The suspension was stored in a refrigerator at 5°C for two hours and the slightly yellowish solid was then filtered off and washed with a little ethyl acetate. The desired 3-(2-ethoxypyridin-3-yl)-3-hydroxy-5-iodo-1,3-dihydro-2*H*-indol-2-one (17.1 g, 43.16 mmol, 57%) was isolated after drying at 40°C.

ESI-MS [M+H$^+$] = 397.05 calculated for $C_{15}H_{13}IN_2O_3$ = 396.19

1b) 5-Cyano-3-hydroxy-3-(2-ethoxypyridin-3-yl)-1,3-dihydroindol-2-one

Under an atmosphere of nitrogen, 7.1 g (17.92 mmol) of 3-(2-ethoxypyridin-3-yl)-3-hydroxy-5-iodo-1,3-dihydro-2*H*-indol-2-one were stirred in 100 ml of anhydrous THF at room temperature. 2.1 g (17.92 mmol) of zinc cyanide were added, followed by 0.51 g (0.45 mmol) of tetrakis(triphenylphosphine)palladium(0). The reaction mixture was transferred directly into a preheated oil bath at a temperature of 100°C. The mixture was stirred at 100°C (oil bath temperature), and after 30 minutes, another 0.51 g (0.45 mmol) of the catalyst was added. In total, the mixture was stirred for 2 hours. The reaction mixture was cooled to room temperature, and an excess of water was added. The mixture was extracted with ethyl acetate (3 x), and the combined organic phases were washed with water (3 x). The solvent was evaporated to dryness under reduced pressure, and the residue was slurried with small volumes of ethyl acetate. A slightly yellowish solid was removed by filtration, washed with ethyl acetate and dried in a vacuum drying cabinet. It was possible to isolate 3.7 g (12.44 mmol, 69.4%) of the desired product 5-cyano-3-hydroxy-3-(2-ethoxypyridin-3-yl)-1,3-dihydroindol-2-one.

ESI-MS [M+H$^+$] = 296.05 calculated for $C_{16}H_{13}N_3O_3$ = 295.30

1c) 3-Chloro-3-(2-ethoxypyridin-3-yl)-2-oxoindoline-5-carbonitrile

Under an atmosphere of nitrogen, 6.00 g (20.32 mmol) of the 5-cyano-3-hydroxy-3-(2-ethoxypyridin-3-yl)-1,3-dihydroindol-2-one were suspended in 60 ml of anhydrous dichloromethane (dried over molecular sieve). 2.30 ml (28.45 mmol) of pyridine were then added. The reaction mixture was cooled to a temperature of 0°C, and 2.06 ml (28.45 mmol) of neat thionyl chloride were then added dropwise (exothermic reaction). The mixture was stirred at room temperature for one hour. The formation of a yellow suspension was observed. The course of the reaction was monitored by thin-layer chromatography (TLC) (silica gel, dichloromethane/methanol in a ratio of 95:5). The reaction mixture was carefully poured into ice-water. After 15 minutes of stirring, the organic phase was removed. The aqueous phase was extracted with dichloromethane (2 x). All organic phases were combined, dried over magnesium sulphate and filtered, and the solvent was removed under reduced pressure. The product gave 5.70 g (18.17 mmol, 89%) of 3-chloro-3-(2-ethoxypyridin-3-yl)-2-oxoindoline-5-carbonitrile as an amorphous solid which was used without further purification for the next reaction.

ESI-MS [M+H$^+$] = 314.1 calculated for $C_{16}H_{12}ClN_3O_2$ = 313.75

1d) 3-Amino-3-(2-ethoxypyridin-3-yl)-2-oxoindoline-5-carbonitrile

5.70 g (18.17 mmol) of 3-chloro-3-(2-ethoxypyridin-3-yl)-2-oxoindoline-5-carbonitrile were dissolved in 50 ml of dichloromethane. Under an atmosphere of nitrogen, 14 ml (98.11 mmol) of a 7 *N* methanolic ammonia solution were slowly added dropwise to the cooled reaction solution. The colour of the solution changed to light-yellow, and the solution was stirred at room temperature overnight, during which time the product slowly crystallized out. The course of the reaction was monitored by TLC (silica gel, dichloromethane/methanol in a ratio of 9:1). The solvent was removed under reduced pressure, and the residue was once more taken up and dissolved in dichloromethane. The mixture was then extracted with water. The phases were separated, and a greasy phase which had formed between the phases was added to the aqueous phase. The aqueous phase was extracted with ethyl acetate until the greasy phase had gone into solution. All organic phases obtained were combined, and the solvent was removed under reduced pressure. The residue was triturated with diethyl ether, resulting in the formation of a solid substance which was filtered off and dried in a vacuum drying cabinet at moderate temperature (35°C). This gave 4.54 g (15.43 mmol, 85%) of the 3-amino-3-(2-ethoxypyridin-3-yl)-2-oxoindoline-5-carbonitrile as a solid.

ESI-MS [M+H$^+$] = 295.3 calculated for $C_{16}H_{14}N_4O_2$ = 294.32

1e) 3-Amino-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxoindoline-5-carbonitrile

3.54 g (12.03 mmol) of 3-amino-3-(2-ethoxypyridin-3-yl)-2-oxoindoline-5-carbonitrile were dissolved in 80 ml of anhydrous dimethylformamide (dried over molecular sieve). Under an atmosphere of nitrogen and with cooling using an ice-bath, 1.49 g (13.23 mmol) of potassium *tert*-butoxide were added a little at a time. The colour of the reaction mixture changed, and the brown solution was stirred at 0°C for another hour to ensure that the deprotonation proceeded to completion. At low temperature, 3.16 g (13.23 mmol) 2,4-dimethoxybenzenesulphonyl chloride were added, and the mixture was stirred at 0°C for another two hours. The course of the reaction was monitored by TLC (silica gel, dichloromethane/methanol in a ratio of 9:1). The reaction mixture was poured into ice-water and then extracted with ethyl acetate. The organic phase was washed with saturated sodium chloride solution and dried over magnesium sulphate, and the solvent

was evaporated. The residue was suspended in diethyl ether and stirred until the product precipitated as a solid and could be removed by filtration. After removal of the solvent, the mother liquor was once more treated with diethyl ether (2 x) until finally, after drying, 4.67 g (9.44 mmol, 79%) of the desired 3-amino-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxoindoline-5-carbonitrile were obtained as a solid substance.

ESI-MS $[M+H^+]$ = 495.15 calculated for $C_{24}H_{22}N_4O_6S$ = 494.53

1f) Phenyl [5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1H-indol-3-yl]carbamate

4.67 g (9.44 mmol) of 3-amino-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxoindoline-5-carbonitrile were dissolved in 120 ml of pyridine and cooled to 0°C using an ice-bath. 1.30 ml (10.39 mmol) of neat phenyl chloroformate were added, and the reaction mixture was stirred at 0°C for 2 hours. The course of the reaction was monitored by TLC (silica gel, dichloromethane/methanol in a ratio of 95:5). The solvent and especially pyridine were removed under reduced pressure, and the residue was diluted with water and extracted with ethyl acetate (3 x). The combined organic phases were washed with saturated sodium chloride solution, dried over magnesium sulphate and filtered, and the solvent was removed under reduced pressure. Traces of pyridine were removed by repeated addition of toluene and evaporation on a rotary evaporator. Diethyl ether was added to the isolated residue, and a solid crystallized overnight giving 5.62 g (9.14 mmol, 97%) of the desired product phenyl [5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indole-3-yl]carbamate.

ESI-MS $[M+H^+]$ = 615.15 calculated for $C_{31}H_{26}N_4O_8S$ = 614.64

1g) N-[5-Cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1H-indol-3-yl]-4-(1-methylpiperidin-4-yl)piperazine-1-carboxamide

1.00 g (1.63 mmol) of phenyl [5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]carbamate, 596 mg (3.25 mmol) of 1-(1-methylpiperidin-4-yl)piperazine and 8 ml of dried THF were combined and the mixture was stirred at room temperature for 24 hours. The end of the reaction was detected with the aid of analytical HPLC (RP, eluents acetonitrile/water, 0.01% TFA). The solvent was removed, and the residue was purified by preparative HPLC using dichloromethane and 6% methanol as eluents on a Chromolith column (normal phase, from Merck). After

repeated column chromatography, it was possible to isolate 230 mg (0.33 mmol, 21%) of the *N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-methylpiperidin-4-yl)piperazine-1-carboxamide.

Alternatively, work-up and purification after the reaction had ended could be carried out as follows: the solvent was removed. The crude material was dissolved in ethyl acetate and extracted with 1 *N* HCl. The impurities were detected in the organic phase, the product being in the acidic aqueous phase. Accordingly, the aqueous phase was neutralized with 2 *N* NaOH solution and extracted with ethyl acetate. After drying over magnesium sulphate, filtration and removal of the ethyl acetate under reduced pressure, the product could be crystallized with diethyl ether. The *N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-methylpiperidin-4-yl)piperazine-1-carboxamide was obtained in yields of > 50%.

ESI-MS $[M+H^+]$ = 704.2 calculated for $C_{35}H_{41}N_7O_7S$ = 703.82

^{1}H-NMR ([D6]-DMSO, 400 MHz) δ [ppm] = 8.12 (d, 1H, J = 4.8 Hz), 7.88 (d, 1H, J = 8.8 Hz), 7.87 (d, 1H, J = 8.7 Hz), 7.81 (d, 1H, J = 8.5 Hz), 7.72 (d, 1H, J = 7.6 Hz), 7.67 (s, 1H), 7.64 (s, 1H), 7.02 (dd, 1H, J = 5.0 Hz, J = 7.5 Hz), 6.69 (d, 1H, J = 8.9 Hz), 6.65 (s, 1H), 4.15 (m, 2H), 3.85 (s, 3H), 3.44 (s, 3H), 3.20 (m, 4H), 2.76 (m, 2H, J = 11.1 Hz), 2.34 (m, 4H), 2.11 (m, 4H), 1.81 (m, 2H, J = 11.3 Hz), 1.64 (m, 2H, J = 10.7 Hz), 1.37 (m, 2H), 1.06 (t, 1H, J = 7.0 Hz).

EXAMPLE 5:

N-[5-Cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(1-methylpiperidin-4-yl)piperazine-1-carboxamide

5a) Phenyl 5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-3-[(phenoxycarbonyl)amino]-indoline-2-carboxylate

2.78 g (9.43 mmol) of 3-amino-3-(2-ethoxypyridin-3-yl)-2-oxoindoline-5-carbonitrile (prepared according to Example 1, process steps 1a) to 1c)) were suspended in 25 ml of dichloromethane and cooled with an ice-bath to 0°C. 7.63 ml (94.34 mmol) of pyridine were added, and 2.37 ml (18.87 mmol) of phenyl chloroformate were then added slowly dropwise such that the temperature did not exceed 5-10°C. With thawing of the ice-bath, the reaction was stirred at room temperature overnight, and a lightly coloured solid precipitated out. The reaction mixture was diluted with dichloromethane, and after addition of water, the solid went back into solution. The phases were separated and the aqueous

phase was again extracted with dichloromethane (1 x). The combined organic phases were washed initially with water (3 x) and then with saturated sodium chloride solution (1 x). After drying over magnesium sulphate, filtration and evaporation of the solvent under reduced pressure, the residue was subjected to incipient dissolution in diethyl ether, and 10 times the amount of pentane was added. A white precipitate formed, and this was filtered off with suction, washed with pentane and dried in a vacuum drying cabinet at 40°C. After fractional crystallization, a total of 4.46 g (8.35 mmol, 89%) of phenyl 5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-3-[(phenyloxycarbonyl)amino]indoline-1-carboxylate were isolated.

ESI-MS $[M+H^+]$ = 535.15 calculated for $C_{30}H_{22}N_4O_6$ = 534.53

5b) N-[5-Cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1H-indol-3-yl]-4-(1-methylpiperidin-4-yl)piperazine-1-carboxamide

760 mg (1.42 mmol) of phenyl 5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-3-[(phenoxycarbonyl)amino]indoline-1-carboxylate were initially charged in 5 ml of THF, and 1.42 g (5.69 mmol) of 1-(1-methylpiperidin-4-yl)piperazine were added undiluted at room temperature. The reaction mixture was stirred overnight, and the reaction was checked by TLC (silica gel, dichloromethane/methanol 15:5) to determine the progress of the reaction. The reaction was diluted with ethyl acetate and washed with water (1 x) and saturated sodium chloride solution (1 x). The organic phase was dried over magnesium sulphate and filtered, and the solvent was removed under reduced pressure. The residue was taken up in a little diethyl ether, and 6 times the amount of cyclohexane was added. A colourless solid comprising 615 mg (1.22 mmol, 86%) of pure N-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-methylpiperidin-4-yl)piperazine-1-carboxamide precipitated out.

ESI-MS $[M+H^+]$ = 504.25 calculated for $C_{27}H_{33}N_7O_3$ = 503.61

5c) N-[5-Cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1H-indol-3-yl]-4-(1-methylpiperidin-4-yl)piperazine-1-carboxamide

80.0 mg (0.16 mmol) of N-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-methylpiperidin-4-yl)piperazine-1-carboxamide were dissolved in dimethylformamide, and 7.63 mg (0.19 mmol, 60% w/w) of sodium hydride were added at 0°C. For the deprotonation of the 1,3-dihydro-2*H*-indol-2-on derivative, the mixture was stirred for 10 minutes, and 39.4 mg (0.19 mmol) of 4-methoxybenzenesulphonyl chloride

were then added. The mixture was then allowed to warm to room temperature and stirred for 30 minutes. The progress of the reaction was monitored by TLC (silica gel, dichloromethane/methanol 1:1). Saturated sodium bicarbonate solution and ethyl acetate were added to the reaction mixture, and the phases were then separated. The aqueous phase was reextracted with ethyl acetate (1 x). The combined organic phase was washed with water (1 x) and saturated sodium chloride solution (1 x), dried over magnesium sulphate and filtered, and the solvent was removed under reduced pressure. The residue was purified by preparative MPLC (ISCO Companion, 4 g NP cartridge) using the mobile phases dichloromethane/methanol (5-20%). What was isolated were 27.3 mg (0.04 mmol, 23% yield, 90% purity) of N-[5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-methylpiperidin-4-yl)piperazine-1-carboxamide.

ESI-MS $[M+H^+]$ = 674.2 calculated for $C_{34}H_{39}N_7O_6S$ = 673.80

Alternative purification methods to the crystallization of the crude mixtures include the conventional column chromatography on a normal phase (NP-SiO_2 cartridge, Chromabond) using the mobile phases dichloromethane/methanol and the preparative HPLC (RP, mobile phase acetonitrile/water, 0.01% TFA or 0.01% acetic acid).

EXAMPLES 2 to 4 and 6 to 30:

The compounds according to Examples 2 to 4 and 6 to 30 can be prepared in a manner analogous to the preparation procedures according to Example 1 and/or Example 5 using the appropriate starting materials.

EXAMPLE 2:

N-{5-Cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(1-methylpiperidin-4-yl)piperazine-1-carboxamide

ESI-MS $[M+H^+]$ = 674.05 calculated for $C_{34}H_{39}N_7O_6S$ = 673.80

EXAMPLE 3:

N-[5-Cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-methylpiperidin-4-yl)piperazine-1-carboxamide trifluoroacetate

ESI-MS $[M+H^+]$ = 688.3 calculated for $C_{35}H_{41}N_7O_6S$ = 687.82

EXAMPLE 4:

N-[5-Cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4-(1-methylpiperidin-4-yl)piperazine-1-carboxamide

ESI-MS [M+H$^+$] = 644.2 calculated for $C_{33}H_{37}N_7O_5S$ = 643.77

EXAMPLE 31:

N-[5-Cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-methylpiperazin-1-yl)piperidine-1-carboxamide

100 mg (0.16 mmol) of the phenyl [5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]carbamate (prepared according to Example 1, process steps 1a) to 1f)) were initially charged in 8 ml of anhydrous tetrahydrofuran (dried over molecular sieve), and 44.7 mg (0.24 mmol) of 1-methyl-4-(piperidin-4-yl)piperazine were added. The reaction mixture was stirred at room temperature overnight. The course of the reaction was monitored by TLC (silica gel, dichloromethane/methanol in a ratio of 9:1) and LCMS (RP, acetonitrile/water as eluents and 0.01% TFA). The solvent was removed under reduced pressure, and the residue was taken up in dichloromethane and extracted with 2 *N* sodium hydroxide solution (1 x). The combined organic phases were dried over magnesium sulphate and filtered, and the solvent was removed under reduced pressure. The crude mixture was purified twice by column chromatography (5 g NP-SiO_2 cartridge Chromabond) using dichloromethane/methanol in a ratio of 99:1 to 80:20 as eluent. What was isolated were 53.8 mg (0.08 mmol, 47%) of pure *N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1H-indol-3-yl]-4-(4-methylpiperazin-1-yl)piperidine-1-carboxamide.

ESI-MS [M+H$^+$] = 704.25 calculated for $C_{35}H_{41}N_7O_7S$ = 703.82

^{1}H-NMR ([D6]-DMSO, 400 MHz) δ [ppm] = 8.13 (dd, 1H, J = 1.4 Hz, J = 4.8 Hz), 7.88 (d, 1H, J = 8.5 Hz), 7.87 (d, 1H, J = 8.8 Hz), 7.81 (dd, 1H, J = 1.6 Hz, J = 8.6 Hz), 7.71 (dd, 1H, J = 1.4 Hz, J = 7.6 Hz), 7.68 (d, 1H, J = 1.3 Hz), 7.65 (s, 1H), 7.02 (dd, 1H, J = 4.9 Hz, J = 7.6 Hz), 6.68 (d, 1H, J = 8.9 Hz), 6.65 (s, 1H), 4.17 (m, 2H), 3.85 (s, 3H), 3.80 (m, 2H), 3.44 (s, 3H), 2.62 (m, 2H), 2.41-2.12 (m, 9H), 2.12 (s, 3H), 1.61 (m, 2H), 1.16 (m, 2H), 1.09 (t, 3H, J = 7.0 Hz).

EXAMPLES 32 to 36:

The compounds according to Examples 32 to 36 can be prepared in a manner analogous to the preparation procedures according to Example 1, 5 and/or 31 using the appropriate starting materials.

EXAMPLE 32:

N-[5-Cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-methylpiperazin-1-yl)piperidine-1-carboxamide

ESI-MS $[M+H^+]$ = 674.8 calculated for $C_{34}H_{39}N_7O_6S$ = 673.80

EXAMPLE 33:

N-[5-Cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-methylpiperazin-1-yl)piperidine-1-carboxamide trifluoroacetate

ESI-MS $[M+H^+]$ = 688.2 calculated for $C_{35}H_{41}N_7O_6S$ = 687.82

EXAMPLE 34:

N-[5-Cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4-(4-methylpiperazin-1-yl)piperidine-1-carboxamide

ESI-MS $[M+H^+]$ = 644.7 calculated for $C_{33}H_{37}N_7O_5S$ = 643.77

EXAMPLE 35:

N-[5-Cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-methylpiperazin-1-yl)piperidine-1-carboxamide trifluoroacetate

ESI-MS $[M+H^+]$ = 674.2 calculated for $C_{34}H_{39}N_7O_6S$ = 673.80

EXAMPLE 37:

N-[5-Cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-ethylpiperazin-1-yl)piperidine-1-carboxamide

100 mg (0.16 mmol) of the phenyl [5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]carbamate (prepared according to

Example 1, process steps 1a) to 1f)), dissoved in 8 ml of anhydrous tetrahydrofuran (dried over molecular sieve) were initially charged. 74.9 mg (0.24 mmol) of 1-ethyl-4-piperidin-4-ylpiperazine and 0.07 ml of triethylamine were added together to the reaction mixture, which was then stirred at room temperature overnight. To accelerate the reaction and to achieve complete conversion, the mixture was again heated to 50°C. The course of the reaction was monitored by TLC (silica gel, dichloromethane/methanol in a ratio of 9:1) and LCMS (RP, acetonitrile/water as eluents and 0.01% TFA). The solvent was removed under reduced pressure, and the residue was taken up in dichloromethane and extracted with 2 *N* sodium hydroxide solution (1 x). The combined organic phases were dried over magnesium sulphate and filtered, and the solvent was removed under reduced pressure. The crude mixture was purified initially by column chromatography of silica gel (column 20 x 200 mm) using dichloromethane and 2% methanol as eluents. The combined, still slightly contaminated product fractions were purified again by preparative HPLC on a Chromolith column (normal phase, from Merck) using the eluents dichloromethane and methanol (gradient 0–10% by volume of methanol over 15 min.). This gave 20 mg (0.03 mmol, 17%) of the desired *N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-ethylpiperazin-1-yl)piperidine-1-carboxamide.

ESI-MS $[M+H^+]$ = 718.25 calculated for $C_{36}H_{43}N_7O_7S$ = 717.85

^{1}H-NMR ([D6]-DMSO, 400 MHz) δ [ppm] = 8.13 (dd, 1H, J = 1.2 Hz, J = 4.6 Hz), 7.88 (d, 1H, J = 8.2 Hz), 7.87 (d, 1H, J = 8.7 Hz), 7.81 (dd, 1H, J = 1.4 Hz, J = 8.6 Hz), 7.72 (dd, 1H, J = 1.3 Hz, J = 7.6 Hz), 7.68 (d, 1H, J = 1.1 Hz), 7.66 (s, 1H), 7.02 (dd, 1H, J = 4.9 Hz, J = 7.6 Hz), 6.68 (dd, 1H, J = 2.0 Hz, J = 8.8 Hz), 6.65 (d, 1H, J = 2.2 Hz), 4.17 (m, 2H), 3.85 (s, 3H), 3.81 (m, 2H), 3.44 (s, 3H), 2.62 (m, 2H), 2.43-2.29 (m, 11H), 1.61 (m, 2H), 1.15 (m, 2H), 1.09 (t, 3H, J = 7.0 Hz), 0.97 (t, 3H, J = 7.1 Hz).

EXAMPLES 38 to 90:

The compounds according to Examples 38 to 90 can be prepared in a manner analogous to the preparation procedures according to Examples 1, 5, 31, 37, 55, 61 and/or 67 using the appropriate starting materials.

EXAMPLE 40:

N-[5-Cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4-(4-ethylpiperazin-1-yl)piperidine-1-carboxamide

ESI-MS [M+H$^+$] = 658.25 calculated for $C_{34}H_{39}N_7O_5S$ = 657.79

EXAMPLE 43:

N-[5-Cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-propylpiperazin-1-yl)piperidine-1-carboxamide

ESI-MS [M+H$^+$] = 732.3 calculated for $C_{37}H_{45}N_7O_7S$ = 731.88

EXAMPLE 55:

N-[5-Cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-piperazin-1-ylpiperidine-1-carboxamide

55a) tert-Butyl 4-[1-({[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1H-indol-3-yl]amino}carbonyl)piperidin-4-yl]piperazine-1-carboxylate

100 mg (0.16 mmol) of phenyl [5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)2-oxo-2,3-dihydro-1*H*-indol-3-yl]carbamate (prepared according to Example 1, process steps 1a) to 1f)) were initially charged in 8 ml of anhydrous tetrahydrofuran (dried over molecular sieve), and 65.8 mg (0.24 mmol) of tert-butyl 4-piperidin-4-ylpiperazine-1-carboxylate were added. The mixture was then stirred at room temperature overnight. The progress of the reaction was monitored by TLC (silica gel, CH_2Cl_2/MeOH 9:1) and LCMS (RP, mobile phases acetonitrile/water and 0.01% TFA). The solvent was removed under reduced pressure, and the residue was taken up in dichloromethane and extracted with 2 *N* aqueous sodium hydroxide solution (1 x). The combined organic phases were dried over magnesium sulphate and filtered, and the solvent was removed under reduced pressure. The crude mixture was purified by column chromatography (5 g NP-SiO_2 cartridge, Chromabond) using dichloromethane/methanol in a ratio of 98:2 as mobile phase. This gave 55.3 mg (0.07 mmol, 43%) of the desired product, which was directly used in the next reaction step for Boc deprotection.

ESI-MS [M+H$^+$] = 790.30 calculated for $C_{39}H_{47}N_7O_9S$ = 789.91

55b) N-[5-Cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1H-indol-3-yl]-4-piperazin-1-ylpiperidine-1-carboxamide

55.3 mg (0.07 mmol) of tert-butyl 4-[1-({[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3,-dihydro-1*H*-indol-3-yl]amino}carbonyl)piperidin-4-

yl]piperazine-1-carboxylate were initially charged in 4 ml of methanol, and 1.0 ml of 5-6 *M* hydrochloric acid in isopropanol was added. The mixture was stirred at room temperature. The progress of the reaction was monitored by TLC (silica gel, CH_2Cl_2/MeOH 9:1). After complete conversion, the alcoholic solvent residues were removed, and the residue was taken up in dichloromethane and, using 1 *N* aqueous sodium hydroxide solution, adjusted by extraction to pH 9. The organic phase was separated from the aqueous phase, and the aqueous phase was reextracted with dichloromethane (2 x). The combined organic phase was dried over magnesium sulphate, and the solvent was removed under reduced pressure. The residue was crystallized from diethyl ether. Alternatively, the residue can also be purified either by conventional column chromatography on a normal phase (NP-SiO_2 cartridge, Chromabond) using dichloromethane/methanol as mobile phases or by preparative HPLC (RP, mobile phases acetonitrile/water, 0.01% TFA) . After crystallization, 15.9 mg (0.023 mmol, 33%) of N-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-piperazin-1-ylpiperidine-1-carboxamide were isolated.

ESI-MS $[M+H^+]$ = 690.45 calculated for $C_{34}H_{39}N_7O_7S$ = 689.80

EXAMPLES 25 to 30 and 56 to 60 and 85 to 90:

The compounds according to Examples 25 to 30 and 56 to 60 and 85 to 90 can also be prepared in a manner analogous to the preparation procedures according to Examples 1, 5, 31, 37 and/or 55 using the appropriate starting materials.

EXAMPLE 25:

N-[5-Cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-piperidin-4-ylpiperazine-1-carboxamide bis(trifluoroacetate)

ESI-MS $[M+H^+]$ = 690.15 calculated for $C_{34}H_{39}N_7O_7S$ = 689.80

EXAMPLE 85:

N-[5-Cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4,4'-bipiperidine-1-carboxamide bis(trifluoroacetate)

ESI-MS $[M+H^+]$ = 689.25 calculated for $C_{35}H_{40}N_6O_7S$ = 688.81

In the compounds (I) according to the invention, the substituent R7 can, according to

synthesis scheme 1 or 2, also be introduced subsequently by reductive amination, which is to be illustrated in an exemplary manner using Examples 61 and 67:

EXAMPLE 61:

N-[5-Cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-methyl-4,4'-bipiperidine-1-carboxamide

100 mg (0.138 mmol) of 4-[1-({[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]amino}carbonyl)piperidin-4-yl]piperidinium chloride (corresponds to the chloride salt of Example 85) (prepared according to Example 1, process steps 1a) to 1f) and Example 55, process steps 55a) to 55b)) were initially introduced in 10 ml of dichloromethane. 20 µl (0.207 mmol) of aqueous formaldehyde solution (37% strength) were added, and the reaction mixture was stirred for 5 minutes. The solution became slightly turbid. 98 mg (0.69 mmol) of sodium sulphate and 20 µl (0.279 mmol) of glacial acetic acid were added, and the mixture was stirred for 1.5 h. 48.7 mg (0.207 mmol) of the hydrogenation reagent sodium acetoxyborohydride were introduced a little at a time, and after 15 minutes the reaction mixture became clear and then soon turbid again. The mixture was stirred at room temperature overnight and warmed to 40°C for another hour. The reaction mixture was initially diluted with 30 ml of dichloromethane and then extracted with saturated sodium bicarbonate solution (3 x). The combined organic phases were dried over magnesium sulphate and filtered, and the solvent was evaporated under reduced pressure. What was isolated were 75 mg of crude product which was purified by a preparative HPLC on a Chromolith column (RP-18e, from Merck, mobile phases acetonitrile/water, 0.01% acetic acid). What was isolated were 5 mg (0.007 mmol, 5%) of the desired *N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-methyl-4,4'-bipiperidine-1-carboxamide (proportionally present as acetate salt).

ESI-MS $[M+H^+]$ = 703.2 calculated for $C_{36}H_{42}N_6O_7S$ = 702.83

EXAMPLE 67:

N-[5-Cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-ethyl-4,4'-bipiperidine-1-carboxamide trifluoroacetate

ESI-MS $[M+H^+]$ = 717.30 calculated for $C_{37}H_{44}N_6O_7S$ = 716.86

RACEMATE RESOLUTION of the racemic compounds according to EXAMPLES 1 to 90:

In an exemplary manner, using Example 1, the separation of the racemates into its enantiomers (Example 1A and 1B) by separation on a preparative chiral column is shown:

A.) RACEMATE RESOLUTION of the racemic compound according to EXAMPLE 1:

100 mg (0.14 mmol) of the racemic *N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-methylpiperidin-4-yl)piperazine-1-carboxamide (EXAMPLE 1) were separated on a chiral preparative column (Chiralcell OD, flow rate 55 ml/min) using *n*-heptane/ethanol (700:300) as eluent. The enantiomer which eluted first, having a positive optical rotation (Example 1A), could be isolated in a yield of 19 mg (0.03 mmol, 19%) and the enantiomer which followed, having a negative optical rotation (Example 1B), could be isolated in a yield of 8 mg (0.01 mmol, 8%).

EXAMPLE 1A:

(+)-*N*-[5-Cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1H-indol-3-yl]-4-(1-methylpiperidin-4-yl)piperazine-1-carboxamide

ESI-MS $[M+H^+]$ = 704.25 calculated for $C_{35}H_{41}N_7O_7S$ = 703.82
HPLC (Chiralcel OD 0.46 cm x 25 cm; n-heptane/ethanol 7:3) R_f = 9.04 min
Optical rotation α (22°C, 589 nm, $CHCl_3$, 1 mg/ml) = dextrorotatory
^{1}H-NMR ([D6]-DMSO, 500 MHz) δ [ppm] = 8.13 (dd, 1H, J = 1.6 Hz, J = 4.9 Hz), 7.89 (d, 1H, J = 8.9 Hz), 7.88 (d, 1H, J = 8.6 Hz), 7.82 (dd, 1H, J = 1.7 Hz, J = 8.6 Hz), 7.72 (dd, 1H, J = 1.5 Hz, J = 7.7 Hz), 7.68 (d, 1H, J = 1.6 Hz), 7.65 (s, 1H), 7.02 (dd, 1H, J = 4.9 Hz, J = 7.6 Hz), 6.69 (dd, 1H, J = 2.2 Hz, J = 8.9 Hz), 6.66 (d, 1H, J = 2.1 Hz), 4.17 (m, 2H), 3.86 (s, 3H), 3.45 (s, 3H), 3.21 (m, 4H), 2.77 (m, 2H, J = 11.0 Hz), 2.34 (m, 4H), 2.12 (m, 4H), 1.82 (m, 2H, J = 10.9 Hz), 1.64 (m, 2H, J = 10.8 Hz), 1.37 (m, 2H), 1.08 (t, 3H, J = 7.0 Hz).

EXAMPLE 1B:

(-)-*N*-[5-Cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-methylpiperidin-4-yl)piperazine-1-carboxamide

ESI-MS $[M+H^+]$ = 704.25 calculated for $C_{35}H_{41}N_7O_7S$ = 703.82
HPLC (Chiralcel OD 0.46 cm x 25 cm; n-heptane/ethanol 7:3) R_f = 25.73 min
Optical rotation α (22°C, 589 nm, $CHCl_3$, 1 mg/ml) = laevorotatory
^{1}H-NMR ([D6]-DMSO, 500 MHz) δ [ppm] = 8.13 (dd, 1H, J = 1.2 Hz, J = 4.7 Hz), 7.88 (d,

1H, J = 8.9 Hz), 7.87 (d, 1H, J = 8.5 Hz), 7.81 (dd, 1H, J = 1.5 Hz, J = 8.5 Hz), 7.72 (dd, 1H, J = 1.1 Hz, J = 7.6 Hz), 7.68 (s, 1H), 7.64 (s, 1H), 7.01 (dd, 1H, J = 4.9 Hz, J = 7.6 Hz), 6.69 (dd, 1H, J = 1.9 Hz, J = 9.0 Hz), 6.66 (d, 1H, J = 1.9 Hz), 4.16 (m, 2H), 3.85 (s, 3H), 3.45 (s, 3H), 3.20 (m, 4H), 2.77 (m, 2H, J = 11.5 Hz), 2.34 (m, 4H), 2.12 (m, 4H), 1.82 (m, 2H, J = 11.3 Hz), 1.64 (m, 2H, J = 11.5 Hz), 1.37 (m, 2H), 1.07 (t, 3H, J = 7.0 Hz).

B.) RACEMATE RESOLUTION of the racemic compound according to EXAMPLE 31: N-[5-Cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1H-indol-3-yl]-4-(4-methylpiperazin-1-yl)piperidine-1-carboxamide (EXAMPLE 31) was separated on a chiral preparative column (Chiralcell OD, flow rate 55 ml/min) using *n*-heptane/ethanol (700:300) as eluent. The enantiomer which eluted first has a positive optical rotation (Example 31A), and the enantiomer which followed had a negative optical rotation (Example 31B).

EXAMPLE 31A:

(+)-*N*-[5-Cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-methylpiperazin-1-yl)piperidine-1-carboxamide

ESI-MS $[M+H^+]$ = 704.80 calculated for $C_{35}H_{41}N_7O_7S$ = 703.82
HPLC (Chiralcel OD 0.46 cm x 25 cm; n-heptane/ethanol 7:3) R_f = 9.60 min
Optical rotation α (22 °C, 589 nm, $CHCl_3$, 1 mg/ml) = dextrorotatory
^{1}H-NMR ([D6]-DMSO, 500 MHz) δ [ppm] = 8.12 (dd, 1H, J = 1.6 Hz, J = 4.8 Hz), 7.87 (d, 1H, J = 8.5 Hz), 7.86 (d, 1H, J = 8.8 Hz), 7.81 (dd, 1H, J = 1.7 Hz, J = 8.6 Hz), 7.73 (dd, 1H, J = 1.5 Hz, J = 7.7 Hz), 7.69 (s, 1H), 7.67 (d, 1H, J = 1.5 Hz), 7.02 (dd, 1H, J = 4.9 Hz, J = 7.6 Hz), 6.67 (dd, 1H, J = 2.2 Hz, J = 8.9 Hz), 6.65 (d, 1H, J = 2.1 Hz), 4.14 (m, 2H), 3.83 (s, 3H), 3.80 (m, 2H), 3.42 (s, 3H), 2.60 (m, 2H), 2.39-2.10 (m, 9H), 2.10 (s, 3H), 1.60 (m, 2H), 1.12 (m, 2H), 1.06 (t, 3H, J = 7.0 Hz).

EXAMPLE 31B:

(-)-*N*-[5-Cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-methylpiperazin-1-yl)piperidine-1-carboxamide

ESI-MS $[M+H^+]$ = 704.80 calculated for $C_{35}H_{41}N_7O_7S$ = 703.82
HPLC (Chiralcel OD 0.46 cm x 25 cm; n-heptane/ethanol 7:3) R_f = 34.31 min

Optical rotation α (22°C, 589 nm, $CHCl_3$, 1 mg/ml) = laevorotatory

^{1}H-NMR ([D6]-DMSO, 500 MHz) δ [ppm] = 8.12 (dd, 1H, J = 1.6 Hz, J = 4.9 Hz), 7.86 (d, 1H, J = 8.7 Hz), 7.85 (d, 1H, J = 8.8 Hz), 7.81 (dd, 1H, J = 1.6 Hz, J = 8.6 Hz), 7.72 (dd, 1H, J = 1.4 Hz, J = 7.6 Hz), 7.69 (s, 1H), 7.67 (d, 1H, J = 1.6 Hz), 7.02 (dd, 1H, J = 4.9 Hz, J = 7.6 Hz), 6.67 (dd, 1H, J = 2.2 Hz, J = 8.9 Hz), 6.64 (d, 1H, J = 2.0 Hz), 4.13 (m, 2H), 3.83 (s, 3H), 3.80 (m, 2H), 3.42 (s, 3H), 2.60 (m, 2H), 2.42-2.10 (m, 9H), 2.10 (s, 3H), 1.60 (m, 2H), 1.12 (m, 2H), 1.06 (t, 3H, J = 7.0 Hz).

C.) RACEMATE RESOLUTION of the racemic compound according to EXAMPLE 37: *N*-[5-Cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-ethylpiperazin-1-yl)piperidine-1-carboxamide (EXAMPLE 37) was separated on a chiral preparative column (Chiralcell OD, flow rate 55 ml/min) using *n*-heptane/ethanol (700:300) as eluent. The enantiomer which eluted first had a positive optical rotation (Example 37A), and the enantiomer which followed had a negative optical rotation (Example 37B).

EXAMPLE 37A:

(+)-*N*-[5-Cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-ethylpiperazin-1-yl)piperidine-1-carboxamide

ESI-MS [M+H$^+$] = 718.30 calculated for $C_{36}H_{43}F_3N_7O_7S$ = 717.85

HPLC (Chiralcel OD 0.46 cm x 25 cm; n-heptane/ethanol 7:3) R_f = 7.29 min

Optical rotation α (22 °C, 589 nm, $CHCl_3$, 1 mg/ml) = dextrorotatory

^{1}H-NMR ([D6]-DMSO, 500 MHz) δ [ppm] = 8.13 (dd, 1H, J = 1.7 Hz, J = 4.9 Hz), 7.89 (d, 1H, J = 8.6 Hz), 7.88 (d, 1H, J = 8.8 Hz), 7.82 (dd, 1H, J = 1.8 Hz, J = 8.6 Hz), 7.72 (dd, 1H, J = 1.7 Hz, J = 7.7 Hz), 7.69 (d, 1H, J = 1.7 Hz), 7.67 (s, 1H), 7.02 (dd, 1H, J = 4.9 Hz, J = 7.7 Hz), 6.69 (dd, 1H, J = 2.2 Hz, J = 8.9 Hz), 6.66 (d, 1H, J = 2.2 Hz), 4.18 (m, 2H), 3.85 (s, 3H), 3.81 (m, 2H), 3.44 (s, 3H), 2.62 (m, 2H), 2.42-2.24 (m, 11H), 1.62 (m, 2H), 1.15 (m, 2H), 1.09 (t, 3H, J = 7.1 Hz), 0.96 (t, 3H, J = 7.2 Hz).

EXAMPLE 37B:

(-)-*N*-[5-Cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-ethylpiperazin-1-yl)piperidine-1-carboxamide

ESI-MS [M+H$^+$] = 718.25 calculated for $C_{36}H_{43}F_3N_7O_7S$ = 717.85

HPLC (Chiralcel OD 0.46 cm x 25 cm; n-heptane/ethanol 7:3) R_f = 12.41 min
Optical rotation α (22 °C, 589 nm, $CHCl_3$, 1 mg/ml) = laevorotatory
^{1}H-NMR ([D6]-DMSO, 500 MHz) δ [ppm] = 8.12 (dd, 1H, J = 1.6 Hz, J = 4.9 Hz), 7.88 (d, 1H, J = 8.5 Hz), 7.87 (d, 1H, J = 8.8 Hz), 7.80 (dd, 1H, J = 1.7 Hz, J = 8.6 Hz), 7.71 (dd, 1H, J = 1.5 Hz, J = 7.7 Hz), 7.68 (d, 1H, J = 1.5 Hz), 7.66 (s, 1H), 7.00 (dd, 1H, J = 4.9 Hz, J = 7.6 Hz), 6.67 (dd, 1H, J = 2.2 Hz, J = 8.9 Hz), 6.65 (d, 1H, J = 2.1 Hz), 4.16 (m, 2H), 3.84 (s, 3H), 3.80 (m, 2H), 3.44 (s, 3H), 2.61 (m, 2H), 2.41-2.23 (m, 11H), 1.60 (m, 2H), 1.14 (m, 2H), 1.08 (t, 3H, J = 7.1 Hz), 0.95 (t, 3H, J = 7.2 Hz).

D.) RACEMATE RESOLUTION of the racemic compounds 2 to 30, 21 to 36 and 38 to 90:

In a manner analogous to the racemate resolutions of the racemic compounds 1, 31 and 37, it is possible to carry out the separation of the racemates 2 to 30, 32 to 36 and 38 to 90 give the corresponding (+)-enantiomers 2A, 3A, 4A, 5A, 6A, 7A, 8A, 9A, 10A, 11A, 12A, 13A, 14A, 15A, 16A, 17A, 18A, 19A, 20A, 21A, 22A, 23A, 24A, 25A, 26A, 27A, 28A, 29A, 30A and 32A, 33A, 34A, 35A and 38A, 39A, 40A, 41A, 42A, 43A, 44A, 45A, 46A, 47A, 48A, 49A, 50A, 51A, 52A, 53A, 54A, 55A, 56A, 57A, 58A, 59A, 60A, 61A, 62A, 63A, 64A, 65A, 66A, 67A, 68A, 69A, 70A, 71A, 72A, 73A, 74A, 75A, 76A, 77A, 78A, 79A, 80A, 81A, 82A, 83A, 84A, 85A, 86A, 87A, 88A, 89A and 90A
and the corresponding (-)-enantiomers 2B, 3B, 4B, 5B, 6B, 7B, 8B, 9B, 10B, 11B, 12B, 13B, 14B, 15B, 16B, 17B, 18B, 19B, 20B, 21B, 22B, 23B, 24B, 25B, 26B, 27B, 28B, 29B, 30B and 32B, 33B, 34B, 35B and 38B, 39B, 40B, 41B, 42B, 43B, 44B, 45B, 46B, 47B, 48B, 49B, 50B, 51B, 52B, 53B, 54B, 55B, 56B, 57B, 58B, 59B, 60B, 61B, 62B, 63B, 64B, 65B, 66B, 67B, 68B, 69B, 70B, 71B, 72B, 73B, 74B, 75B, 76B, 77B, 78B, 79B, 80B, 81B, 82B, 83B, 84B, 85B, 86B, 87B, 88B, 89B and 90B.

The enantiomers A and B can also be prepared using enantiomerically pure precursors and intermediates, for example analogously to synthesis schemes 1 or 2, preferably via synthesis scheme 1. The separation of the racemic mixture into the (+)-enantiomers and (-)-enantiomers can be carried out by chiral preparative chromatography, preferably via the corresponding amine building block VI.

EXAMPLE 7B:

(-)-*N*-[5-Cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-ethylpiperidin-4-yl)piperazine-1-carboxamide trifluoroacetate

ESI-MS [M+H$^+$] = 718.25 calculated for $C_{36}H_{43}N_7O_7S$ = 717.85

EXAMPLE 40B:
(-)-*N*-[5-Cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4-(4-ethylpiperazin-1-yl)piperidin-1-carboxamide

ESI-MS [M+H$^+$] = 658.25 calculated for $C_{34}H_{39}N_7O_5S$ = 657.79

EXAMPLE 61B:
(-)-*N*-[5-Cyano-1-[(2,4-dimethoxyphenyl)sulphonyl)-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-methyl-4,4'-bipiperidine-1-carboxamide trifluoroacetate

ESI-MS [M+H$^+$] = 703.30 calculated for $C_{36}H_{42}N_6O_7S$ = 702.83
^{1}H-NMR ([D6]-DMSO, 500 MHz) δ [ppm] = 9.26 (1H, protonation of TFA), 8.12 (dd, 1H, J = 1.7 Hz, J = 4.9 Hz), 7.87 (dd, 2H, J = 1.3 Hz, J = 8.7 Hz), 7.80 (dd, 1H, J = 1.8 Hz, J = 8.5 Hz), 7.80 (m, 2H), 7.66 (s, 1H), 7.00 (dd, 1H, J = 4.9 Hz, J = 7.6 Hz), 6.68 (dd, 1H, J = 2.2 Hz, J = 8.9 Hz), 6.65 (d, 1H, J = 2.1 Hz), 4.16 (m, 2H), 3.85 (s, 6H), 3.44 - 3.41 (m, 5H), 2.85 (m, 2H), 2.73 (m, 2H), 2.57 (m, 2H), 1.81 (m, 2H), 1.55 (m, 2H), 1.34 - 1.22 (m, 4H), 1.08 (t, 3H, J = 7.0 Hz), 0.92 (m, 2H).

EXAMPLE 67B:
(-)-*N*-[5-Cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-ethyl-4,4'-bipiperidine-1-carboxamide trifluoroacetate

ESI-MS [M+H$^+$] = 717.35 calculated for $C_{37}H_{44}N_6O_7S$ = 716.86

The amines of the general formula X can be prepared according to synthesis scheme 1 or 2 by reductive amination. Hereinbelow, this is shown using the preparation of the amine compound 1-ethyl-4-piperidin-4-ylpiperazine as an example:

EXAMPLE 91: 1-Ethyl-4-piperidin-4-ylpiperazine

91a) tert-Butyl 4-(4-ethylpiperazin-1-yl)piperidine-1-carboxylate
With ice-cooling, 29.2 g (256 mmol) of *N*-ethylpiperazine and 50.0 g (256 mmol) of *tert*-butyl 4-oxopiperidine-1-carboxylate (corresponds to 1-Boc-4-piperidone) were initially

charged in 800 ml of ethanol and 15.4 g (256 mmol) of glacial acetic acid were added. A little at a time, 16.1 g (256 mmol) of sodium acetoxyborohydride was then added to the cooled reaction mixture. Initially, a slight evolution of gas and, after 2/3 of the reducing agent had been added, foaming could be observed. The reaction mixture was stirred at room temperature overnight. For work-up, 200 ml of 2 *N* aqueous sodium hydroxide solution were added with cooling to the reaction solution, the solvent ethanol was distilled off and the reaction mixture which remained was diluted with water. The mixture was extracted with diethyl ether (2 x) and washed with saturated sodium chloride solution (1 x), the combined organic phases were dried over magnesium sulphate and filtered and the solvent was removed under reduced pressure. The desired product was obtained as a yellow oil which was subsequently chromatographed on a 4 l Nutsche filter filled with silica gel, using dichloromethane and 10% methanol as eluents. This gave a total of 40 g (135 mmol, 53%) of *tert*-butyl 4-(4-ethylpiperazin-1-yl)piperidine-1-carboxylate.

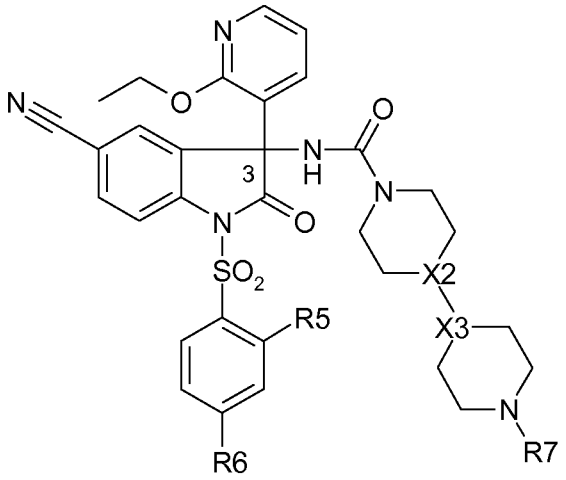
91 b) 1-Ethyl-4-piperidin-4-ylpiperazine as chloride salt:

To remove the protective groups, 40 g (135 mmol) of the *tert*-butyl 4-(4-ethylpiperazin-1-yl)piperidine-1-carboxylate were initially charged in 200 ml of methanol and 1.8 l of dichloromethane, and 100 ml 5-6 M HCl solution in isopropanol were added. The solution became a suspension, and a slight evolution of gas could be observed. The reaction mixture was stirred at 40°C (water bath temperature) for one hour and at room temperature over the weekend. For complete deprotection to the desired product, another 50 ml of the 5-6 M HCl solution in isopropanol were added, and the mixture was stirred at 40°C. The dichloromethane was distilled off on a rotary evaporator, and another 200 ml of methanol and 30 ml of the 5-6 M HCl solution in isopropanol were added. After one hour of stirring under reflux, a white suspension formed with strong evolution of gas. Subsequently, a low-viscosity suspension was fomed, which was cooled to room temperature. The precipitate was filtered off with suction and washed with methanol and diethyl ether. After drying, 36 g (117 mmol, 87%) of 1-ethyl-4-piperidin-4-ylpiperazine were isolated as chloride salt.

^{1}H-NMR (D_2O, 400 MHz) δ [ppm] = 3.74 - 3.47 (m, 11H), 3.28 (q, 2H, J = 7.3 Hz), 3.06 (dt, 2H, J = 2.2 Hz, J = 13.2 Hz), 2.38 (m, 2H, J = 13.6 Hz), 1.89 (dq, 2H, J = 4.1 Hz, J = 13.3 Hz), 1.30 (t, 3H, J = 7.3 Hz).

The chemical structures of the compounds according to Examples 1 to 90 (racemate) and

the corresponding dextrorotatory (+)-enantiomers (Examples Nos. 1 to 90 with the appended letter "A" such as, for example, 1A, 2A, etc. ...) and the corresponding laevorotatory (-)-enantiomers (Example Nos. 1 to 90 with the appended letter "B", such as, for example, 1B, 2B, etc. ...) are shown in Table 2 below:



(Ib)

Table 2: Compounds of the general formula (Ib) where the radicals R5, R6, R7, X2 and X3 have the meanings mentioned below (in each case per row):

Exp. No.	**X2**	**X3**	**R5**	**R6**	**R7**	**IUPAC Name (according to ACD-Labs Version 8.00 release product version 8.05)**
1	N	CH	methoxy	methoxy	methyl	*(±)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-methylpiperidin-4-yl)piperazine-1-carboxamide
1A	N	CH	methoxy	methoxy	methyl	*(+)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-methylpiperidin-4-yl)piperazine-1-carboxamide
1B	N	CH	methoxy	methoxy	methyl	*(-)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-methylpiperidin-4-yl)piperazine-1-carboxamide
2	N	CH	methoxy	H	methyl	*(±)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-

Exp. No.	X2	X3	R5	R6	R7	IUPAC Name (according to ACD-Labs Version 8.00 release product version 8.05)
						dihydro-1*H*-indol-3-yl}-4-(1-methylpiperidin-4-yl)piperazine-1-carboxamide
2A	N	CH	methoxy	H	methyl	*(+)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(1-methylpiperidin-4-yl)piperazine-1-carboxamide
2B	N	CH	methoxy	H	methyl	*(-)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(1-methylpiperidin-4-yl)piperazine-1-carboxamide
3	N	CH	ethoxy	H	methyl	*(±)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-methylpiperidin-4-yl)piperazine-1-carboxamide
3A	N	CH	ethoxy	H	methyl	*(+)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-methylpiperidin-4-yl)piperazine-1-carboxamide
3B	N	CH	ethoxy	H	methyl	*(-)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-methylpiperidin-4-yl)piperazine-1-carboxamide
4	N	CH	H	H	methyl	*(±)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4-(1-methylpiperidin-4-yl)piperazine-1-carboxamide
4A	N	CH	H	H	methyl	*(+)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4-(1-methylpiperidin-4-yl)piperazine-1-carboxamide
4B	N	CH	H	H	methyl	*(-)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4-(1-methylpiperidin-4-yl)piperazine-1-carboxamide
5	N	CH	H	methoxy	methyl	*(±)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(1-methylpiperidin-4-yl)piperazine-1-carboxamide
5A	N	CH	H	methoxy	methyl	*(+)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(1-methylpiperidin-4-yl)piperazine-1-carboxamide
5B	N	CH	H	methoxy	methyl	*(-)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(1-methylpiperidin-4-yl)piperazine-1-carboxamide

Exp. No.	X2	X3	R5	R6	R7	IUPAC Name (according to ACD-Labs Version 8.00 release product version 8.05)
6	N	CH	ethoxy	methoxy	methyl	*(±)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-methylpiperidin-4-yl)piperazine-1-carboxamide
6A	N	CH	ethoxy	methoxy	methyl	*(+)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-methylpiperidin-4-yl)piperazine-1-carboxamide
6B	N	CH	ethoxy	methoxy	methyl	*(-)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-methylpiperidin-4-yl)piperazine-1-carboxamide
7	N	CH	methoxy	methoxy	ethyl	*(±)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-ethylpiperidin-4-yl)piperazine-1-carboxamide
7A	N	CH	methoxy	methoxy	ethyl	*(+)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-ethylpiperidin-4-yl)piperazine-1-carboxamide
7B	N	CH	methoxy	methoxy	ethyl	*(-)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-ethylpiperidin-4-yl)piperazine-1-carboxamide
8	N	CH	methoxy	H	ethyl	*(±)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(1-ethylpiperidin-4-yl)piperazine-1-carboxamide
8A	N	CH	methoxy	H	ethyl	*(+)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(1-ethylpiperidin-4-yl)piperazine-1-carboxamide
8B	N	CH	methoxy	H	ethyl	*(-)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(1-ethylpiperidin-4-yl)piperazine-1-carboxamide
9	N	CH	ethoxy	H	ethyl	*(±)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-ethylpiperidin-4-yl)piperazine-1-carboxamide
9A	N	CH	ethoxy	H	ethyl	*(+)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-

Exp. No.	X2	X3	R5	R6	R7	IUPAC Name (according to ACD-Labs Version 8.00 release product version 8.05)
						dihydro-1*H*-indol-3-yl]-4-(1-ethylpiperidin-4-yl)piperazine-1-carboxamide
9B	N	CH	ethoxy	H	ethyl	*(-)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-ethylpiperidin-4-yl)piperazine-1-carboxamide
10	N	CH	H	H	ethyl	*(±)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4-(1-ethylpiperidin-4-yl)piperazine-1-carboxamide
10A	N	CH	H	H	ethyl	*(+)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4-(1-ethylpiperidin-4-yl)piperazine-1-carboxamide
10B	N	CH	H	H	ethyl	*(-)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4-(1-ethylpiperidin-4-yl)piperazine-1-carboxamide
11	N	CH	H	methoxy	ethyl	*(±)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(1-ethylpiperidin-4-yl)piperazine-1-carboxamide
11A	N	CH	H	methoxy	ethyl	*(+)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(1-ethylpiperidin-4-yl)piperazine-1-carboxamide
11B	N	CH	H	methoxy	ethyl	*(-)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(1-ethylpiperidin-4-yl)piperazine-1-carboxamide
12	N	CH	ethoxy	methoxy	ethyl	*(±)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-ethylpiperidin-4-yl)piperazine-1-carboxamide
12A	N	CH	ethoxy	methoxy	ethyl	*(+)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-ethylpiperidin-4-yl)piperazine-1-carboxamide
12B	N	CH	ethoxy	methoxy	ethyl	*(-)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-ethylpiperidin-4-yl)piperazine-1-carboxamide
13	N	CH	methoxy	methoxy	n-propyl	*(±)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-propylpiperidin-4-yl)piperazine-1-carboxamide

Exp. No.	X2	X3	R5	R6	R7	IUPAC Name (according to ACD-Labs Version 8.00 release product version 8.05)
13A	N	CH	methoxy	methoxy	n-propyl	*(+)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-propylpiperidin-4-yl)piperazine-1-carboxamide
13B	N	CH	methoxy	methoxy	n-propyl	*(-)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-propylpiperidin-4-yl)piperazine-1-carboxamide
14	N	CH	methoxy	H	n-propyl	*(±)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(1-propylpiperidin-4-yl)piperazine-1-carboxamide
14A	N	CH	methoxy	H	n-propyl	*(+)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(1-propylpiperidin-4-yl)piperazine-1-carboxamide
14B	N	CH	methoxy	H	n-propyl	*(-)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(1-propylpiperidin-4-yl)piperazine-1-carboxamide
15	N	CH	ethoxy	H	n-propyl	*(±)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-propylpiperidin-4-yl)piperazine-1-carboxamide
15A	N	CH	ethoxy	H	n-propyl	*(+)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-propylpiperidin-4-yl)piperazine-1-carboxamide
15B	N	CH	ethoxy	H	n-propyl	*(-)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-propylpiperidin-4-yl)piperazine-1-carboxamide
16	N	CH	H	H	n-propyl	*(±)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4-(1-propylpiperidin-4-yl)piperazine-1-carboxamide
16A	N	CH	H	H	n-propyl	*(+)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4-(1-propylpiperidin-4-yl)piperazine-1-carboxamide
16B	N	CH	H	H	n-propyl	*(-)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4-(1-propylpiperidin-4-yl)piperazine-1-carboxamide
17	N	CH	H	methoxy	n-	*(±)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-

Exp. No.	X2	X3	R5	R6	R7	IUPAC Name (according to ACD-Labs Version 8.00 release product version 8.05)
					propyl	dihydro-1*H*-indol-3-yl}-4-(1-propylpiperidin-4-yl)piperazine-1-carboxamide
17A	N	CH	H	methoxy	n-propyl	*(+)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(1-propylpiperidin-4-yl)piperazine-1-carboxamide
17B	N	CH	H	methoxy	n-propyl	*(-)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(1-propylpiperidin-4-yl)piperazine-1-carboxamide
18	N	CH	ethoxy	methoxy	n-propyl	*(±)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-propylpiperidin-4-yl)piperazine-1-carboxamide
18A	N	CH	ethoxy	methoxy	n-propyl	*(+)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-propylpiperidin-4-yl)piperazine-1-carboxamide
18B	N	CH	ethoxy	methoxy	n-propyl	*(-)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-propylpiperidin-4-yl)piperazine-1-carboxamide
19	N	CH	methoxy	methoxy	isopropyl	*(±)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-isopropylpiperidin-4-yl)piperazine-1-carboxamide
19A	N	CH	methoxy	methoxy	isopropyl	*(+)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-isopropylpiperidin-4-yl)piperazine-1-carboxamide
19B	N	CH	methoxy	methoxy	isopropyl	*(-)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-isopropylpiperidin-4-yl)piperazine-1-carboxamide
20	N	CH	methoxy	H	isopropyl	*(±)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(1-isopropylpiperidin-4-yl)piperazine-1-carboxamide
20A	N	CH	methoxy	H	isopropyl	*(+)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(1-isopropylpiperidin-4-yl)piperazine-1-carboxamide

Exp. No.	X2	X3	R5	R6	R7	IUPAC Name (according to ACD-Labs Version 8.00 release product version 8.05)
20B	N	CH	methoxy	H	isopropyl	*(-)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(1-isopropylpiperidin-4-yl)piperazine-1-carboxamide
21	N	CH	ethoxy	H	isopropyl	*(±)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-isopropylpiperidin-4-yl)piperazine-1-carboxamide
21A	N	CH	ethoxy	H	isopropyl	*(+)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-isopropylpiperidin-4-yl)piperazine-1-carboxamide
21B	N	CH	ethoxy	H	isopropyl	*(-)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-isopropylpiperidin-4-yl)piperazine-1-carboxamide
22	N	CH	H	H	isopropyl	*(±)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4-(1-isopropylpiperidin-4-yl)piperazine-1-carboxamide
22A	N	CH	H	H	isopropyl	*(+)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4-(1-isopropylpiperidin-4-yl)piperazine-1-carboxamide
22B	N	CH	H	H	isopropyl	*(-)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4-(1-isopropylpiperidin-4-yl)piperazine-1-carboxamide
23	N	CH	H	methoxy	isopropyl	*(±)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(1-isopropylpiperidin-4-yl)piperazine-1-carboxamide
23A	N	CH	H	methoxy	isopropyl	*(+)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(1-isopropylpiperidin-4-yl)piperazine-1-carboxamide
23B	N	CH	H	methoxy	isopropyl	*(-)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(1-isopropylpiperidin-4-yl)piperazine-1-carboxamide
24	N	CH	ethoxy	methoxy	isopropyl	*(±)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-isopropylpiperidin-4-yl)piperazine-1-carboxamide

Exp. No.	X2	X3	R5	R6	R7	IUPAC Name (according to ACD-Labs Version 8.00 release product version 8.05)
24A	N	CH	ethoxy	methoxy	isopropyl	*(+)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-isopropylpiperidin-4-yl)piperazine-1-carboxamide
24B	N	CH	ethoxy	methoxy	isopropyl	*(-)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(1-isopropylpiperidin-4-yl)piperazine-1-carboxamide
25	N	CH	methoxy	methoxy	H	*(±)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-piperidin-4-ylpiperazine-1-carboxamide
25A	N	CH	methoxy	methoxy	H	*(+)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-piperidin-4-ylpiperazine-1-carboxamide
25B	N	CH	methoxy	methoxy	H	*(-)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-piperidin-4-ylpiperazine-1-carboxamide
26	N	CH	methoxy	H	H	*(±)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-piperidin-4-ylpiperazine-1-carboxamide
26A	N	CH	methoxy	H	H	*(+)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-piperidin-4-ylpiperazine-1-carboxamide
26B	N	CH	methoxy	H	H	*(-)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-piperidin-4-ylpiperazine-1-carboxamide
27	N	CH	ethoxy	H	H	*(±)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-piperidin-4-ylpiperazine-1-carboxamide
27A	N	CH	ethoxy	H	H	*(+)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-piperidin-4-ylpiperazine-1-carboxamide
27B	N	CH	ethoxy	H	H	*(-)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-

Exp. No.	X2	X3	R5	R6	R7	IUPAC Name (according to ACD-Labs Version 8.00 release product version 8.05)
						dihydro-1*H*-indol-3-yl]-4-piperidin-4-ylpiperazine-1-carboxamide
28	N	CH	H	H	H	*(±)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4-piperidin-4-ylpiperazine-1-carboxamide
28A	N	CH	H	H	H	*(+)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4-piperidin-4-ylpiperazine-1-carboxamide
28B	N	CH	H	H	H	*(-)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4-piperidin-4-ylpiperazine-1-carboxamide
29	N	CH	H	methoxy	H	*(±)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-piperidin-4-ylpiperazine-1-carboxamide
29A	N	CH	H	methoxy	H	*(+)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-piperidin-4-ylpiperazine-1-carboxamide
29B	N	CH	H	methoxy	H	*(-)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-piperidin-4-ylpiperazine-1-carboxamide
30	N	CH	ethoxy	methoxy	H	*(±)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-piperidin-4-ylpiperazine-1-carboxamide
30A	N	CH	ethoxy	methoxy	H	*(+)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-piperidin-4-ylpiperazine-1-carboxamide
30B	N	CH	ethoxy	methoxy	H	*(-)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-piperidin-4-ylpiperazine-1-carboxamide
31	CH	N	methoxy	methoxy	methyl	*(±)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-methylpiperazin-1-yl)piperidine-1-carboxamide
31A	CH	N	methoxy	methoxy	methyl	*(+)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-methylpiperazin-1-yl)piperidine-1-carboxamide

Exp. No.	X2	X3	R5	R6	R7	IUPAC Name (according to ACD-Labs Version 8.00 release product version 8.05)
31B	CH	N	methoxy	methoxy	methyl	*(-)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-methylpiperazin-1-yl)piperidine-1-carboxamide
32	CH	N	methoxy	H	methyl	*(±)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(4-methylpiperazin-1-yl)piperidine-1-carboxamide
32A	CH	N	methoxy	H	methyl	*(+)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(4-methylpiperazin-1-yl)piperidine-1-carboxamide
32B	CH	N	methoxy	H	methyl	*(-)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(4-methylpiperazin-1-yl)piperidine-1-carboxamide
33	CH	N	ethoxy	H	methyl	*(±)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-methylpiperazin-1-yl)piperidine-1-carboxamide
33A	CH	N	ethoxy	H	methyl	*(+)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-methylpiperazin-1-yl)piperidine-1-carboxamide
33B	CH	N	ethoxy	H	methyl	*(-)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-methylpiperazin-1-yl)piperidine-1-carboxamide
34	CH	N	H	H	methyl	*(±)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4-(4-methylpiperazin-1-yl)piperidine-1-carboxamide
34A	CH	N	H	H	methyl	*(+)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4-(4-methylpiperazin-1-yl)piperidine-1-carboxamide
34B	CH	N	H	H	methyl	*(-)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4-(4-methylpiperazin-1-yl)piperidine-1-carboxamide
35	CH	N	H	methoxy	methyl	*(±)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(4-methylpiperazin-1-yl)piperidine-1-carboxamide
35A	CH	N	H	methoxy	methyl	*(+)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-

Exp. No.	X2	X3	R5	R6	R7	IUPAC Name (according to ACD-Labs Version 8.00 release product version 8.05)
						dihydro-1*H*-indol-3-yl}-4-(4-methylpiperazin-1-yl)piperidine-1-carboxamide
35B	CH	N	H	methoxy	methyl	*(-)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(4-methylpiperazin-1-yl)piperidine-1-carboxamide
36	CH	N	ethoxy	methoxy	methyl	*(±)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-methylpiperazin-1-yl)piperidine-1-carboxamide
36A	CH	N	ethoxy	methoxy	methyl	*(+)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-methylpiperazin-1-yl)piperidine-1-carboxamide
36B	CH	N	ethoxy	methoxy	methyl	*(-)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-methylpiperazin-1-yl)piperidine-1-carboxamide
37	CH	N	methoxy	methoxy	ethyl	*(±)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-ethylpiperazin-1-yl)piperidine-1-carboxamide
37A	CH	N	methoxy	methoxy	ethyl	*(+)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-ethylpiperazin-1-yl)piperidine-1-carboxamide
37B	CH	N	methoxy	methoxy	ethyl	*(-)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-ethylpiperazin-1-yl)piperidine-1-carboxamide
38	CH	N	methoxy	H	ethyl	*(±)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(4-ethylpiperazin-1-yl)piperidine-1-carboxamide
38A	CH	N	methoxy	H	ethyl	*(+)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(4-ethylpiperazin-1-yl)piperidine-1-carboxamide
38B	CH	N	methoxy	H	ethyl	*(-)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(4-ethylpiperazin-1-yl)piperidine-1-carboxamide

Exp. No.	X2	X3	R5	R6	R7	IUPAC Name (according to ACD-Labs Version 8.00 release product version 8.05)
39	CH	N	ethoxy	H	ethyl	*(±)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-ethylpiperazin-1-yl)piperidine-1-carboxamide
39A	CH	N	ethoxy	H	ethyl	*(+)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-ethylpiperazin-1-yl)piperidine-1-carboxamide
39B	CH	N	ethoxy	H	ethyl	*(-)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-ethylpiperazin-1-yl)piperidine-1-carboxamide
40	CH	N	H	H	ethyl	*(±)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4-(4-ethylpiperazin-1-yl)piperidine-1-carboxamide
40A	CH	N	H	H	ethyl	*(+)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4-(4-ethylpiperazin-1-yl)piperidine-1-carboxamide
40B	CH	N	H	H	ethyl	*(-)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4-(4-ethylpiperazin-1-yl)piperidine-1-carboxamide
41	CH	N	H	methoxy	ethyl	*(±)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(4-ethylpiperazin-1-yl)piperidine-1-carboxamide
41A	CH	N	H	methoxy	ethyl	*(+)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(4-ethylpiperazin-1-yl)piperidine-1-carboxamide
41B	CH	N	H	methoxy	ethyl	*(-)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(4-ethylpiperazin-1-yl)piperidine-1-carboxamide
42	CH	N	ethoxy	methoxy	ethyl	*(±)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-ethylpiperazin-1-yl)piperidine-1-carboxamide
42A	CH	N	ethoxy	methoxy	ethyl	*(+)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-ethylpiperazin-1-yl)piperidine-1-carboxamide
42B	CH	N	ethoxy	methoxy	ethyl	*(-)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-

Exp. No.	X2	X3	R5	R6	R7	IUPAC Name (according to ACD-Labs Version 8.00 release product version 8.05)
						oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-ethylpiperazin-1-yl)piperidine-1-carboxamide
43	CH	N	methoxy	methoxy	n-propyl	*(±)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-propylpiperazin-1-yl)piperidine-1-carboxamide
43A	CH	N	methoxy	methoxy	n-propyl	*(+)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-propylpiperazin-1-yl)piperidine-1-carboxamide
43B	CH	N	methoxy	methoxy	n-propyl	*(-)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-propylpiperazin-1-yl)piperidine-1-carboxamide
44	CH	N	methoxy	H	n-propyl	*(±)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(4-propylpiperazin-1-yl)piperidine-1-carboxamide
44A	CH	N	methoxy	H	n-propyl	*(+)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(4-propylpiperazin-1-yl)piperidine-1-carboxamide
44B	CH	N	methoxy	H	n-propyl	*(-)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(4-propylpiperazin-1-yl)piperidine-1-carboxamide
45	CH	N	ethoxy	H	n-propyl	*(±)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-propylpiperazin-1-yl)piperidine-1-carboxamide
45A	CH	N	ethoxy	H	n-propyl	*(+)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-propylpiperazin-1-yl)piperidine-1-carboxamide
45B	CH	N	ethoxy	H	n-propyl	*(-)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-propylpiperazin-1-yl)piperidine-1-carboxamide
46	CH	N	H	H	n-propyl	*(±)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4-(4-propylpiperazin-1-yl)piperidine-1-carboxamide
46A	CH	N	H	H	n-propyl	*(+)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4-(4-propylpiperazin-1-yl)piperidine-1-carboxamide

Exp. No.	X2	X3	R5	R6	R7	IUPAC Name (according to ACD-Labs Version 8.00 release product version 8.05)
46B	CH	N	H	H	n-propyl	*(-)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4-(4-propylpiperazin-1-yl)piperidine-1-carboxamide
47	CH	N	H	methoxy	n-propyl	*(±)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(4-propylpiperazin-1-yl)piperidine-1-carboxamide
47A	CH	N	H	methoxy	n-propyl	*(+)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(4-propylpiperazin-1-yl)piperidine-1-carboxamide
47B	CH	N	H	methoxy	n-propyl	*(-)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(4-propylpiperazin-1-yl)piperidine-1-carboxamide
48	CH	N	ethoxy	methoxy	n-propyl	*(±)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-propylpiperazin-1-yl)piperidine-1-carboxamide
48A	CH	N	ethoxy	methoxy	n-propyl	*(+)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-propylpiperazin-1-yl)piperidine-1-carboxamide
48B	CH	N	ethoxy	methoxy	n-propyl	*(-)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-propylpiperazin-1-yl)piperidine-1-carboxamide
49	CH	N	methoxy	methoxy	isopropyl	*(±)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-isopropylpiperazin-1-yl)piperidine-1-carboxamide
49A	CH	N	methoxy	methoxy	isopropyl	*(+)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-isopropylpiperazin-1-yl)piperidine-1-carboxamide
49B	CH	N	methoxy	methoxy	isopropyl	*(-)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-isopropylpiperazin-1-yl)piperidine-1-carboxamide
50	CH	N	methoxy	H	isoprop	*(±)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-

Exp. No.	X2	X3	R5	R6	R7	IUPAC Name (according to ACD-Labs Version 8.00 release product version 8.05)
					yl	dihydro-1*H*-indol-3-yl}-4-(4-isopropylpiperazin-1-yl)piperidine-1-carboxamide
50A	CH	N	methoxy	H	isopropyl	*(+)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(4-isopropylpiperazin-1-yl)piperidine-1-carboxamide
50B	CH	N	methoxy	H	isopropyl	*(-)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(4-isopropylpiperazin-1-yl)piperidine-1-carboxamide
51	CH	N	ethoxy	H	isopropyl	*(±)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-isopropylpiperazin-1-yl)piperidine-1-carboxamide
51A	CH	N	ethoxy	H	isopropyl	*(+)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-isopropylpiperazin-1-yl)piperidine-1-carboxamide
51B	CH	N	ethoxy	H	isopropyl	*(-)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-isopropylpiperazin-1-yl)piperidine-1-carboxamide
52	CH	N	H	H	isopropyl	*(±)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4-(4-isopropylpiperazin-1-yl)piperidine-1-carboxamide
52A	CH	N	H	H	isopropyl	*(+)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4-(4-isopropylpiperazin-1-yl)piperidine-1-carboxamide
52B	CH	N	H	H	isopropyl	*(-)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4-(4-isopropylpiperazin-1-yl)piperidine-1-carboxamide
53	CH	N	H	methoxy	isopropyl	*(±)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(4-isopropylpiperazin-1-yl)piperidine-1-carboxamide
53A	CH	N	H	methoxy	isopropyl	*(+)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(4-isopropylpiperazin-1-yl)piperidine-1-carboxamide
53B	CH	N	H	methoxy	isopropyl	*(-)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-(4-isopropylpiperazin-1-yl)piperidine-1-carboxamide

Exp. No.	X2	X3	R5	R6	R7	IUPAC Name (according to ACD-Labs Version 8.00 release product version 8.05)
54	CH	N	ethoxy	methoxy	isopropyl	*(±)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-isopropylpiperazin-1-yl)piperidine-1-carboxamide
54A	CH	N	ethoxy	methoxy	isopropyl	*(+)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-isopropylpiperazin-1-yl)piperidine-1-carboxamide
54B	CH	N	ethoxy	methoxy	isopropyl	*(-)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-(4-isopropylpiperazin-1-yl)piperidine-1-carboxamide
55	CH	N	methoxy	methoxy	H	*(±)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-piperazin-1-ylpiperidine-1-carboxamide
55A	CH	N	methoxy	methoxy	H	*(+)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-piperazin-1-ylpiperidine-1-carboxamide
55B	CH	N	methoxy	methoxy	H	*(-)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-piperazin-1-ylpiperidine-1-carboxamide
56	CH	N	methoxy	H	H	*(±)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-piperazin-1-ylpiperidine-1-carboxamide
56A	CH	N	methoxy	H	H	*(+)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-piperazin-1-ylpiperidine-1-carboxamide
56B	CH	N	methoxy	H	H	*(-)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-piperazin-1-ylpiperidine-1-carboxamide
57	CH	N	ethoxy	H	H	*(±)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-piperazin-1-ylpiperidine-1-carboxamide

Exp. No.	X2	X3	R5	R6	R7	IUPAC Name (according to ACD-Labs Version 8.00 release product version 8.05)
57A	CH	N	ethoxy	H	H	*(+)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-piperazin-1-ylpiperidine-1-carboxamide
57B	CH	N	ethoxy	H	H	*(-)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-piperazin-1-ylpiperidine-1-carboxamide
58	CH	N	H	H	H	*(±)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4-piperazin-1-ylpiperidine-1-carboxamide
58A	CH	N	H	H	H	*(+)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4-piperazin-1-ylpiperidine-1-carboxamide
58B	CH	N	H	H	H	*(-)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4-piperazin-1-ylpiperidine-1-carboxamide
59	CH	N	H	methoxy	H	*(±)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-piperazin-1-ylpiperidine-1-carboxamide
59A	CH	N	H	methoxy	H	*(+)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-piperazin-1-ylpiperidine-1-carboxamide
59B	CH	N	H	methoxy	H	*(-)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4-piperazin-1-ylpiperidine-1-carboxamide
60	CH	N	ethoxy	methoxy	H	*(±)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-piperazin-1-ylpiperidine-1-carboxamide
60A	CH	N	ethoxy	methoxy	H	*(+)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-piperazin-1-ylpiperidine-1-carboxamide
60B	CH	N	ethoxy	methoxy	H	*(-)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4-piperazin-1-ylpiperidine-1-carboxamide
61	CH	CH	methoxy	methoxy	methyl	*(±)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-

Exp. No.	X2	X3	R5	R6	R7	IUPAC Name (according to ACD-Labs Version 8.00 release product version 8.05)
						2,3-dihydro-1*H*-indol-3-yl]-1'-methyl-4,4'-bipiperidine-1-carboxamide
61A	CH	CH	methoxy	methoxy	methyl	*(+)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-methyl-4,4'-bipiperidine-1-carboxamide
61B	CH	CH	methoxy	methoxy	methyl	*(-)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-methyl-4,4'-bipiperidine-1-carboxamide
62	CH	CH	methoxy	H	methyl	*(±)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-1'-methyl-4,4'-bipiperidine-1-carboxamide
62A	CH	CH	methoxy	H	methyl	*(+)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-1'-methyl-4,4'-bipiperidine-1-carboxamide
62B	CH	CH	methoxy	H	methyl	*(-)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-1'-methyl-4,4'-bipiperidine-1-carboxamide
63	CH	CH	ethoxy	H	methyl	*(±)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-methyl-4,4'-bipiperidine-1-carboxamide
63A	CH	CH	ethoxy	H	methyl	*(+)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-methyl-4,4'-bipiperidine-1-carboxamide
63B	CH	CH	ethoxy	H	methyl	*(-)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-methyl-4,4'-bipiperidine-1-carboxamide
64	CH	CH	H	H	methyl	*(±)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-1'-methyl-4,4'-bipiperidine-1-carboxamide
64A	CH	CH	H	H	methyl	*(+)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-1'-methyl-4,4'-bipiperidine-1-carboxamide
64B	CH	CH	H	H	methyl	*(-)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-1'-methyl-4,4'-bipiperidine-1-carboxamide

Exp. No.	X2	X3	R5	R6	R7	IUPAC Name (according to ACD-Labs Version 8.00 release product version 8.05)
65	CH	CH	H	methoxy	methyl	*(±)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-1'-methyl-4,4'-bipiperidine-1-carboxamide
65A	CH	CH	H	methoxy	methyl	*(+)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-1'-methyl-4,4'-bipiperidine-1-carboxamide
65B	CH	CH	H	methoxy	methyl	*(-)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-1'-methyl-4,4'-bipiperidine-1-carboxamide
66	CH	CH	ethoxy	methoxy	methyl	*(±)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-methyl-4,4'-bipiperidine-1-carboxamide
66A	CH	CH	ethoxy	methoxy	methyl	*(+)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-methyl-4,4'-bipiperidine-1-carboxamide
66B	CH	CH	ethoxy	methoxy	methyl	*(-)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-methyl-4,4'-bipiperidine-1-carboxamide
67	CH	CH	methoxy	methoxy	ethyl	*(±)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-ethyl-4,4'-bipiperidine-1-carboxamide
67A	CH	CH	methoxy	methoxy	ethyl	*(+)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-ethyl-4,4'-bipiperidine-1-carboxamide
67B	CH	CH	methoxy	methoxy	ethyl	*(-)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-ethyl-4,4'-bipiperidine-1-carboxamide
68	CH	CH	methoxy	H	ethyl	*(±)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-1'-ethyl-4,4'-bipiperidine-1-carboxamide
68A	CH	CH	methoxy	H	ethyl	*(+)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-1'-ethyl-4,4'-bipiperidine-1-carboxamide
68B	CH	CH	methoxy	H	ethyl	*(-)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-

Exp. No.	X2	X3	R5	R6	R7	IUPAC Name (according to ACD-Labs Version 8.00 release product version 8.05)
						dihydro-1*H*-indol-3-yl}-1'-ethyl-4,4'-bipiperidine-1-carboxamide
69	CH	CH	ethoxy	H	ethyl	*(±)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-ethyl-4,4'-bipiperidine-1-carboxamide
69A	CH	CH	ethoxy	H	ethyl	*(+)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-ethyl-4,4'-bipiperidine-1-carboxamide
69B	CH	CH	ethoxy	H	ethyl	*(-)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-ethyl-4,4'-bipiperidine-1-carboxamide
70	CH	CH	H	H	ethyl	*(±)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-1'-ethyl-4,4'-bipiperidine-1-carboxamide
70A	CH	CH	H	H	ethyl	*(+)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-1'-ethyl-4,4'-bipiperidine-1-carboxamide
70B	CH	CH	H	H	ethyl	*(-)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-1'-ethyl-4,4'-bipiperidine-1-carboxamide
71	CH	CH	H	methoxy	ethyl	*(±)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-1'-ethyl-4,4'-bipiperidine-1-carboxamide
71A	CH	CH	H	methoxy	ethyl	*(+)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-1'-ethyl-4,4'-bipiperidine-1-carboxamide
71B	CH	CH	H	methoxy	ethyl	*(-)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-1'-ethyl-4,4'-bipiperidine-1-carboxamide
72	CH	CH	ethoxy	methoxy	ethyl	*(±)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-ethyl-4,4'-bipiperidine-1-carboxamide
72A	CH	CH	ethoxy	methoxy	ethyl	*(+)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-ethyl-4,4'-bipiperidine-1-carboxamide

Exp. No.	X2	X3	R5	R6	R7	IUPAC Name (according to ACD-Labs Version 8.00 release product version 8.05)
72B	CH	CH	ethoxy	methoxy	ethyl	*(-)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-ethyl-4,4'-bipiperidine-1-carboxamide
73	CH	CH	methoxy	methoxy	n-propyl	*(±)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-propyl-4,4'-bipiperidine-1-carboxamide
73A	CH	CH	methoxy	methoxy	n-propyl	*(+)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-propyl-4,4'-bipiperidine-1-carboxamide
73B	CH	CH	methoxy	methoxy	n-propyl	*(-)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-propyl-4,4'-bipiperidine-1-carboxamide
74	CH	CH	methoxy	H	n-propyl	*(±)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-1'-propyl-4,4'-bipiperidine-1-carboxamide
74A	CH	CH	methoxy	H	n-propyl	*(+)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-1'-propyl-4,4'-bipiperidine-1-carboxamide
74B	CH	CH	methoxy	H	n-propyl	*(-)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-1'-propyl-4,4'-bipiperidine-1-carboxamide
75	CH	CH	ethoxy	H	n-propyl	*(±)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-propyl-4,4'-bipiperidine-1-carboxamide
75A	CH	CH	ethoxy	H	n-propyl	*(+)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-propyl-4,4'-bipiperidine-1-carboxamide
75B	CH	CH	ethoxy	H	n-propyl	*(-)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-propyl-4,4'-bipiperidine-1-carboxamide
76	CH	CH	H	H	n-propyl	*(±)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-1'-propyl-4,4'-bipiperidine-1-carboxamide
76A	CH	CH	H	H	n-	*(+)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-

Exp. No.	X2	X3	R5	R6	R7	IUPAC Name (according to ACD-Labs Version 8.00 release product version 8.05)
					propyl	indol-3-yl]-1'-propyl-4,4'-bipiperidine-1-carboxamide
76B	CH	CH	H	H	n-propyl	*(-)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-1'-propyl-4,4'-bipiperidine-1-carboxamide
77	CH	CH	H	methoxy	n-propyl	*(±)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-1'-propyl-4,4'-bipiperidine-1-carboxamide
77A	CH	CH	H	methoxy	n-propyl	*(+)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-1'-propyl-4,4'-bipiperidine-1-carboxamide
77B	CH	CH	H	methoxy	n-propyl	*(-)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-1'-propyl-4,4'-bipiperidine-1-carboxamide
78	CH	CH	ethoxy	methoxy	n-propyl	*(±)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-propyl-4,4'-bipiperidine-1-carboxamide
78A	CH	CH	ethoxy	methoxy	n-propyl	*(+)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-propyl-4,4'-bipiperidine-1-carboxamide
78B	CH	CH	ethoxy	methoxy	n-propyl	*(-)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-propyl-4,4'-bipiperidine-1-carboxamide
79	CH	CH	methoxy	methoxy	isopropyl	*(±)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-isopropyl-4,4'-bipiperidine-1-carboxamide
79A	CH	CH	methoxy	methoxy	isopropyl	*(+)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-isopropyl-4,4'-bipiperidine-1-carboxamide
79B	CH	CH	methoxy	methoxy	isopropyl	*(-)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-isopropyl-4,4'-bipiperidine-1-carboxamide
80	CH	CH	methoxy	H	isopropyl	*(±)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-1'-isopropyl-4,4'-bipiperidine-1-carboxamide

Exp. No.	X2	X3	R5	R6	R7	IUPAC Name (according to ACD-Labs Version 8.00 release product version 8.05)
80A	CH	CH	methoxy	H	isopropyl	*(+)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-1'-isopropyl-4,4'-bipiperidine-1-carboxamide
80B	CH	CH	methoxy	H	isopropyl	*(-)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-1'-isopropyl-4,4'-bipiperidine-1-carboxamide
81	CH	CH	ethoxy	H	isopropyl	*(±)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-isopropyl-4,4'-bipiperidine-1-carboxamide
81A	CH	CH	ethoxy	H	isopropyl	*(+)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-isopropyl-4,4'-bipiperidine-1-carboxamide
81B	CH	CH	ethoxy	H	isopropyl	*(-)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-isopropyl-4,4'-bipiperidine-1-carboxamide
82	CH	CH	H	H	isopropyl	*(±)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-1'-isopropyl-4,4'-bipiperidine-1-carboxamide
82A	CH	CH	H	H	isopropyl	*(+)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-1'-isopropyl-4,4'-bipiperidine-1-carboxamide
82B	CH	CH	H	H	isopropyl	*(-)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-1'-isopropyl-4,4'-bipiperidine-1-carboxamide
83	CH	CH	H	methoxy	isopropyl	*(±)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-1'-isopropyl-4,4'-bipiperidine-1-carboxamide
83A	CH	CH	H	methoxy	isopropyl	*(+)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-1'-isopropyl-4,4'-bipiperidine-1-carboxamide
83B	CH	CH	H	methoxy	isopropyl	*(-)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-1'-isopropyl-4,4'-bipiperidine-1-carboxamide
84	CH	CH	ethoxy	methoxy	isoprop	*(±)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-

Exp. No.	X2	X3	R5	R6	R7	IUPAC Name (according to ACD-Labs Version 8.00 release product version 8.05)
					yl	2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-isopropyl-4,4'-bipiperidine-1-carboxamide
84A	CH	CH	ethoxy	methoxy	isopropyl	*(+)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-isopropyl-4,4'-bipiperidine-1-carboxamide
84B	CH	CH	ethoxy	methoxy	isopropyl	*(-)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-1'-isopropyl-4,4'-bipiperidine-1-carboxamide
85	CH	CH	methoxy	methoxy	H	*(±)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4,4'-bipiperidine-1-carboxamide
85A	CH	CH	methoxy	methoxy	H	*(+)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4,4'-bipiperidine-1-carboxamide
85B	CH	CH	methoxy	methoxy	H	*(-)-N*-[5-cyano-1-[(2,4-dimethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4,4'-bipiperidine-1-carboxamide
86	CH	CH	methoxy	H	H	*(±)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4,4'-bipiperidine-1-carboxamide
86A	CH	CH	methoxy	H	H	*(+)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4,4'-bipiperidine-1-carboxamide
86B	CH	CH	methoxy	H	H	*(-)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(2-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4,4'-bipiperidine-1-carboxamide
87	CH	CH	ethoxy	H	H	*(±)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4,4'-bipiperidine-1-carboxamide
87A	CH	CH	ethoxy	H	H	*(+)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4,4'-bipiperidine-1-carboxamide
87B	CH	CH	ethoxy	H	H	*(-)-N*-[5-cyano-1-[(2-ethoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4,4'-bipiperidine-1-carboxamide

Exp. No.	X2	X3	R5	R6	R7	IUPAC Name (according to ACD-Labs Version 8.00 release product version 8.05)
88	CH	CH	H	H	H	*(±)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4,4'-bipiperidine-1-carboxamide
88A	CH	CH	H	H	H	*(+)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4,4'-bipiperidine-1-carboxamide
88B	CH	CH	H	H	H	*(-)-N*-[5-cyano-3-(2-ethoxypyridin-3-yl)-2-oxo-1-(phenylsulphonyl)-2,3-dihydro-1*H*-indol-3-yl]-4,4'-bipiperidine-1-carboxamide
89	CH	CH	H	methoxy	H	*(±)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4,4'-bipiperidine-1-carboxamide
89A	CH	CH	H	methoxy	H	*(+)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4,4'-bipiperidine-1-carboxamide
89B	CH	CH	H	methoxy	H	*(-)-N*-{5-cyano-3-(2-ethoxypyridin-3-yl)-1-[(4-methoxyphenyl)sulphonyl]-2-oxo-2,3-dihydro-1*H*-indol-3-yl}-4,4'-bipiperidine-1-carboxamide
90	CH	CH	ethoxy	methoxy	H	*(±)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4,4'-bipiperidine-1-carboxamide
90A	CH	CH	ethoxy	methoxy	H	*(+)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4,4'-bipiperidine-1-carboxamide
90B	CH	CH	ethoxy	methoxy	H	*(-)-N*-[5-cyano-1-[(2-ethoxy-4-methoxyphenyl)sulphonyl]-3-(2-ethoxypyridin-3-yl)-2-oxo-2,3-dihydro-1*H*-indol-3-yl]-4,4'-bipiperidine-1-carboxamide

METHODS FOR DETERMINING THE BIOLOGICAL ACTIVITY

Vasopressin V1b receptor binding assay:

Substances:

The test substances were dissolved in a concentration of 10^{-2} M in DMSO and further diluted to $5x10^{-4}$ M to $5x10^{-9}$ M in DMSO. This series of DMSO predilutions was diluted 1:10 with assay buffer. The substance concentration was again diluted 1:5 in the assay mixture (2% DMSO in the mixture).

Membrane preparation:

CHO-K1 cells with stably expressed human vasopressin V1b receptor (clone 3H2) were harvested and homogenized in 50 mM Tris-HCl and in the presence of protease inhibitors (Roche complete Mini # 1836170) with a Polytron homogenizer at a medium setting for 2x10 seconds and subsequently centrifuged at 40 000 x g for 1 h. The membrane pellet was again homogenized and centrifuged as described and then taken up in 50 mM Tris-HCl, pH 7.4, homogenized and stored in aliquots frozen in liquid nitrogen at –190°C.

Binding assay:

The binding assay was carried out by a method based on that of Tahara et al. (Tahara A et al., Brit. J. Pharmacol. 125, 1463-1470 (1998)). The incubation buffer was: 50 mM Tris, 10 mM $MgCl_2$, 0.1% BSA, pH 7.4.

In the assay mixture (250 µl), membranes (50 µg/ml protein in incubation buffer) from CHO-K1 cells with stably expressed human V1b receptors (cell line hV1b_3H2_CHO) were incubated with 1.5 nM ^{3}H-AVP (8-Arg-vasopressin, PerkinElmer #18479) in incubation buffer (50 mM Tris, 10 mM $MgCl_2$, 0.1% BSA, pH 7.4) (total binding) or additionally with increasing concentrations of test substance (displacement experiment). The nonspecific binding was determined with 1 µM AVP (Bachem # H1780). All determinations were carried out as triplicate determinations. After incubation (60 minutes at room temperature), the free radioligand was removed by vacuum filtration (Skatron cell harvester 7000) through Wathman GF/B glass fibre filter mats, and the filters were transferred into scintillation vials. The liquid scintillation measurement took place in a Tricarb model 2000 or 2200CA instrument (Packard). Conversion of the measured cpm into dpm was carried out with the aid of a standard quench series.

Evaluation:

The binding parameters were calculated by nonlinear regression in SAS. The algorithms of the program operate in analogy to the LIGAND analysis program (Munson PJ and Rodbard D, Analytical Biochem. 107, 220-239 (1980)). The Kd of ^{3}H-AVP for the recombinant human V1b receptors is 0.4 nM and was used to determine the Ki value.

The test reveals that compounds of the present invention generally have high affinities towards the V1b receptor which, expressed as K_i(h-V1b) values, are generally below 150 nM, in particular at most 50 nM and especially at most 10 nM. The results are given in table 3

Vasopressin V1a receptor binding assay:

Substances:

The test substances were dissolved in a concentration of 10^{-2} M in DMSO. These DMSO solutions were further diluted in incubation buffer (50 mM Tris, 10 mM $MgCl_2$, 0.1% BSA, pH 7.4).

Membrane preparation:

CHO-K1 cells with stably expressed human vasopressin V1a receptor (clone 5) were harvested and homogenized in 50 mM Tris-HCl and in the presence of protease inhibitors (Roche complete Mini # 1836170) with a Polytron homogenizer at a medium setting for 2x10 seconds and subsequently centrifuged at 40 000 x g for 1 h. The membrane pellet was again homogenized and centrifuged as described and then taken up in 50 mM Tris-HCl, pH 7.4, homogenized and stored in aliquots frozen in liquid nitrogen at -190°C.

Binding assay:

The binding assay was carried out by a method based on that of Tahara et al. (Tahara A et al., Brit. J. Pharmacol. 125, 1463-1470 (1998)).

The incubation buffer was: 50 mM Tris, 10 mM $MgCl_2$, 0.1% BSA, pH 7.4.

In the assay mixture (250 µl), membranes (20 µg/ml protein in incubation buffer) from CHO-K1 cells with stably expressed human V1a receptors (cell line hV1a_5_CHO) were incubated with 0.04 nM ^{125}I-AVP (8-Arg-vasopressin, NEX 128) in incubation buffer (50 mM Tris, 10 mM $MgCl_2$, 0.1% BSA, pH 7.4) (total binding) or additionally with increasing concentrations of test substance (displacement experiment). The nonspecific binding was determined with 1 µM AVP (Bachem # H1780). Triplicate determinations were carried out.

After incubation (60 minutes at room temperature), the free radioligand was removed by vacuum filtration (Skatron cell harvester 7000) through Wathman GF/B glass fibre filter mats, and the filters were transferred into scintillation vials.

The liquid scintillation measurement took place in a Tricarb model 2000 or 2200CA instrument (Packard). Conversion of the measured cpm into dpm was carried out with the aid of a standard quench series.

Evaluation:

The binding parameters were calculated by nonlinear regression in SAS. The algorithms of the program operate in analogy to the LIGAND analysis program (Munson PJ and Rodbard D, Analytical Biochem. 107, 220-239 (1980)). The Kd of ^{125}I-AVP for the recombinant hV1a receptors was determined in saturation experiments. A Kd of 1.33 nM was used to determine the Ki value.

The test reveals that compounds of the present invention generally have selectivity towards the V1b receptor in comparison with V1a receptor, which, expressed as K_i(h-V1a)/K_i(h-V1b) values generally exceed 10 and are frequently at least 15, in particular at least 50 and especially at least 100. The results are given in table 3.

Vasopressin V2 receptor binding assay:

Substances:

The test substances were dissolved in a concentration of 10^{-2} M in DMSO. This DMSO solution was further diluted in incubation buffer (50 mM Tris, 10 mM $MgCl_2$, 0.1% BSA, pH 7.4).

Membrane preparation:

CHO-K1 cells with stably expressed human vasopressin V2 receptor (clone 23) were harvested and homogenized in 50 mM Tris-HCl and in the presence of protease inhibitors (Roche complete Mini # 1836170) with a Polytron homogenizer at a medium setting for 2x10 seconds and subsequently centrifuged at 40 000 x g for 1 h. The membrane pellet was again homogenized and centrifuged as described and then taken up in 50 mM Tris-HCl, pH 7.4, homogenized and stored in aliquots frozen in liquid nitrogen at -190°C.

Binding assay:

The binding assay was carried out by a method based on that of Tahara et al. (Tahara A

et al., Brit. J. Pharmacol. 125, 1463-1470 (1998)).

The incubation buffer was: 50 mM Tris, 10 mM $MgCl_2$, 0.1% BSA, pH 7.4.

In the assay mixture (250 µl), membranes (50 µg/ml protein in incubation buffer) from CHO-K1 cells with stably expressed human V2 receptors (cell line hV2_23_CHO) were incubated with 1-2 nM ^{3}H-AVP (8-Arg-vasopressin, PerkinElmer #18479) in incubation buffer (50 mM Tris, 10 mM $MgCl_2$, 0.1% BSA, pH 7.4) (total binding) or additionally with increasing concentrations of test substance (displacement experiment). The nonspecific binding was determined with 1 µM AVP (Bachem # H1780). Triplicate determinations were carried out.

After incubation (60 minutes at room temperature), the free radioligand was removed by vacuum filtration (Skatron cell harvester 7000) through Wathman GF/B glass fibre filter mats, and the filters were transferred into scintillation vials.

The liquid scintillation measurement took place in a Tricarb model 2000 or 2200CA instrument (Packard). Conversion of the measured cpm into dpm was carried out with the aid of a standard quench series.

Evaluation:

The binding parameters were calculated by nonlinear regression in SAS. The algorithms of the program operate in analogy to the LIGAND analysis program (Munson PJ and Rodbard D, Analytical Biochem. 107, 220-239 (1980)). The Kd of ^{3}H-AVP for the recombinant hV2 receptors is 2.4 nM and was used to determine the Ki value.

The test reveals that compounds of the present invention generally have selectivity towards the V1b receptor in comparison with V2 receptor, which, expressed as K_i(h-V2)/K_i(h-V1b) values generally exceed 10 and are frequently at least 15, in particular at least 25 and especially at least 50.

Oxytocin receptor binding assay

Substances:

The substances were dissolved in a concentration of 10^{-2} M in DMSO and diluted with incubation buffer (50 mM Tris, 10 mM $MgCl_2$, 0.1% BSA, pH 7.4).

Cell preparation:

Confluent HEK-293 cells with transiently expressing recombinant human oxytocin receptors were centrifuged at 750 x g and at room temperature for 5 minutes. The residue

was taken up in ice-cold lysis buffer (50 mM Tris-HCl, 10% glycerol, pH 7.4 and Roche Complete Protease Inhibitor) and subjected to an osmotic shock at 4°C for 20 minutes. The lyzed cells were then centrifuged at 750 x g and at 4°C for 20 minutes, the residue was taken up in incubation buffer, and aliquots of 10^7 cells/ml were prepared. The aliquots were frozen at -80°C until used.

Binding assay:

On the day of the experiment, the cells were thawed, diluted with incubation buffer and homogenized using a Multipette Combitip (Eppendorf, Hamburg). The reaction mixture of 0.250 ml was composed of 2 to $5x10^4$ recombinant cells, 3-4 nM ^{3}H-oxytocin (PerkinElmer, NET 858) in the presence of test substance (inhibition plot) or only incubation buffer (total binding). The nonspecific binding was determined with 10^{-6} M oxytocin (Bachem AG, H2510). Determinations in triplicate were set up. Bound and free radioligand were separated by filtration under vacuum with Whatman GF/B glass fibre filters using a Skatron cell harvester 7000. The bound radioactivity was determined by liquid scintillation measurement in a Tricarb beta counter, model 2000 or 2200CA (Packard).

Evaluation:

The binding parameters were calculated by nonlinear regression analysis (SAS), in analogy to the LIGAND program of Munson and Rodbard (Analytical Biochem 1980; 107: 220-239). The Kd of ^{3}H-oxytocin for the recombinant hOT receptors is 7.6 nM and was used to determine the Ki value.

The test reveals that compounds of the present invention generally have selectivity towards the V1b receptor in comparison with Oxytocin receptor, which, expressed as K_i(h-OT)/K_i(h-V1b) values generally exceed 10 and are frequently at least 15, in particular at least 25 and especially at least 50. The results are given in table 3.

Table 3

Example	K_i(h-V1b)* [nM]	K_i(h-V1a) / K_i(h-V1b)*	K_i(h-OT) / K_i(h-V1b)*
1	+++	+++	+++
1B	+++	+++	+++

Example	K_i(h-V1b)* [nM]	K_i(h-V1a) / K_i(h-V1b)*	K_i(h-OT) / K_i(h-V1b)*
2	++	+++	+++
3	++	+++	+++
4	++	++	++
7B	+++	+++	+++
25	+++	+++	++
31	+++	+++	+++
31B	+++	+++	+++
32	++	+	+++
35	+++	+	++
37	+++	+++	+++
37B	+++	+++	+++
40	+++	++	+++
40B	+++	+	+++
43	+++	+++	+++
55	+++	+++	++
61	+++	+++	+++
61B	+++	+++	+++
67	+++	+++	+++
67B	+++	+++	+++
85	+++	+++	++

	K_i(h-V1b)	K_i(h-V1a)/K_i(h-V1b)	K_i(h-OT)/K_i(h-V1b)
+	> 50 – 150 nM	15 - 50	15 - 25
++	10 - 50 nM	> 50 - 100	> 25 - 50
+++	< 10 nM	> 100	> 50

Determination of the microsomal half-life:

The metabolic stability of the compounds of the invention was determined in the following assay.

The test substances are incubated in a concentration of 0.5 µM as follows:

0.5 µM test substance is preincubated together with liver microsomes of various species (rat, human or other species) (0.25 mg of microsomal protein/ml) in 0.05M potassium phosphate buffer pH 7.4 in microtitre plates at 37°C for 5 min. The reaction is started by adding NADPH (1 mg/ml). 50 µl aliquots are taken after 0, 5, 10, 15, 20 and 30 min, and the reaction is stopped immediately with the same volume of acetonitrile and cooled down. The samples are frozen until analyzed. Using MSMS, the remaining concentration of undegraded test substance is determined. From the increase of the test substance signal/time unit curve, the half-life (T1/2) is determined, where the half-life of the test substance can be calculated, assuming first order kinetics, from the decrease in the concentration of the compound with time. The microsomal clearance (mCl) is calculated as mCl= ln2/T1/2 / (content of microsomal protein in mg/ml) x 1000 [ml/min/mg] (modified according to the literature references: Di, The Society for Biomoleculaur Screening, 2003, 453-462; Obach, DMD, 1999 vol 27. N 11, 1350-1359).

The test reveals that compounds of the present invention generally have a high metabolic stability, which result in human microsomal clearance values of generally at most 220 µl min^{-1} mg^{-1}, frequently 120 µl min^{-1} mg^{-1} and in particular at most 60 µl min^{-1} mg^{-1}. The results are given in table 4.

Table 4

Example	Human Mikrosomal Clearance [µl min^{-1} mg^{-1}]
1	+++
1B	+++
4	+++
5	+++
7B	+++
25	+++
31	++
31B	+++
34	+++
35	++
37	++
37B	+++

Example	Human Mikrosomal Clearance [µl min^{-1} mg^{-1}]
40	++
40B	++
55	++
61B	+++
85	++

	Human Mikrosomal Clearance
+	> 120 - 220 µl min^{-1} mg^{-1}
++	60 - 120 µl min^{-1} mg^{-1}
+++	< 60 µl min^{-1} mg^{-1}

Determination of plasma protein binding (PPB) by equilibrium dialysis:

150 µl of rat or human plasma, with 1 or 10 µM of test substance added, is pipetted onto one side of the 96-well dialysis chambers, 150 µl of PPS buffer are pipetted onto the other side. The chambers are separated by a dialysis membrane having a cut–off of 6-8000 dalton.

The 96-well dialysis chambers are covered and gently shaken overnight.

The next morning, 10 µl of plasma are removed and diluted with 90 µl of PPS buffer, and the protein is precipitated using 200 µl of acetonitrile. The precipitated protein is removed by centrifugation, and 100 µl of the supernatant are used for MSMS analysis. From the buffer side, 100 µl are removed for MSMS analysis. See also the following literature reference: Banker, Journal of Pharmaceutical Sciences Vol. 92, 5, 967-974, 2003.

Methods for the *in vitro* determination of cytochrom P450 (CYP) inhibition

Luminescence substrates for 2C9 and 3A4:

0.4 mg/ml of human liver microsomes are preincubated for 10 minutes with the test substances to be tested (0-20 µM), the CYP specific substrates, in 0.05 M potassium phosphate buffer pH 7.4 at 37°C. The Cyp-specific substrate for CYP 2C9 is luciferin H, that for CYP 3A4 is luciferin BE. The reaction is started by addition of NADPH. After 30 min of incubation at RT, the luciferin detection reagent is added, and the resulting

luminescence signal is measured (modified according to literature reference: Promega, Technical Bulletin P450-GLO ™ Assays).

Midazolam CYP 3A4 time-dependent inhibition

The test consists of 2 parts. In the first part, the test substance is preincubated with the liver microsomes (with NADPH)= preincubation, followed by addition of the substrate; in the second part, substrate and test substance are added simultaneously = coincubation.

Preincubation:

0.05 mg/ml of microsomal protein (human liver microsomes) are preincubated with 0-10 µM (or 50 µM) of test substance in 50 mM potassium phosphate buffer for 5 min. The reaction is started using NADPH. After 30 min, 4 µM of midazolam (final concentration) are added, and the mixture is incubated for a further 10 min. After 10 min, 75 µl of the reaction solution are removed and quenched with 150 µl of acetonitrile solution.

Coincubation:

0.05 mg/ml of microsomal protein (human liver microsomes), 4 µM midazolam (final concentration) and 0-10 µM (or 50 µM) of test substance are preincubated in 50 mM potassium phosphate buffer for 5 min. The reaction is started using NADPH. After 10 min, 75 µl of the reaction solution are removed and quenched with 150 µl of acetonitrile solution. The samples are frozen until analyzed by MSMS (modified according to literature references:
Obdach, Journal of Pharmacology & Experimental Therapeutics, Vol 316, 1, 336-348, 2006; Walsky, Drug Metabolism and Disposition Vol 32, 6, 647-660, 2004).

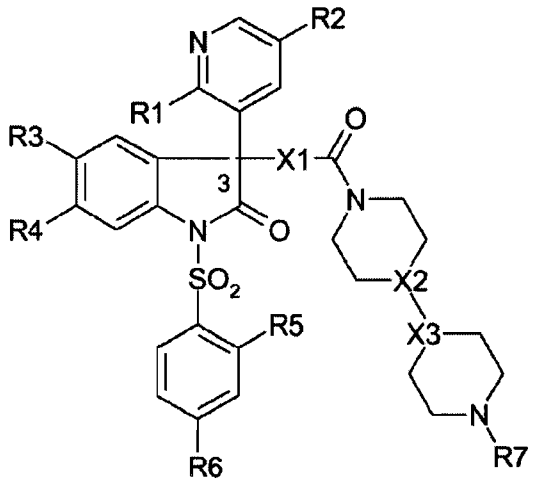
Method for determining the solubility in water (in mg/ml)

The solubility in water of the compounds according to the invention can be determined, for example, according to the so-called "shake flask" method (according to *ASTM International: E 1148-02, Standard test methods for measurement of aqueous solubility, Book of Standards Volume 11.05.*). Here, an excess of the solid compound is added to a buffer solution having a certain pH (for example phosphate buffer pH 7.4) and the resulting mixture is shaken or stirred until the steady state has been reached (typically 24 or 48 hours, sometimes even up to 7 days). The undissolved solid is then removed by filtration or centrifugation, and the concentration of the dissolved compound is determined by UV spectroscopy or high-pressure liquid chromatography (HPLC) using an appropriate

calibration curve.

Claims:

1. Compounds of the general formula (I)



(I)

in which

R1 Is ethoxy;

R2 is hydrogen;

R3 Is cyano;

R4 is hydrogen;

R5 is hydrogen, methoxy or ethoxy;

R6 is hydrogen or methoxy;

R7 is hydrogen, methyl, ethyl, n-propyl or isopropyl;

X1 is -NH-;

X2 is N or CH;

X3 is N or CH;

where **X2** and **X3** are not simultaneously N;

and the pharmaceutically acceptable salts, tautomeric forms and prodrugs thereof.

2. Compounds according to Claim 1, in which **R5** is hydrogen or methoxy.

3. Compounds according to Claim 1, in which **R7** is hydrogen, methyl or ethyl.

4. Compounds according to any of Claims 1 to 3, in which
R5 is hydrogen or methoxy;
R7 is hydrogen, methyl or ethyl;
X1 is -NH-;
X2 is N; and
X3 is CH.

5. Compounds according to any of Claims 1 to 3, in which
R5 is hydrogen or methoxy;
R7 is hydrogen, methyl or ethyl;
X1 is -NH-;
X2 is CH; and
X3 is N.

6. Compounds according to any of Claims 1 to 3, in which
R5 is methoxy;
R6 is methoxy;
R7 is methyl or ethyl;
X1 is -NH-;
X2 is CH and **X3** is N or
X2 is N and **X3** is CH.

7. Compounds according to any of Claims 1 to 3, in which
R5 is methoxy;
R6 is methoxy;
R7 is methyl;
X1 is -NH-;
X2 is N; and
X3 is CH.

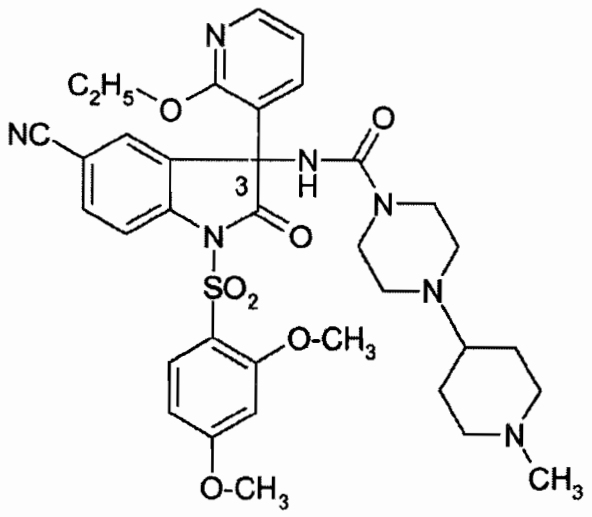
8. Compounds according to any of Claims 1 to 3, in which
R5 is methoxy;
R6 is methoxy;
R7 is methyl;

X1 is -NH-;
X2 is CH; and
X3 is N.

9. Compounds according to any of Claims 1 to 3, in which
R5 is methoxy;
R6 is methoxy;
R7 is ethyl;
X1 is -NH-;
X2 is CH; and
X3 is N.

10. Compounds of the general formula (I) according to any of Claims **1 to 9**, characterized in that they are present in optically active form and that they are the (laevorotatory) (-)-enantiomer, which rotates the plane of polarization of linear polarized light to the left, of the compound of the general formula (I) in question in the form of the free base, and the pharmaceutically acceptable salts, tautomeric forms and/or prodrugs thereof.

11. Compounds of the general formula (I) according to any of Claims **1 to 9**, characterized in that they are present in optically active form, where the absolute configuration of the chiral C-3 ring carbon atom corresponds to the absolute configuration at C-3 of the (laevorotatory) (-)-enantiomer, which rotates the plane of polarization of linear polarized light to the left, of the compound of the formula (Ia) in the form of the free base



(Ia),

and the pharmaceutically acceptable salts, tautomeric forms and prodrugs thereof.

12. Compounds of the general formula (I) according to Claim **10** in optically active form, characterized in that the corresponding laevorotatory (-)-enantiomer is present in an optical purity (enantiomeric excess, ee) of greater than 50%, and the pharmaceutically acceptable salts, tautomeric forms and prodrugs thereof.

13. Compounds of the general formula (I) according to Claim **11** in optically active form, characterized in that the enantiomer having the preferred absolute configuration at the C-3 ring carbon atom is present in an optical purity (enantiomeric excess, ee) of greater than 50%, and the pharmaceutically acceptable salts, tautomeric forms and prodrugs thereof.

14. Compounds of the general formula (I) according to Claim **10** in optically active form characterized in that the corresponding laevorotatory (-)-enantiomer is present in an optical purity (enantiomeric excess, ee) of greater than 90%, and the pharmaceutically acceptable salts, tautomeric forms and prodrugs thereof.

15. Compounds of the general formula (I) according to Claim **11** in optically active form, characterized in that the enantiomer having the preferred absolute configuration at the C-3 ring carbon atom is present in an optical purity

(enantiomeric excess, ee) of greater than 90%, and the pharmaceutically acceptable salts, tautomeric forms and prodrugs thereof.

16. Compounds of the general formula (I) according to any of Claims **1 to 9** in the form of the racemate, and the pharmaceutically acceptable salts, tautomeric forms and prodrugs of the racemate of the compounds of the general formula (I).

17. Medicament, comprising at least one compound of the general formula (I) according to any of Claims **1 to 16** or at least one pharmaceutically acceptable salt, one tautomeric form or one prodrug thereof.

18. At least one compound of the general formula (I) according to any of Claims **1 to 16**, or at least one pharmaceutically acceptable salt, one tautomeric form or one prodrug thereof for use as a medicament.

19. Use of at least one compound of the general formula (I) according to any of Claims **1 to 16** or at least one pharmaceutically acceptable salt, one tautomeric form or one prodrug thereof for preparing a medicament for the treatment and/or prophylaxis of at least one vasopressin-dependent disease.

20. Use of at least one compound of the general formula (I) according to any of Claims **1 to 16** or at least one pharmaceutically acceptable salt, one tautomeric form or one prodrug thereof for preparing a medicament for the treatment and/or prophylaxis of at least one disorder selected from the group consisting of diabetes, insulin resistance, nocturnal enuresis, incontinence, diseases in which blood coagulation disorders occur, and/or for delaying micturition.

21. Use of at least one compound of the general formula (I) according to any of Claims **1 to 16** or at least one pharmaceutically acceptable salt, one tautomeric form or one prodrug thereof for preparing a medicament for the treatment and/or prophylaxis of at least one disorder selected from the group consisting of hypertension, pulmonary hypertension, heart failure, myocardial infarction, coronary spasm, unstable angina, PTCA (percutaneous transluminal coronary angioplasty), ischemias of the heart, disorders of the renal system, edemas, renal vasospasm, necrosis of the renal cortex, hyponatremia, hypokalemia, Schwartz-Bartter syndrome, disorders of the gastrointestinal tract, gastritic

vasospasm, hepatocirrhosis, gastric and intestinal ulcer, emesis, emesis occurring during chemotherapy, and/or travel sickness.

22. Use of at least one compound of the general formula (I) according to any of Claims **1 to 16** or at least one pharmaceutically acceptable salt, one tautomeric form or one prodrug thereof for preparing a medicament for the treatment of affective disorders.

23. Use of at least one compound of the general formula (I) according to any of Claims **1 to 16** or at least one pharmaceutically acceptable salt, one tautomeric form or one prodrug thereof for preparing a medicament for the treatment of anxiety disorders and/or stress-dependent anxiety disorders.

24. Use of at least one compound of the general formula (I) according to any of Claims **1 to 16** or at least one pharmaceutically acceptable salt, one tautomeric form or one prodrug thereof for preparing a medicament for the treatment of memory impairments and/or Alzheimer's disease.

25. Use of at least one compound of the general formula (I) according to any of Claims **1 to 16** or at least one pharmaceutically acceptable salt, one tautomeric form or one prodrug thereof for preparing a medicament for the treatment of psychoses and/or psychotic disorders.

26. Use of at least one compound of the general formula (I) according to any of Claims **1 to 16** or at least one pharmaceutically acceptable salt, one tautomeric form or one prodrug thereof for preparing a medicament for the treatment of Cushing's syndrome or other stress-dependent diseases.

27. Use of at least one compound of the general formula (I) according to any of Claims **1 to 16** or at least one pharmaceutically acceptable salt, one tautomeric form or one prodrug thereof for preparing a medicament for the treatment of sleep disorders.

28. Use of at least one compound of the general formula (I) according to any of Claims **1 to 16** or at least one pharmaceutically acceptable salt, one tautomeric form or one prodrug thereof for preparing a medicament for the treatment of depressive disorders.

29. Use according to Claim **28**, for preparing a medicament for the treatment and/or prophylaxis of childhood onset mood disorders.

30. Use of at least one compound of the general formula (I) according to any of Claims **1 to 16** or at least one pharmaceutically acceptable salt, one tautomeric form or one prodrug thereof for preparing a medicament for the treatment of vasomotor symptoms and/or thermoregulatory dysfunctions, such as, for example, the "hot flush" symptom.

31. Use of at least one compound of the general formula (I) according to any of Claims **1 to 16** or at least one pharmaceutically acceptable salt, one tautomeric form or one prodrug thereof for preparing a medicament for the treatment and/or prophylaxis of drug dependencies, medicament dependencies and/or dependencies mediated by other factors, for the treatment and/or prophylaxis of stress caused by the withdrawal of one or more factors mediating the dependency and/or for the treatment and/or prophylaxis of stress-induced relapses into the drug dependencies, medicament dependencies and/or dependencies mediated by other factors.

32. Use of at least one compound of the general formula (I) according to any of Claims **1 to 16** or at least one pharmaceutically acceptable salt, one tautomeric form or one prodrug thereof for preparing a medicament for the treatment and/or prophylaxis of schizophrenia and/or psychosis.

33. Process for preparing at least one compound of the general formula (I) according to any of Claims **1 to 16**, characterized in that it can be prepared by the relevant skilled worker with knowledge of the technical teaching of the invention in implementation and/or in analogous implementation of process steps known per se.

34. A compound of the formula (I) according to any of Claims **1 to 7**, or a pharmaceutically acceptable salt, a tautomeric form or a prodrug thereof for use in treatment and/or prophylaxis of a disease or disorder.

35. The compound as claimed in claim **34** for use in treatment and/or prophylaxis of a disease or disorder as set forth in any of claims **19 to 32**.

36. Use of the compound of the formula (I) according to any of Claims **1 to 7** or at least one pharmaceutically acceptable salt, one tautomeric form or one prodrug thereof for the manufacture of a medicament for the treatment and/or prophylaxis of a disease or disorder.

37. The use as claimed in claim **36**, where the disease or disorder is as set forth in any of claims **19 to 32**.