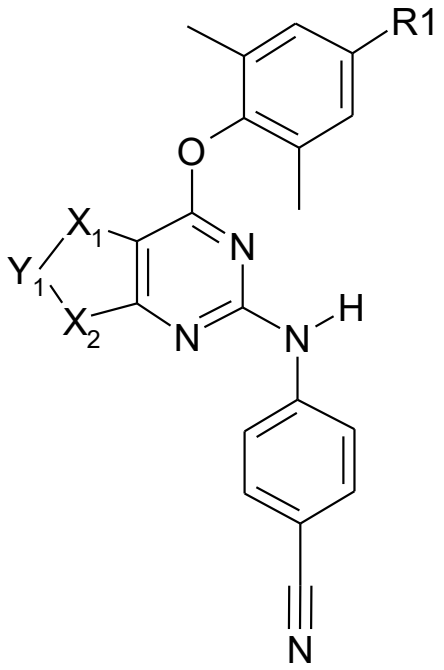
Claims

1. Compound of formula I

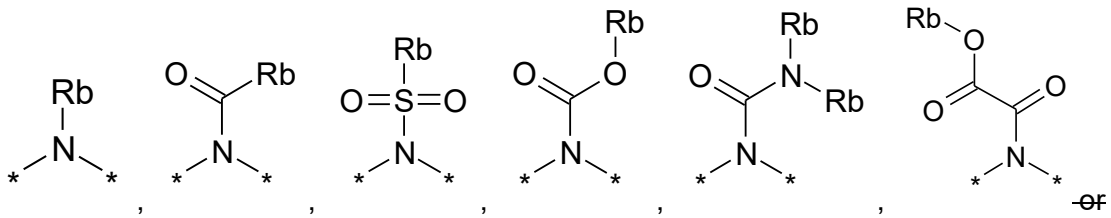


(1),

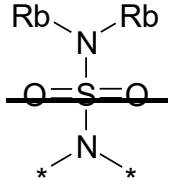
~~wherein R^1 is selected independently and represents H, CN, CN-CH=CH-, C=O, CH=CH-COOH, substituted or unsubstituted 4-6-membered heterocyclyl, containing 1-2 heteroatom O; aminocarbonyl; NH_2; substituted or unsubstituted C_{1-6}alkyl; halogen; substituted or unsubstituted C_{1-6}alkyloxy; NHR^9; NR^9R^{10}; -C(=O)-NHR^9; -C(=O)-NR^9R^{10}; -C(=O)-R^9; -CH=N-NH-C(=O)-R^9; substituted or unsubstituted C_{1-6}alkyloxyC_{1-6}alkyl, substituted or unsubstituted C_{2-6}alkenyl; substituted or unsubstituted C_{2-6}alkynyl; -C(=N-O-R^8)-C_{1-4}alkyl; R^7 and -Rb-R^7;~~

X^1, X^2 represent substituent of $(CH_2)_n$ type, wherein, n is selected independently for X_1, X_2 and may take on values from 1 to 3;

Y^1 is selected independently and represents -O-, ~~-S-, -S(=O)-, -S(=O)$_2$-,~~ or substituents of the following type:



~~or~~



;

wherein each substituent R1, Rb is independently selected from the group including:

H, CN, CN-CH=CH-, C=O, CH=CH-COOH,

substituted or unsubstituted C_{1-6}alkyl; substituted or unsubstituted C_{2-6}alkenyl; substituted or unsubstituted C_{2-6}alkynyl; substituted or unsubstituted C_{1-6}alkyloxy; halogen;

NHR^9; NR^9R^{10}; -C(=O)-NHR^9; -C(=O)-NR^9R^{10}; -C(=O)-R^9;

R^7, which is selected either from monocyclic, bicyclic or saturated, or aromatic carbocycle or from monocyclic, bicyclic saturated or aromatic 4-6-membered heterocycle, having 1 to 2 heteroatoms independently selected from the group S, N and O, where each mentioned carbocyclic or heterocyclic fragment may optionally be substituted with one, two substituents, each of which is independently selected from halogen, hydroxy, C_{1-6}alkyl, C_{1-6}alkyloxycarbonyl, aminocarbonyl, $OCH_2C{\equiv}CH$, NHCOO-C_{1-6}-alkyl, -Rb-R^{7a},

where R^{7a} is either a monocyclic or aromatic carbocycle or a monocyclic, bicyclic, saturated or aromatic 4-6-membered heterocycle, having 1 to 2 heteroatoms independently selected from the group N and O, where each mentioned carbocyclic or heterocyclic fragment may optionally be substituted with one, two substituents, each of which is independently selected from halogen, hydroxy, C_{1-6}alkyl, C_{1-6}alkyloxycarbonyl or NHCOO-C_{1-6}-alkyl;

or R^9, where each R^9 may independently be hydrogen; cyano, aminocarbonyl, hydroxy group; C_{1-6}alkyl; C_{1-6}alkyloxy, C_{1-6}alkylcarbonyl; C_{1-6}alkyloxycarbonyl; amino; mono(C_{1-6}alkyl)amino or R^7,

wherein each mentioned C_{1-6}alkyl group taken individually may optionally be substituted with one or two substituents, each of which is independently selected from hydroxy, C_{1-6}alkyloxy, carboxyl, C_{1-6}alkyloxycarbonyl, amino,

and R^{10}, selected from the R^7, which is selected from a series of monocyclic 6-membered saturated heterocycle having 1 O atom, monocyclic 6-membered aromatic carbocycle, bicyclic aromatic 6-membered carbocycle, and aromatic 6-membered heterocycle having 2 N atoms,

COO-tert-butyl, COOH, NHCOO-C_{1-6}-alkyl, where Rb may be linked to the rest of the molecule via a linker of $(CH_2)_n$ type, n may take on values from 1 to 3, and the compound of formula (1) may be represented by its pharmaceutically acceptable salt or may include isotopes.

~~R^b is selected independently and represents -H, cyano, aminocarbonyl, substituted or unsubstituted -C_1-C_6-alkyl, substituted or unsubstituted -C_2-C_6-alkenyl, substituted or unsubstituted -C_2-C_6-alkynyl, substituted or unsubstituted -C_3-C_6-aryl, substituted or unsubstituted 4-6-membered heteroaryl, containing 1 to 4 heteroatoms, independently selected from N, S and/or O, substituted or unsubstituted -C_3-C_9-cycloalkyl, substituted or~~

unsubstituted 4-9-membered heterocyclyl, containing 1 to 4 heteroatoms, independently selected from N, S and/or O, R^7 or R^9,

wherein R^b may be attached to the rest moiety through a linker of $(CH_2)_n$ type,

R^7 represents monocyclic, bicyclic or tricyclic, saturated, partially saturated or aromatic carbocycle or monocyclic, bicyclic or tricyclic, saturated, partially saturated or aromatic 4-6 membered heterocycle, containing 1 to 4 heteroatoms, independently selected from a group S, N and O, wherein each of the mentioned above carbocyclic or heterocyclic fragments may be optionally substituted by one, two, three, four or five substituents, each of which is independently selected from halogen, hydroxy, mercapto, C_{1-6}alkyl, hydroxyC_{1-6}alkyl, aminoC_{1-6}alkyl, mono- and di(C_{1-6}alkyl)aminoC_{1-6}alkyl, formyl, C_{1-6}alkylcarbonyl, C_{3-7}cycloalkyl, C_{1-6}alkyloxy, C_{1-6}alkyloxycarbonyl, C_{1-6}alkylthio, cyano, nitro, polyhaloC_{1-6}alkyl, polyhaloC_{1-6}alkyloxy, aminocarbonyl, -C(=N-O-R^8), R^{7a}, -Rb-R^{7a}, and R^{7a}-C_{1-4}alkyl;

R^{7a} represents monocyclic, bicyclic or tricyclic, saturated, partially saturated or aromatic carbocycle or monocyclic, bicyclic or tricyclic, saturated, partially saturated or aromatic 4-6 membered heterocycle, containing 1 to 4 heteroatoms, independently selected from a group S, N and O, wherein each of the mentioned above carbocyclic or heterocyclic fragments may be optionally substituted by one, two, three, four or five substituents, each of which is independently selected from halogen, hydroxy, mercapto, C_{1-6}alkyl, hydroxyC_{1-6}alkyl, aminoC_{1-6}alkyl, mono- or di(C_{1-6}alkyl)aminoC_{1-6}alkyl, formyl, C_{1-6}alkylcarbonyl, C_{3-7}cycloalkyl, C_{1-6}alkyloxy, C_{1-6}alkyloxycarbonyl, C_{1-6}alkylthio, cyano, nitro, polyhaloC_{1-6}alkyl, polyhaloC_{1-6}alkyloxy, aminocarbonyl and -CH(=N-O-R^8);

R^8 represents hydrogen, C_{1-4}alkyl, aryl or arylC_{1-4}alkyl.

Each of R^9 and R^{10} independently represents hydrogen; cyano, aminocarbonyl, hydroxy group; C_{1-6}alkyl; C_{1-6}alkyloxy; C_{1-6}alkylcarbonyl; C_{1-6}alkyloxycarbonyl; amino; mono- or di(C_{1-6}alkyl)amino; mono- or di(C_{1-6}alkyl)aminocarbonyl; -CH(=NR^{11}) or R^7, wherein each of the abovementioned C_{1-6}alkyl groups may be optionally independently substituted by one or two substituents, each of which is independently selected from hydroxy, C_{1-6}alkyloxy, hydroxyC_{1-6}alkyloxy, carboxyl, C_{1-6}alkyloxycarbonyl, cyano, amino, aminocarbonyl, imino, mono- and di(C_{1-4}alkyl)amino, polyhalomethyl, polyhalomethyloxy; polyhalomethylthio, -$S(=O)_pR^8$, -NH-$S(=O)_pR^8$, -C(=O)R^8, -NHC(=O)H, -C(=O)$NHNH_2$, NHC(=O)R^8, C(=NH)R^8, R^7

wherein substituents R^1, R^b each independently is selected from a group, comprising: COO-isobutyl, OH, CN, NH_2, C1-4-alkoxy, C1-4alkyl, 4-6-membered heteroaryl, containing 1 to 4 heteroatoms, independently selected from a group S, N and O, in addition, the abovementioned heteroaryl is unsubstituted or substituted with CN, NH_2, OH, C_{1-6}-alkyl, O or R^c; BOC,COOH, R^c, C_{3-6}-aryl, optionally substituted CN, NH_2, OH, O or $OCH_2C{\equiv}CH$, 4-6-membered heterocyclyl, containing 1-3 heteroatom, selected from N, S and O, O, N, S-C_{1-6}-

~~alkyl, halogen, NR^9R^{10}, $-C(=O)-NR^9R^{10}$, $-C(=O)-C_{1-6}$alkyl.~~

~~R^e represents $NHCOO-C_{1-6}$-alkyl,~~

~~n may have values from 1 to 3.~~

2. Compound according to claim 1, where

R^1 is selected independently and represents H, CN, CN-CH=CH, C=O, CH=CH-COOH, 4-6-membered heterocyclyl, containing 1-2 heteroatom O;

R^b is selected independently and represents:

-H,

substituted or unsubstituted -C_1-C_6-alkyl,

substituted or unsubstituted -C_1-C_6-alkenyl,

substituted or unsubstituted ~~–C_3-~~C_6-aryl,

substituted or unsubstituted -5-6-membered-heteroaryl, containing 1 to 2~~–4~~ heteroatoms, independently selected from N, S and/or O,

substituted or unsubstituted -C_3-~~ C_9~~-cycloalkyl, or

substituted or unsubstituted 4-9-membered heterocyclyl, containing 1 to 2 ~~4~~ heteroatoms, independently selected from N, ~~S~~ and/or O,

wherein the mentioned above substituents R^b, each independently is selected from a group, comprising:

COO-tert-butyl, NH_2, C_{1-4}-alkoxy, 5-6-membered heteroaryl having 1 to 2 heteroatoms selected independently from the group of N and O, and mentioned heteroaryl is not substituted or is substituted with C_1-alkyl,

BOC; COOH; the rest of radicals are the same as defined in claim 1.

~~COO-isobutyl,~~

~~NH_2,~~

~~CN,~~

~~C_{1-4}-alkoxy,~~

~~4-6-membered heteroaryl, containing 1 to 4 heteroatoms, independently selected from a group S, N and O, in addition, the abovementioned heteroaryl is unsubstituted or substituted with OH, C_{1-6}-alkyl, O or R^e;~~

~~BOC;~~

~~COOH;~~

~~R^e–;~~

~~C3-6-aryl, optionally substituted OH, O or $OCH_2C{\equiv}CH$,~~

~~4-6-membered heterocyclyl, containing 1-2 heteroatom selected from N and O,~~

~~O, N,~~

~~S-C_{1-6}-alkyl,~~

~~halogen,~~

~~the remaining radicals are as determined in claim 1.~~

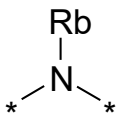
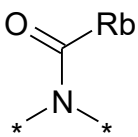
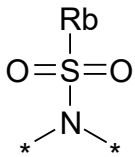
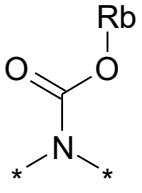
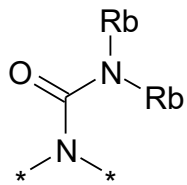
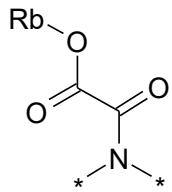
3. Compound according to claim 1, wherein R^1 is selected independently and represents H, -CN, -CH=CH-CN, -C=O or -CH=CH-COOH.

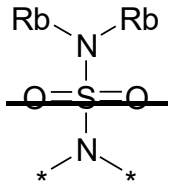
4. Compound according to claim 1, wherein R^1 is selected independently and represents 4-6-membered heterocyclyl, containing 1-2 heteroatom O.

5. Compound according to claim 3, wherein R^1 represents oxetane, ~~tetrahydrofuran or tetrahydropyran.~~

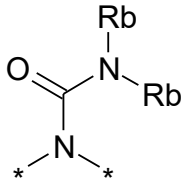
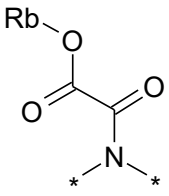
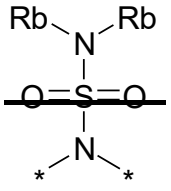
6. Compound according to claim 1, wherein Y^1 represents -O-, -S-, -S(=O)- or -S(=O)$_2$-.

7. Compound according to claim 1, wherein Y^1 is substituents of the following type:

 ,  ,  ,  ,  ,  ~~or~~

 .

8. Compound according to claim 1, wherein Y^1 is substituents of the following type:

 ,  ~~or~~  .

9. Compound according to claim 1, wherein R^b is substituted or unsubstituted methyl, ethyl, ~~propyl~~, n-propyl, isopropyl, ~~butyl~~, n-butyl, sec-butyl, tert-butyl or pentyl, wherein substituents are such, as determined in claim 1.

~~10. Compound according to claim 1, wherein R^b is substituted or unsubstituted ethenyl, 1-propenyl, 2-propenyl, 1-butenyl, 2-butenyl, 3-butenyl, 2-methyl-1-propenyl, 2-methyl-2-propenyl, wherein substituents are as determined in claim 1.~~

10~~11~~. Compound according to claim 1, wherein R^b is substituted or unsubstituted

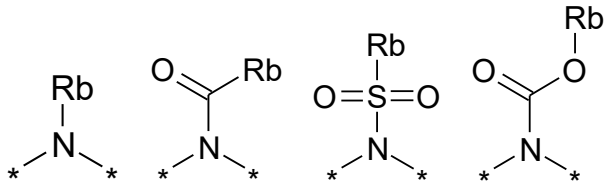
phenyl, wherein substituents are as determined in claim 1.

1112. Compound according to claim 1, wherein R^b is substituted or unsubstituted ~~thienyl,~~ pyrrolyl, imidazolyl, pyrazolyl, pyridyl, pyrimidinyl, pyridazinyl, ~~triazinyl, tetrazolyl, benzo[b]thienyl,~~ isobenzofuranyl, ~~isoindolyl,~~ benzimidazolyl, furan and wherein substituents are as determined in claim 1.

~~13. Compound according to claim 1, wherein R^b is substituted or unsubstituted cyclopropyl, cyclopentyl, cyclohexyl, bicyclo[2.2.2]octanyl, spiro[5.5]undecanyl, wherein substituents are as determined in claim 1.~~

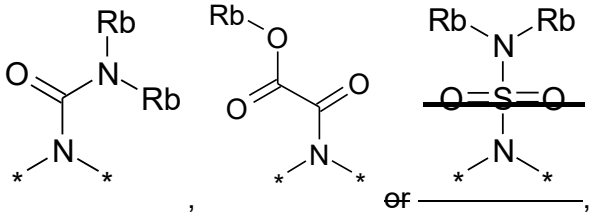
1214. Compound according to claim 1, wherein R^b is substituted or unsubstituted ~~pyrimidine,~~ piperidine, azetidine, morpholine, ~~piperazine, pyrrolidine~~, tetrahydropyran, ~~furan, pyrrol, pyrazine, imidazole or pyrazole~~.

1315. Compound according to claim 1, wherein Y^1 is substituents of the following type:



, a R^b is substituted or unsubstituted -5-6-membered-heteroaryl or heterocyclyl, containing 1 to 2 ~~4~~ heteroatoms, independently selected from N, S and/or O, wherein substituents are as determined in claim 1.

14 ~~16~~. Compound according to claim 1, wherein Y^1 is substituents of the following type:



, ~~or~~ ——————,

and Rb is substituted or unsubstituted C_6-aryl, 5-6-membered heteroaryl or -C_3-cycloalkyl and the substituents are defined in claim 1.

~~a R^b is substituted or unsubstituted -C_3-C_6-aryl or substituted or unsubstituted -C_3-C_9-cycloalkyl, wherein substituents are as determined in claim 1.~~

15 ~~17~~. Compound selected from:

4-((4-(2,6-Dimethylphenoxy)-6,7-dihydro-5H-cyclopenta[d]pyrimidine-2-yl)amino)-benzonitrile

4-(2,6-Dimethylphenoxy)-N-(piperidine-4-yl)-6,7-dihydro-5H-cyclopenta[d]pyrimidine-2-amine

Ethylic ether 4-(((6-benzyl-4-(4-cyano-2,6-dimethylphenoxy)-5,6,7,8-tetrahydropyrido[4,3-d]pyrimidine-2-yl)amino)methyl)benzoic acid

Ethylic ether 4-(((6-benzyl-4-(2,6-dimethylphenoxy)-5,6,7,8-tetrahydropyrido[4,3-d]pyrimidine-2-yl)amino)methyl)benzoic acid

4-(((7-Benzyl-4-(2,6-dimethylphenoxy)-5,6,7,8-tetrahydropyrido[3,4-d]pyrimidine-2-yl)amino)methyl)benzonitrile

N-(1-Benzylpiperidine-4-yl)-4-(2,6-dimethylphenoxy)-5,6,7,8-tetrahydroquinazoline-2-amine

N-(1-Benzylpiperidine-4-yl)-4-(2,6-dimethylphenoxy)-6,7-dihydro-5H-cyclopenta[d]pyrimidine-2-amine

4-((2-((4-Cyanophenyl)amino)-7-methyl-5,6,7,8-tetrahydropyrido[3,4-d]pyrimidine -4-yl)oxy)-3,5-dimethylbenzonitrile

4-((4-(4-Formyl-2,6-dimethylphenoxy)-7-methyl-5,6,7,8-tetrahydro[3,4-d]pyrimidine -2-yl)amino)benzonitrile

Tert-butyl 4-(4-(1,3-dioxolane-2-yl)-2,6-dimethylphenoxy)-2-((4-cyanophenyl)amino)-8,9-dihydro-5H-pyrimido[4,5-d]azepine-7(6H)-carboxylate

Tert-butyl 2-((4-cyanophenyl)amino)-4-(4-formyl-2,6-dimethylphenyoxy)-8,9-dihydro-5H-pyrimido[4,5-d]azepine-7(6H)-carboxylate

Tert-butyl 4-(4-cyano-2,6-dimethylphenoxy)-2-((4-cyanophenyl)amino)-7,8-dihydropyrido[4,3-d]pyrimidine-6(5H)-carboxylate

4-((2-((4-Cyanophenyl)amino)-5,6,7,8-tetrahydropyrido[4,3-d]pyrimidine-4-yl)oxy)-3,5-dimethylbenzonitrile

4-((2-((4-Cyanophenyl)amino)-6-(methylsulfonyl)-5,6,7,8-tetrahydropyrido[4,3-d]pyrimidine-4-yl)oxy)-3,5-dimethylbenzonitrile

Ethyl 4-(4-cyano-2,6-dimethylphenoxy)-2-((4-cyanophenyl)amino)-7,8-dihydropyrido[4,3-d]pyrimidine-6(5H)-carboxylate

(E)-3-(4-((7-(Tert-butoxycarbonyl)-2-((4-cyanophenyl)amino)-6,7,8,9-tetrahydro-5H-pyrimido[4,5-d]azepine-4-yl)oxy)-3,5-dimethylphenyl)acrylic acid

Tert-butyl 4-(4-cyano-2,6-dimethylphenoxy)-2-((4-cyanophenyl)amino)-8,9-dihydro-5H-pyrimido[4,5-d]azepine-7(6H)-carboxylate

4-((2-((4-Cyanophenyl)amino)-6,7,8,9-tetrahydro-5H-pyrimido[4,5-d]azepine-4-yl)oxy)-3,5-dimethylbenzonitrile

Tert-butyl 2-((4-cyanophenyl)amino)-4-(4-(2-cyanovinyl)-2,6-dimethylphenoxy)-8,9-dihydro-5H-pyrimido[4,5-d]azepine-7(6H)-carboxylate

4-((2-((4-Cyanophenyl)amino)-7-picolynoyl-6,7,8,9-tetrahydro-5H-pyrimido[4,5-d]azepine-4-yl)oxy)-3,5-dimethylbenzonitrile

4-((2-((4-Cyanophenyl)amino)-7-isonicotinoyl-6,7,8,9-tetrahydro-5H-pyrimido[4,5-d]azepine-4-yl)oxy)-3,5-dimethylbenzonitrile

4-((2-((4-Cyanophenyl)amino)-7-nicotinoyl-6,7,8,9-tetrahydro-5H-pyrimido[4,5-d]azepine-4-yl)oxy)-3,5-dimethylbenzonitrile

4-((2-((4-Cyanophenyl)amino)-7-(pyridine-2-ylmethyl)-6,7,8,9-tetrahydro-5H-pyrimido[4,5-d]azepine-4-yl)oxy)-3,5-dimethylbenzonitrile

4-((2-((4-Cyanophenyl)amino)-7-(pyridine-3-ylmethyl)-6,7,8,9-tetrahydro-5H-pyrimido[4,5-d]azepine-4-yl)oxy)-3,5-dimethylbenzonitrile

4-((2-((4-Cyanophenyl)amino)-7-(pyridine-4-ylmethyl)-6,7,8,9-tetrahydro-5H-pyrimido[4,5-d]azepine-4-yl)oxy)-3,5-dimethylbenzonitrile

4-((2-((4-Cyanophenyl)amino)-6,7,8,9-tetrahydro-5H-pyrimido[4,5-d]azepine-4-yl)oxy)-3,5-dimethylbenzonitrile

Tert-butyl 4-(4-(4-cyano-2,6-dimethylphenoxy)-2-((4-cyanophenyl)amino)-6,7,8,9-tetrahydro-5H-pyrimido[4,5-d]asein-7-carbonyl)piperidine-1-carboxylate

4-((2-((4-Cyanophenyl)amino)-7-(piperidine-4-carbonyl)-6,7,8,9-tetrahydro-5H-pyrimido[4,5-d]azepine-4-yl)oxy)-3,5-dimethylbenzonitrile

Tert-butyl 4-(4-(4-cyano-2,6-dimethylphenoxy)-2-((4-cyanophenyl)amino)-8,9-dihydro-5H-pyrimido[4,5-d]azepine-7(6H)-yl)piperidine-1-carboxylate

4-((2-((4-Cyanophenyl)amino)-7-(piperidine-4-yl)-6,7,8,9-tetrahydro-5H-pyrimido[4,5-d]azepine-4-yl)oxy)-3,5-dimethylbenzonitrile

4-((6-(2-Aminoacetyl)-2-((4-cyanophenyl)amino)-5,6,7,8-tetrahydropyrido[4,3-d]pyrimidine-4-yl)oxy)-3,5-dimethylbenzonitrile

4-((2-((4-Cyanophenyl)amino)-6-(2-(3-hydroxyazetidine-1-yl)acetyl)-5,6,7,8-tetrahydropyrido[4,3-d]pyrimidine-4-yl)oxy)-3,5-dimethylbenzonitrile

4-({2-[(4-Cyanophenyl)amino]-6-[2-(morpholine-4-yl)acetyl]-5H,6H,7H,8H-pyrido[4,3-d]pyrimidine-4-yl}oxy)-3,5-dimethylbenzonitrile

4-({2-[(4-Cyanophenyl)amino]-6-[2-(4,4-difluoropiperidine-1-yl)acetyl]-5H,6H,7H,8H-pyrido[4,3-d]pyrimidine-4-yl}oxy)-3,5-dimethylbenzonitrile

4-((2-((4-Cyanophenyl)amino)-7-(cyclopropanecarbonyl)-5,6,7,8-tetrahydro-[4,3-d]pyrimidine-4-yl)oxy)-3,5-dimethylbenzonitrile

4-({2-[(4-Cyanophenyl)amino]-6-(morpholine-4-carbonyl)-5H,6H,7H,8H-pyrido[4,3-d]pyrimidine-4-yl}oxy)-3,5-dimethylbenzonitrile

4-({2-[(4-Cyanophenyl)amino]-6-(4-methylpiperazine-1-carbonyl)-5H,6H,7H,8H-pyrido[4,3-d]pyrimidine-4-yl}oxy)-3,5-dimethylbenzonitrile

Tert-butyl 2-(4-(4-cyano-2,6-dimethylphenoxy)-2-((cyanophenyl)amino)-6,7,8,9-tetrahydro-5H-pyrimido[4,5-d]azepine-7-carbonyl)pyrrolidine-1-carboxylate

(R)-Tert-butyl 2-(4-(4-cyano-2,6-dimethylphenoxy)-2-((cyanophenyl)amino)-6,7,8,9-tetrahydro-5H-pyrimido[4,5-d]azepine-7-carbonyl)pyrrolidine-1-carboxylate

(S)-Tert-butyl 2-(4-(4-cyano-2,6-dimethylphenoxy)-2-((cyanophenyl)amino)-6,7,8,9-tetrahydro-5H-pyrimido[4,5-d]azepine-7-carbonyl)pyrrolidine-1-carboxylate

4-((2-((4-Cyanophenyl)amino)-7-(tetrahydro-2H-pyran-4-yl)-6,7,8,9-tetrahydro-5H-pyrimido[4,5-d]azepine-4-yl)oxy)-3,5-dimethylbenzonitrile

4-((2-((4-Cyanophenyl)amino)-7-(5-methylfuran-2-yl)methyl)-6,7,8,9-tetrahydro-5H-pyrimido[4,5-d]azepine-4-yl)oxy)-3,5-dimethylbenzonitrile

4-((2-((4-Cyanophenyl)amino)-7-(1-methyl-1H-pyrrol-2-yl)methyl)-6,7,8,9-tetrahydro-5H-pyrimido[4,5-d]azepine-4-yl)oxy)-3,5-dimethylbenzonitrile

4-((2-((4-Cyanophenyl)amino)-7-(4-hydroxybenzyl)-6,7,8,9-tetrahydro-5H-pyrimido[4,5-d]azepine-4-yl)oxy)-3,5-dimethylbenzonitrile

4-((2-((4-Cyanophenyl)amino)-7-(1-methoxypropane-2-yl)-6,7,8,9-tetrahydro-5H-pyrimido[4,5-d]azepine-4-yl)oxy)-3,5-dimethylbenzonitrile

Tert-butyl 2-(4-(4-cyano-2,6-dimethylphenoxy)-2-((4-cyanophenyl)amino)-5,6,7,8-tetrahydropyrido[4,3-d]pyrimidine-6-carbonyl)pyrrolidine-1-carboxylate

4-((2-((4-Cyanophenyl)amino)-6-(pyrrolidine-2-carbonyl)-5,6,7,8-tetrahydropyrido[4,3-d]pyrimidine-4-yl)oxy)-3,5-dimethylbenzonitrile

4-((6-(Azetidine-3-carbonyl)-2-((4-cyanophenyl)amino)-5,6,7,8-tetrahydropyrido[4,3-d]pyrimidine-4-yl)oxy)-3,5-dimethylbenzonitrile

4-((2-((4-Cyanophenyl)amino)-6-(pyrazine-2-carbonyl)-5,6,7,8-tetrahydropyrido[4,3-d]pyrimidine-4-yl)oxy)-3,5-dimethylbenzonitrile

(S)-Tert-butyl (1-(4-(4-cyano-2,6-dimethylphenoxy)-2-((4-cyanophenyl)amino)-7,8-dihydropyrido[4,3-d]pyrimidine-6(5H)-yl)-1-oxopropane-2-yl)carbamate

(S)-4-((6-(2-Aminopropanoyl)-2-((4-cyanophenyl)amino)-5,6,7,8-tetrahydropyrido[4,3-d]pyrimidine-4-yl)oxy)-3,5-dimethylbenzonitrile

(S)-Ttert-butyl (1-(4-(4-cyano-2,6-dimethylphenoxy)-2-((4-cyanophenyl)amino)-7,8-dihydropyrido[4,3-d]pyrimidine-6(5H)-yl)-1-oxo-3-phenylpropane-2-yl)carbamate

(S)-4-((6-(2-Amino-3-phenylpropanoyl)-2-((4-cyanophenyl)amino)-5,6,7,8-tetrahydropyrido[4,3-d]pyrimidine-4-yl)oxy)-3,5-dimethylbenzonitrile

4-((2-((4-Cyanophenyl)amino)-7-(2-morpholineoEthyl)-6,7,8,9-tetrahydro-5H-pyrimido[4,5-d]azepine-4-yl)oxy)-3,5-dimethylbenzonitrile

(R)-Tert-butyl (1-(4-(4-cyano-2,6-dimethylphenoxy)-2-((4-cyanophenyl)amino)-7,8-dihydropyrido[4,3-d]pyrimidine-6(5H)-yl)-3-hydroxy-1-oxopropane-2-yl)carbamate

Tert-butyl (1-(4-(4-cyano-2,6-dimethylphenoxy)-2-((4-cyanophenyl)amino)-7,8-dihydropyrido[4,3-d]pyrimidine-6(5H)-yl)-4-(methylthio)-1-oxobutane-2-yl)carbamate

4-({6-[2-Amino-3-(1H-imidazole-5-yl)propanoyl]-2-[(4-cyanophenyl)amino]-5H,6H,7H,8H-pyrido[4,3-d]pyrimidine-4-yl}oxy)-3,5-dimethylbenzonitrile

4-((6-(2-Amino-3-(1H-pyrazole-4-yl)propanoyl)-2-((4-cyanophenyl)amino)-5,6,7,8-tetrahydropyrido[4,3-d]pyrimidine-4-yl)oxy)-3,5-dimethylbenzonitrile

Tert-butyl 4-(2-((tert-butoxycarbonyl)amino)-3-(4-(4-cyano-2,6-dimethylphenoxy)-2-((4-cyanophenyl)amino)-7,8-dihydropyrido[4,3-d]pyrimidine-6(5H)-yl)-3-oxopropyl)-1H-pyrazole-1-carboxylate

(R)-4-((6-(2-Amino-3-hydroxypropanoyl)-2-((4-cyanophenyl)amino)-5,6,7,8-tetrahydropyrido[4,3-d]pyrimidine-4-yl)oxy)-3,5-dimethylbenzonitrile

(S)-Tert-butyl (1-(4-(4-cyano-2,6-dimethylphenoxy)-2-((4-cyanophenyl)amino)-7,8-dihydropyrido[4,3-d]pyrimidine-6(5H)-yl)-3-(4-hydroxyphenyl)-1-oxopropane--2-yl)carbamate

(S)-4-((6-(2-Amino-3-(4-hydroxyphenyl)propanoyl)-2-((4-cyanophenyl)amino)-5,6,7,8-tetrahydropyrido[4,3-d]pyrimidine-4-yl)oxy)-3,5-dimethylbenzonitrile

(R)-Tert-butyl (1-(4-(4-cyano-2,6-dimethylphenoxy)-2-((4-cyanophenyl)amino)-7,8-dihydropyrido[4,3-d]pyrimidine-6(5H)-yl)-3-methyl-1-oxobutane-2-yl)carbamate

(R)-4-((6-(2-Amino-3-methylbutanoyl)-2-((4-cyanophenyl)amino)-5,6,7,8-tetrahydropyrido[4,3-d]pyrimidine-4-yl)oxy)-3,5-dimethylbenzonitrile

(S)-Tert-butyl (1-(4-(4-cyano-2,6-dimethylphenoxy)-2-((4-cyanophenyl)amino)-7,8-dihydropyrido[4,3-d]pyrimidine-6(5H)-yl)-4-methyl-1-oxopentane-2-yl)carbamate

(S)-4-((6-(2-Amino-4-methylpentanoyl)-2-((4-cyanophenyl)amino)-5,6,7,8-tetrahydropyrido[4,3-d]pyrimidine-4-yl)oxy)-3,5-dimethylbenzonitrile

(S)-di-Tert-butyl (6-(4-(4-cyano-2,6-dimethylphenoxy)-2-((4-cyanophenyl)amino)-7,8-dihydropyrido[4,3-d]pyrimidine-6(5H)-yl)-6-oxohexane-1,5-diyl)dicarbamate

(S)-4-((2-((4-Cyanophenyl)amino)-6-(2,6-diaminohexanoyl)-5,6,7,8-tetrahydropyrido[4,3-d]pyrimidine-4-yl)oxy)-3,5-dimethylbenzonitrile

4-((7-(2-Chloroacetyl)-2-((4-cyanophenyl)amino)-6,7,8,9-tetrahydro-5H-pyrimido[4,5-d]azepine-4-yl)oxy)-3,5-dimethylbenzonitrile

Methyl 4-(4-cyano-2,6-dimethylphenoxy)-2-((4-4-cyanophenyl) amino)-8,9-dihydro-5H- pyrimido[4,5-d]azepine-7(6H)-carboxylate

4-((2-((4-Cyanophenyl)amino)-7-(methylsulfonyl)-6,7,8,9-tetrahydro-5H-pyrimido[4,5-d]azepine-4-yl)oxy)-3,5-dimethylbenzonitrile

4-((2-((4-Cyanophenyl)amino)-6-(pyridine-4-ylmethyl)-5,6,7,8-tetrahydropyrido[4,3-d]pyrimidine-4-yl)oxy)-3,5-dimethylbenzonitrile

4-((2-((4-Cyanophenyl)amino)-6-(pyridine-3-ylmethyl)-5,6,7,8-tetrahydropyrido[4,3-d]pyrimidine-4-yl)oxy)-3,5-dimethylbenzonitrile

4-((2-((4-Cyanophenyl)amino)-6-(2-hydroxybenzyl)-5,6,7,8-tetrahydropyrido[4,3-d]pyrimidine-4-yl)oxy)-3,5-dimethylbenzonitrile

4-((2-((4-Cyanophenyl)amino)-6-(2-(prop-2-in-1-yloxy)benzyl)-5,6,7,8-tetrahydropyrido[4,3-d]pyrimidine-4-yl)oxy)-3,5-dimethylbenzonitrile

3-(4-(4-Cyano-2,6-dimethylphenoxy)-2-((4-cyanophenyl)amino)-8,9-dihydro-5H- pyrimido[4,5-d]azepine-7(6H)-yl)propanoic acid

4-((7-Allyl-2-((4-cyanophenyl)amino)-6,7,8,9-tetrahydro-5H- pyrimido[4,5-d]azepine-4-yl)oxy)-3,5-dimethylbenzonitrile

4-((7-Acetyl-2-((4-cyanophenyl)amino)-6,7,8,9-tetrahydro-5H-pyrimido[4,5-d]azepine-4-yl)oxy)-3,5-dimethylbenzonitrile

4-((7-(2-(1H-Imidazole-1-yl)acetyl)-2-((4-cyanophenyl)amino)-6,7,8,9-tetrahydro-5H-pyrimido[4,5-d]azepine-4-yl)oxy)-3,5-dimethylbenzonitrile

4-((2-((4-Cyanophenyl)amino)-7-(2-(methyl-1H-imidazole-1-yl)acetyl)-6,7,8,9-tetrahydro-5H-pyrimido[4,5-d]azepine-4-yl)oxy)-3,5-dimethylbenzonitrile

4-(4-Cyano-2,6-dimethylphenoxy)-2-[(4-cyanophenyl)amino]-5H,6H,7H,8H-pyrido[4,3-d]pyrimidine-6-sulfonamide

Methyl 2-{2-[(4-cyanophenyl)amino]-4-(4-formyl-2,6-dimethylphenoxy)-5H,6H,7H,8H,9H-pyrimido [4,5-d]azepine-7-yl}-2-oxoacetate

4-(4-Cyano-2,6-dimethylphenoxy)-2-[(4-cyanophenyl)amino]-N-(oxane-4-yl)-4aH,5H,6H,7H,8H,8aH-pyrido [4,3-d]pyrimidine-6-carboxamide.

16~~18~~. The compound of any one of claims 1-15 in a form of the pharmaceutically acceptable salt obtained using counter-ions such as halides, hydroxides, carboxylates, sulphates

~~Compound according to any of claims 1-17, which comprises at least one isotope.~~

~~19. Compound according to any of claims 1-17 in the form of a free base~~

~~or pharmaceutically acceptable salts selected from a group, comprising salts of amino groups formed by inorganic acids, such as hydrochloric, hydrobromic, phosphoric, sulfuric and chloric acids, or formed by organic acids, such as acetic, oxalic, maleic, tartaric, succinic or malonic acids,~~

~~or pharmaceutically acceptable salts: adipate, alginate, ascorbate, aspartate, benzene sulfonate, benzoate, bisulfate, borate, butyrate, camphorate, camphor sulfonate, citrate, cyclopentanepropionate, digluconate, dodecyl sulfate, ethane sulfonate, formate, fumarate, glucoheptonate, glycerophosphate, gluconate, hemisulfate, heptanoate, hexanoate, hydroiodide, 2-hydroxy-ethane sulfonate, lactobionate, lactate, laurate, lauryl sulfate, malate, maleate, malonate, methanesulfonate, 2-naphthalene sulfonate, nicotinate, nitrate, oleate, oxalate, palmitate, pamoate, pectinate, persulfate, 3-phenylpropionate, phosphate, picrate, pivalate, propionate, stearate, succinate, sulfate, tartrate, thiocyanate, p-toluenesulfonate, undecanoate, valerate,~~

~~or pharmaceutically acceptable salts, containing alkaline and/or alkaline-earth metals or nontoxic cations of ammonium, quaternary ammonium and amine,~~

~~or pharmaceutically acceptable salts, obtained using counterions, such as halogenides, hydroxides, carboxylates, sulfates, phosphates, nitrates, lower alkyl sulfonates and aryl sulfonates.~~

17~~20~~. Compound according to any of claims 1-15 ~~17~~ for the use as an inhibitor of HIV reverse transcriptase.

18~~21~~. Compound according to any of claims 1-15~~17~~ for the use as a pharmaceutical preparation, having anti-HIV antiviral activity.

19~~22~~. Compound according to any of claims 1-15 ~~17~~for obtaining of a pharmaceutical preparation, having anti-HIV antiviral activity.

2023. Pharmaceutical composition, having activity against reverse transcriptase, comprising the compound according to any of claims 1-15 17in a therapeutically effective amount and at least one carrier, excipient or diluent.

2124. Pharmaceutical composition for use in the treatment or prevention of HIV, comprising at least one compound according to any of claims 1-1517 in a therapeutically effective amount and at least one carrier, excipient or diluent.

22. Use of pharmaceutical composition comprising at least one compound according to any of claims 1-15 in a therapeutically effective amount and at least one carrier, excipient or diluent, in the manufacture of a medicament for the treatment or prevention of HIV.

23 25. A pharmaceutical composition, having activity against HIV reverse transcriptase, comprising the compound according to any of claims 1-1517 in a therapeutically effective amount, and at least one compound selected from a group, comprising HIV protease inhibitors, nucleoside reverse transcriptase inhibitors, non-nucleoside reverse transcriptase inhibitors, CCR5 antagonists and viral cell entry inhibitors.

2426. A pharmaceutical composition, having activity against HIV reverse transcriptase, wherein HIV reverse transcriptase contains at least one mutation compared to Wild type HIV, comprising the compound according to any of claims 1-1517 in a therapeutically effective amount.

2527. A pharmaceutical composition, having activity against HIV reverse transcriptase, wherein HIV reverse transcriptase has reduced sensitivity to Efavirenz, Nevirapine, Doravirine or Delavirdine, comprising the compound according to any of claims 1-1517 in a therapeutically effective amount.

2628. A pharmaceutical composition for obtaining of an agent for use in the treatment or prevention of HIV, comprising at least one compound according to any of claims 1-15 17 in a therapeutically effective amount and pharmaceutically acceptable carrier.

2729. Use ofThe compounds according to any of claims 1-15 17for obtaining of an agent for use in the treatment or prevention of HIV.

2830. Use of theThe pharmaceutical composition according to claim 21 23 for obtaining of an agent for use in the treatment or prevention of HIV.

2931. Use of compound according to any of claims 1-15 in the manufacture of a pharmaceutical composition Method for the treatment or prevention of HIV, including the use of compounds according to any of claims 1-17.

3032. Use of pharmaceutical composition according to any of claims 20-21 23-24 and 23-25 26-28 in the manufacture of a medicament Method for the treatment or prevention of HIV, including the use of composition according to any of claims 23-28.

3133. Use of a therapeutically effective amount of compounds according to any of claims 1-15 17 Method in the manufacture of a medicament for the treatment or prevention of HIV infection, wherein the medicament is to be administered to consisting of a subject as needed for treatment being administered with a therapeutically effective amount of compounds according to any of claims 1-17.

3234. The use Method according to claim 313334, wherein the specified therapeutically effective amount of compounds means a daily dose, which is approximately 0.1 - approximately 500 mg/kg body weight in parenteral infusion.

33 35. The use Method according to claim 29 31 32 and 303233, wherein a single dose or 1-5 divided doses may be administered daily. daily dose may be administered as a single dose or in 1-5 divided doses.

3436. Combination for use in the treatment or prevention of HIV-mediated diseases, including therapeutically effective amount of compounds according to any of claims 1-15 17 and at least one compound selected from a group, comprising HIV protease inhibitors, nucleoside reverse transcriptase inhibitors, non-nucleoside reverse transcriptase inhibitors, CCR5 antagonists and viral cell entry inhibitors.

35. Use of a combination including therapeutically effective amount of compounds according to any of claims 1-15 and at least one compound selected from a group, comprising HIV protease inhibitors, nucleoside reverse transcriptase inhibitors, non-nucleoside reverse transcriptase inhibitors, CCR5 antagonists and viral cell entry inhibitors, in the manufacture of a medicament for the treatment or prevention of HIV-mediated diseases.

3637. Use of a therapeutically effective amount of compounds according to any of claims 1-1517 and at least one compound selected from a group, comprising HIV protease inhibitors, nucleoside reverse transcriptase inhibitors, non-nucleoside reverse transcriptase inhibitors, CCR5 antagonists and viral cell entry inhibitors in the manufacture of a medicament for the treatment Method for the treatment or prevention of HIV-mediated diseases, wherein the medicament is to be administered to consisting of a subject as needed for treatment being administered with therapeutically effective amount of compounds according to any of claims 1-17 and at least one compound selected from a group, comprising HIV protease inhibitors, nucleoside reverse transcriptase inhibitors, non-nucleoside reverse transcriptase inhibitors, CCR5 antagonists and viral cell entry inhibitors..

3738. Use of a therapeutically effective amount of compounds according to any of claims 1-1517 in the manufacture of a medicament for the Method of inhibition of HIV reverse transcriptase in the body of a HIV infected subject, wherein the medicament is to be administered to consisting of a subject as needed for treatment, consisting of a subject as needed for treatment being administered with a therapeutically effective amount of

~~compounds according to any of claims 1-17.~~.

38~~39~~. Method of obtaining of a pharmaceutical composition according to claim 20~~23~~, consisting of mixing compounds according to claims 1-15~~17~~ with pharmaceutically acceptable carriers.