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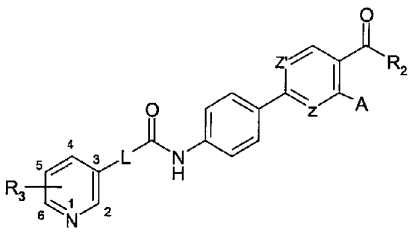
[Suite sur la page suivante]

(54) Title : NICOTINAMIDE DERIVATIVES, PREPARATION THEREOF AND THERAPEUTIC USE THEREOF

(54) Titre : DÉRIVES DE NICOTINAMIDE. LEUR PRÉPARATION ET LEUR APPLICATION EN THÉRAPEUTIQUE



(I)

(57) Abstract : The invention relates to a compound of the formula (I) in which: A is an $NR_1R'_1$ or (C_1-C_6)alcoxy group; Z et Z' are respectively N and CH; N and CF; N and N; CH and CH; CH and N; L is a -CH=CH- or $-CH_2CH_2-$ or $-(CH_2)n-Y-$ group; R_1 and R_2 are such that: (i) R_1 is: a hydrogen atom; an aryl group optionally substituted with one or more halogen atoms; a heteroaryl group; a (C_3-C_6)cycloalkyl group; a (C_1-C_6)alkyl group and R'_1 is a hydrogen atom or a (C_1-C_6)alkyl group; or (ii) R_1 and R'_1 form together with the nitrogen atom to which they are bonded a heterocycloalkyl group; R_2 is a -Q-R_4 group; Q is an oxygen atom or the -NH- group; R_4 is: a hydrogen atom; a heteroaryl group; a (C_3-C_6)cycloalkyl group; an optionally substituted (C_1-C_6)alkyl group; R_3 is at least one substituent of the pyridine nucleus.

(57) Abrégé : L'invention est relative à un composé de formule (I) : dans laquelle : • A représente un groupe $-NR_1R'_1$ OU (C_1-C_6)aIcoxy; • Z et Z' représentent respectivement N et CH; N et CF; N et N; CH et CH; CH et N; • L représente un groupe -CH=CH- ou $-CH_2CH_2-$ ou $-(CH_2)_n-Y-$; • R_1 et R'_1 sont tels que : (i) R_1 représente : - un atome d'hydrogène; - un groupe aryle éventuellement substitué par un ou plusieurs atome(s) d'halogène; - un groupe hétéroaryle; - un groupe (C_3-C_6)cycloalkyle; - un groupe (C_1-C_6)alkyle et R'_1 représente un atome d'hydrogène ou un groupe (C_1-C_6)alkyle; ou (ii) R_1 et R'_1 forment ensemble avec l'atome d'azote auquel ils sont reliés un groupe hétérocycloalkyle; • R_2 représente un groupe -Q-R_4; • Q représente un atome d'oxygène ou le groupe -NH-. • R4 représente : - un atome d'hydrogène; - un groupe hétéroaryle; - un groupe (C_3-C_6)cycloalkyle; - un groupe (C_1-C_6)alkyle, éventuellement substitué • R_3 représente au moins un substituant du noyau pyridine.

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(71) Applicant *(for all designated States except US)*: **SANOFI-AVENTIS** [FR/FR];174 avenue de France, F-75013 Paris (FR).

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[continued on next page]

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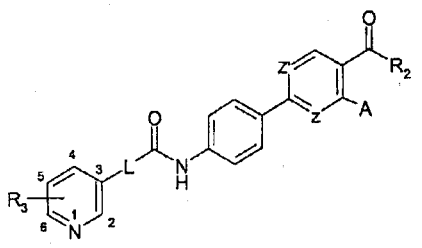

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(57) Abstract : The invention relates to a compound of the formula (I) in which: A is an $NR_1R'_1$ or (C_1-C_6)alcoxy group; Z et Z' are respectively N and CH; N and CF; N and N; CH and CH; CH and N; L is a -CH=CH- or -CH_2CH_2- or -(CH_2)n-Y- group; R_1 and R_2 are such that: (i) R_1 is: a hydrogen atom; an aryl group optionally substituted with one or more halogen atoms; a heteroaryl group; a (C_3-C_6)cycloalkyl group; a (C_1-C_6)alkyl group and R'_1 is a hydrogen atom or a (C_1-C_6)alkyl group; or (ii) R_1 and R'_1 form together with the nitrogen atom to which they are bonded a heterocycloalkyl group; R_2 is a -Q-R_4 group; Q is an oxygen atom or the -NH- group; R_4 is: a hydrogen atom; a heteroaryl group; a (C_3-C_6)cycloalkyl group; an optionally substituted (C_1-C_6)alkyl group; R_3 is at least one substituent of the pyridine nucleus.

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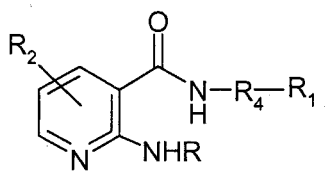
NICOTINAMIDE DERIVATIVES, PREPARATION THEREOF AND THERAPEUTIC USE THEREOF

The present invention relates to nicotinamide derivatives, to the compositions comprising them and to their therapeutic application, in particular as anticancers. The invention also relates to the process for the preparation of these compounds and to some of the intermediates.

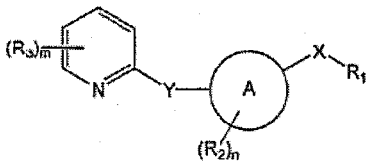
[The prior art]

United States application **US 2006/0216288** describes anticancer compounds of general formula:



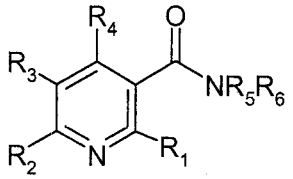
in which the substituent R_2 can in particular be a hydrogen atom, a hydroxyl or amino group, an alkyl or alkynyl group or an optionally substituted phenyl group.

International application **WO 2006/028958** describes anticancer compounds of general formula:



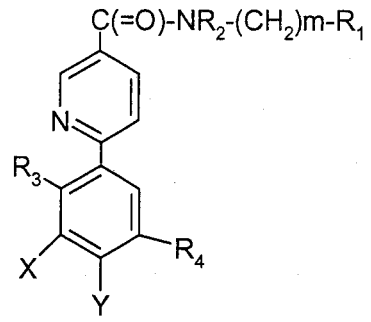
in which A denotes a carbocycle or heterocycle.

United States application **US 2004/0067985** describes antiangiogenesis compounds of general formula:

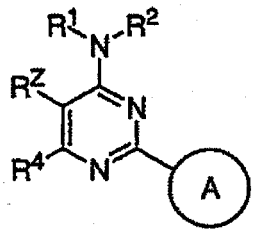


in which R_2 can in particular be an aryl or alkyl group.

International application **WO 03/068747** describes compounds which are inhibitors of enzyme P38 of general formula:

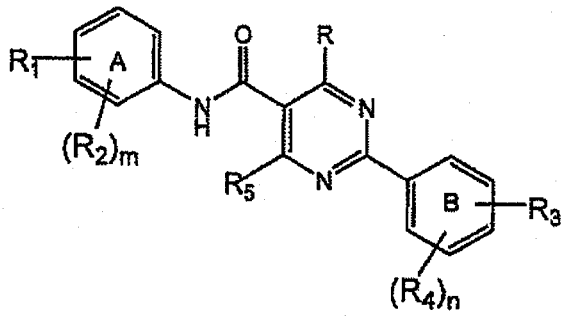


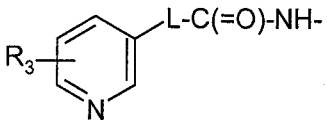
International application **WO 2005/003099** describes compounds of general formula:



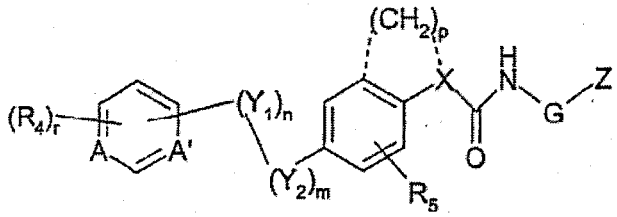
in which A can represent a phenyl group which comprises the $-NR_1R_2$ group.

International application **WO 2007/031829** describes compounds of general formula:



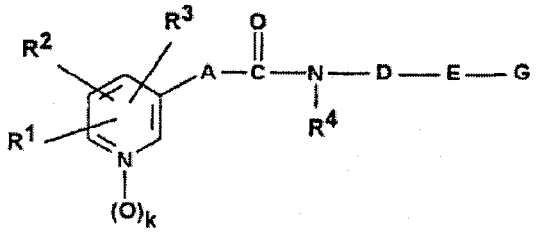
The specific group  of the compounds of the invention is neither described nor suggested in any of these patent applications.

International application **WO 2005/051366** describes compounds of general formula:



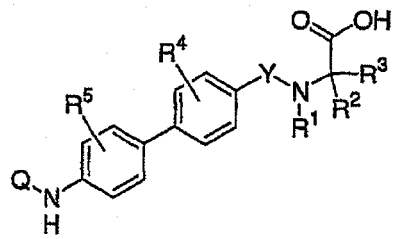
in which Z represents a phenyl or indanyl group and not a pyridinyl group.

International application **WO 97/48397** describes anticancer compounds of general formula:



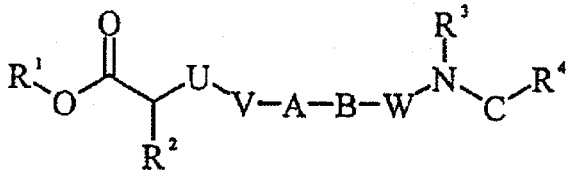
in which E represents a heterocycle comprising a nitrogen atom and optionally an oxygen atom.

International application **WO 2007/016538** describes compounds of general formula:



in which Q can represent an R_{13}-NR_{12}-C(=O)- group, it being possible for R_{13} to be a 2-, 3- or 4-pyridinyl group, R_4 and R_5 representing a hydrogen atom, an alkyl, alkoxy, –OH, –CF_3 or –CN group. These compounds are used in the treatment of obesity.

International application **WO 00/35864** describes compounds of general formula:



in which A and B can each be a 1,3- or 1,4-para-phenylene or 2,4- or 2,5-thienylene group, V represents an alkylene or NR_2CO or NR_2SO_2 group, and U represents an alkylene group or a single bond. The ring A can be substituted, more particularly by alkoxy groups or by a halogen atom. These compounds all comprise the $-CHR_2COOR_1$ unit, which the compounds of the invention do not comprise. Furthermore, the compounds of the invention are characterized by the presence on the ZZ' ring of the substituents A and COR_2, which is not described in **WO 00/35864**.

[Description of the invention]

Definitions used

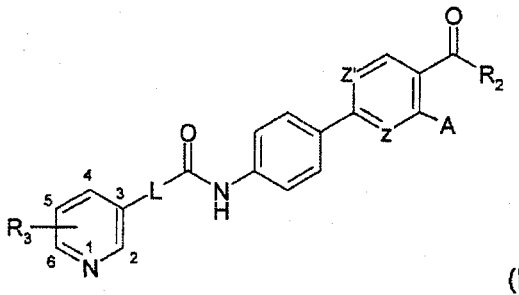
In the context of the present invention, and unless otherwise mentioned in the text:

- a halogen atom is understood to mean: a fluorine, chlorine, bromine or iodine atom;
- an alkyl group is is understood to mean: a saturated aliphatic hydrocarbon group comprising from 1 to 6 carbon atoms (advantageously from 1 to 4 carbon atoms) which is linear or, when the alkyl chain comprises at least 3 carbon atoms, branched or cyclic. Mention may be made, by way of examples, of the methyl, ethyl, propyl, isopropyl, butyl, isobutyl, tert-butyl, methylcyclopropyl, pentyl, 2,2-dimethylpropyl, hexyl, cyclopropyl, cyclobutyl, cyclopentyl or cyclohexyl groups;
- an alkoxy group is understood to mean: an -O-alkyl group, where the alkyl group is as defined above;
- a heteroatom is understood to mean: a nitrogen, oxygen or sulphur atom;
- a cycloalkyl group is understood to mean: a cyclic alkyl group comprising between 3 and 8 carbon atoms, all the carbon atoms being involved in the cyclic structure. Mention may be made, by way of examples, of the cyclopropyl, cyclobutyl, cyclopentyl or cyclohexyl groups;
- an aryl group is understood to mean: a monocyclic aromatic group, for example a phenyl group;
- a heteroaryl group is understood to mean: a monocyclic aromatic group comprising one or more heteroatom(s) involved in the cyclic structure. Mention may be made, by

way of examples, of the pyridine group;

- a heterocycloalkyl group is understood to mean: a cycloalkyl group as defined above initially comprising from 1 to 4 heteroatoms involved in a cyclic structure. Mention may be made, by way of examples, of the tetrahydrofuranyl, azetidinyl, pyrrolidinyl, piperidinyl, N-[(C_1-C_4)alkyl]piperidinyl, morpholinyl, piperazinyl, azepanyl, thiomorpholinyl, 1-oxothiomorpholinyl or 1,1-dioxothiomorpholinyl groups.

According to a 1st aspect, a subject-matter of the present invention is a compound of formula (I):



(I)

in which:

- **A** represents an -$NR_1R'_1$ or (C_1-C_6)alkoxy group;
- **Z** and **Z'** respectively represent N and CH; N and CF; N and N; CH and CH; CH and N;
- **L** represents a –CH=CH- or –CH_2CH_2- or –$(CH_2)_n$-Y- group in which the Y group (attached to the C=O) represents an oxygen atom or an -NH- group and n is an integer ranging from 1 to 4;
- **R_1** and **R'_1** are such that:
  (i) R_1 represents:
  - a hydrogen atom;
  - an aryl group optionally substituted by one or more halogen atom(s);
  - a heteroaryl group;
  - a (C_3-C_6)cycloalkyl group;
  - a (C_1-C_6)alkyl group, optionally substituted by:
    - one or more hydroxyl or (C_1-C_6)alkoxy, preferably (C_1-C_4)alkoxy, group(s);
    - an aryl group;
    - a (C_3-C_6)cycloalkyl group;
    - a heteroaryl group;

- a heterocycloalkyl group;
- an $-NR_aR_b$ group in which R_a and R_b represent, independently of one another, a hydrogen atom or a (C_1-C_6)alkyl, preferably (C_1-C_4)alkyl, group or form, together with the nitrogen atom to which they are connected, a heterocycloalkyl group optionally comprising another nitrogen atom;

and R'_1 represents a hydrogen atom or a (C_1-C_6)alkyl group;

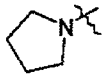
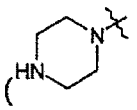
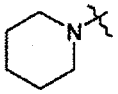
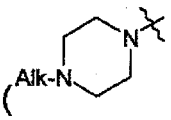
or

(ii) R_1 and R'_1 form, together with the nitrogen atom to which they are connected, a heterocycloalkyl group;

- **R_2** represents a $-Q-R_4$ group;
- **Q** represents an oxygen atom or the -NH- group;
- **R_4** represents:
  - a hydrogen atom;
  - a heteroaryl group;
  - a (C_3-C_6)cycloalkyl group;
  - a (C_1-C_6)alkyl group, optionally substituted by:
    - one or more hydroxyl or (C_1-C_6)alkoxy, preferably (C_1-C_4)alkoxy, groups;
    - a heteroaryl group;
    - a heterocycloalkyl group;
    - an $-NR_cR_d$ group in which R_c and R_d represent, independently of one another, a hydrogen atom or a (C_1-C_6)alkyl group or form, together with the nitrogen atom to which they are connected, a heterocycloalkyl group optionally comprising, in the ring, another heteroatom, such as a nitrogen or oxygen atom or the $-S(O)_q$ group, with q= 0, 1 or 2, and optionally being substituted by one or more substituent(s), which are identical to or different from one another when there are several of them, chosen from a halogen atom or an -OH; (C_1-C_4)alkoxy or (C_1-C_4)alkyl group;
- **R_3** represents at least one substituent of the pyridine ring chosen from a hydrogen or fluorine atom or a (C_1-C_4)alkyl, (C_1-C_4)alkoxy, -OH, -CN or $-NR_eR_f$ group in which R_e and R_f represent a hydrogen atom or a (C_1-C_4)alkyl group or else R_e represents a hydrogen atom and R_f represents a (C_1-C_4)alkyl, $-C(=O)O(C_1-C_4)$alkyl or $-C(=O)(C_1-C_4)$alkyl group.

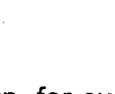
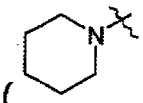
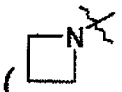
A can represent an $-NR_1R'_1$ group in which:

(i) $\mathbf{R_1}$ can be:

- a hydrogen atom;
- an aryl group optionally substituted by one or more halogen atom(s) (preferably a fluorine atom). The aryl group can be the phenyl group;
- a heteroaryl group, such as, for example the 3- or 4-pyridinyl group;
- a $(C_3\text{-}C_6)$cycloalkyl group, such as, for example, the cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl group;
- a $(C_1\text{-}C_6)$alkyl, optionally substituted by:
  - one or more -OH or $(C_1\text{-}C_6)$alkoxy, preferably $(C_1\text{-}C_4)$alkoxy, group(s): for example methoxy;
  - an aryl group: for example, the phenyl group;
  - a $(C_3\text{-}C_6)$cycloalkyl group: for example, the cyclopropyl group;
  - a heteroaryl group: for example, the pyridinyl group, in particular 2-, 3- or 4-pyridinyl group;
  - a heterocycloalkyl group: for example, the 2-tetrahydrofuryl group;
  - an $-NR_aR_b$ group in which R_a and R_b represent, independently of one another, a hydrogen atom or a $(C_1\text{-}C_6)$alkyl, preferably $(C_1\text{-}C_4)$alkyl, group or form, together with the nitrogen atom to which they are connected, a heterocycloalkyl group optionally comprising, in the ring, another nitrogen atom. R_a and R_b can be two $(C_1\text{-}C_6)$alkyl groups, for example two methyl groups. The heterocycloalkyl formed by R_a and R_b can, for example be the pyrrolidinyle (), piperazinyl (), piperidinyl () or N-[$(C_1\text{-}C_4)$alkyl]piperidinyl (), for example N-methylpiperidinyl, group.

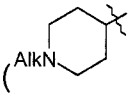
R_1 can be chosen from one of those described in Table I.

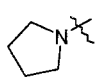
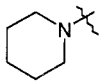
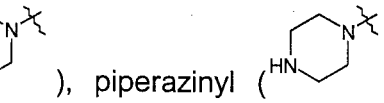
and $\mathbf{R'_1}$ represents a hydrogen atom or a $(C_1\text{-}C_6)$alkyl group. R'_1 can be chosen from one of those described in Table I. An R_1/R'_1 combination can also be chosen from one of those described in Table I.

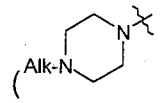
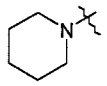
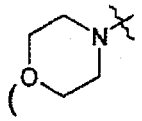
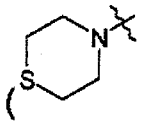
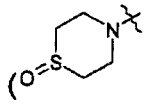
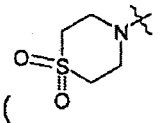
(ii) R_1 and R'_1 form, together with the nitrogen atom to which they are connected, a heterocycloalkyl group, for example the pyrrolidinyl  , piperidinyl  or azetidinyl  group.

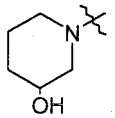
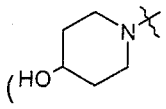
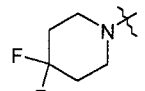
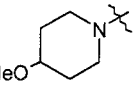
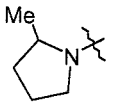
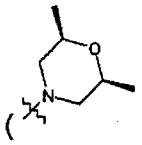
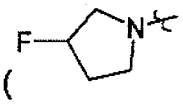
A can also represent a $(C_1\text{-}C_6)$alkoxy group, for example the ethoxy group.

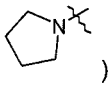
R_2 can represent an $-NHR_4$ group (Q = -NH-) in which R_4 represents:

- a hydrogen atom;
- a heteroaryl group, such as, for example, the pyridinyl group, in particular 2-, 3- or 4-pyridinyl group;
- a $(C_3\text{-}C_6)$cycloalkyl group, such as, for example, the cyclopropyl or cyclopentyl group;
- a $(C_1\text{-}C_6)$alkyl group, optionally substituted by:
  - one or more -OH or $(C_1\text{-}C_6)$alkoxy, preferably $(C_1\text{-}C_4)$alkoxy group, for example methoxy;
  - a heteroaryl group: for example the pyridinyl group, in particular 2-, 3- or 4-pyridinyl group;
  - a heterocycloalkyl group: for example, the morpholinyl, pyrrolidinyl, piperazinyle, or piperidinyl group, more particularly by the 4-piperidinyle  or 4-N-[$(C_1\text{-}C_4)$alkyl]piperidinyl (), for example 4-N-methylpiperidinyl, group;
  - an $-NR_cR_d$ group in which R_c and R_d represent, independently of one another, a hydrogen atom or a $(C_1\text{-}C_6)$alkyl group or form, together with the nitrogen atom to which they are connected, a heterocycloalkyl group optionally comprising, in the ring, another heteroatom, such as a nitrogen or oxygen atom or the $-S(O)_q$ group, with q = 0, 1 or 2.

The heterocycloalkyl group formed by R_c and R_d can, for example, be the pyrrolidinyl () piperidinyl (), piperazinyl () or N-[$(C_1\text{-}C_4)$alkyl]piperazinyl

(), for example N-methyl- or N-propylpiperazinyl, azepanyl (), morpholinyl (), thiomorpholinyl (), 1-oxothiomorpholinyl () or 1,1-dioxothiomorpholinyl () group.

The heterocycloalkyl group formed by R_c and R_d can optionally be substituted by one or more substituent(s), which are identical to or different from one another when there are several of them, chosen from: -OH; $(C_1$-$C_4)$alkoxy: for example methoxy; $(C_1$-$C_4)$alkyl: for example methyl; halogen atom: for example fluorine atom. Thus, the substituted heterocycloalkyl can be the 3-hydroxypiperidinyl () or 4-hydroxypiperidinyl (), 4,4'-difluoropiperidinyl (), 4-methoxypiperidinyl (), 2-methylpyrrolidinyl (), *cis*-2,6-dimethylmorpholinyl () or 3-fluoropyrrolidinyl () group.

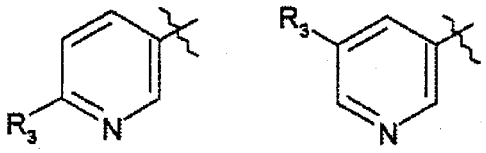
R_2 can also represent an $-OR_4$ group (Q = -O-) in which **R_4** represents a $(C_1$-$C_4)$alkyl group optionally substituted by the preceding $-NR_cR_d$ group. It can, for example, be the piperidinyl group ().

R_2 or R_4 can be chosen from one of those described in Table I.

A pyridine ring can comprise from 1 to 4 **R_3** substituents chosen from a hydrogen or

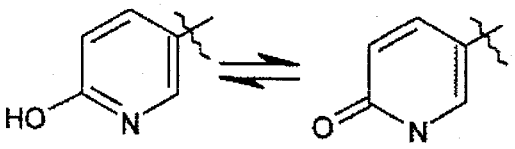
fluorine atom or a (C_1-C_4)alkyl, (C_1-C_4)alkoxy, -OH, -CN or -NR_eR_f group in which R_e and R_f represent a hydrogen atom or a (C_1-C_4)alkyl group or else R_e represents a hydrogen atom and R_f represents a (C_1-C_4)alkyl, -C(=O)(C_1-C_4)alkyl or -C(=O)(C_1-C_4)alkyl group. R_3 can be chosen from those described in Table I.

Preferably, R_3 is in the 5 or 6 position on the pyridine ring (the L group being in the 3 position on this ring), as represented below:



6 position 5 position

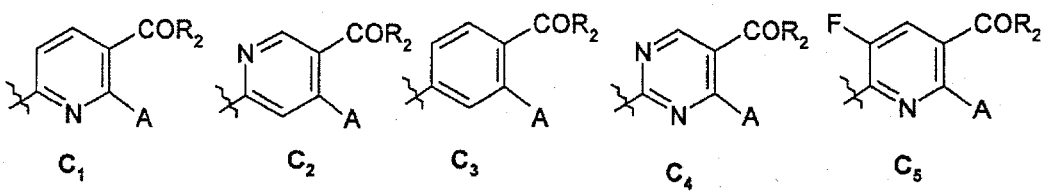
R_3 is more preferably still in the 6 position. Preferably R_3 represents a hydrogen atom or 5- or 6-NH_2. When R_3 represents the -OH group in the 2 or 6 position (cf. compound No. 123), the pyridine ring also exists in the 2-pyridone form:



case of the -OH group in the 6 position

L represents a –CH=CH-, $–CH_2CH_2$- or $–(CH_2)_n$-Y- group in which the Y group (attached to the C=O) represents an oxygen atom or an -NH- group and n is an integer ranging from 1 to 4. L can be one of those described in Table I. Preferably, L represents the $-CH_2$-NH-, $-CH_2$-O- or –CH=CH- group. Preference is also given, in the case where L represents the –CH=CH- group, to the E isomers rather than the Z isomers.

The ring comprising **Z** and **Z'** can be one of the following rings:



C_1 C_2 C_3 C_4 C_5

According to a 1st combination,

- R_1 and R'_1 represent, independently of one another, a hydrogen atom or a (C_1-C_6)alkyl group;
- Q represents the -NH- group;
- R_4 represents a hydrogen atom or a (C_1-C_6)alkyl group.

More particularly, R_1 represents a (C_1-C_6)alkyl group and R'_1 represents a hydrogen atom or else R_1 and R'_1 represent two (C_1-C_6)alkyl groups.

According to a 2nd combination,

- R_1 and R'_1 represent, independently of one another, a hydrogen atom or a (C_1-C_6)alkyl group;
- Q represents the -NH- group;
- R_4 represents a (C_1-C_6)alkyl group substituted by:
  - one or more -OH or (C_1-C_6)alkoxy, preferably (C_1-C_4)alkoxy, groups;
  - the $-NR_cR_d$ group in which R_c and R_d represent, independently of one another, a hydrogen atom or a (C_1-C_6)alkyl group or form, together with the nitrogen atom to which they are connected, a heterocycloalkyl group chosen from a pyrrolidinyl, piperidinyl, piperazinyl or N-[(C_1-C_4)alkyl]piperazinyl, azepanyl, morpholinyl, thiomorpholinyl, 1-oxothiomorpholinyl, 1,1-dioxothiomorpholinyl, 3- or 4-hydroxypiperidinyl, 4,4'-difluoropiperidinyl, 4-methoxypiperidinyl, 2-methylpyrrolidinyl, *cis*-2,6-dimethylmorpholinyl or 3-fluoropyrrolidinyl group.

According to a 3rd combination,

- R_1 represents a (C_1-C_6)alkyl group substituted by:
  - one or more -OH or (C_1-C_6)alkoxy, preferably (C_1-C_4)alkoxy, group(s);
  - an $-NR_aR_b$ group in which R_a and R_b represent, independently of one another, a hydrogen atom or a (C_1-C_6)alkyl, preferably (C_1-C_4)alkyl, group or form, together with the nitrogen atom to which they are connected, a heterocycloalkyl group chosen from a pyrrolidinyl, piperazinyl, piperidinyl or N-[(C_1-C_4)alkyl]piperidinyl group;
- R'_1 represents a hydrogen atom;
- Q represents the -NH- group;
- R_4 represents a (C_1-C_6)alkyl group.

R_a and R_b can be identical and both represent a hydrogen atom or a (C_1-C_6)alkyl group or else can be different and represent a hydrogen atom and a (C_1-C_6)alkyl group.

According to a 4th combination,

- R_1 represents a $(C_1$-$C_6)$alkyl group substituted by a phenyl or 2-, 3- or 4-pyridinyl group;
- R'_1 represents a hydrogen atom;
- Q represents the -NH- group;
- R_4 represents a $(C_1$-$C_6)$alkyl group.

According to a 5th combination,

- R_1 represents a $(C_3$-$C_6)$cycloalkyl group;
- R'_1 represents a hydrogen atom;
- Q represents the -NH- group;
- R_4 represents a $(C_1$-$C_6)$alkyl group or a $(C_3$-$C_6)$cycloalkyl group.

R_1 can be the cyclopropyl, cyclobutyl, cyclopentyl or cyclohexyl group. R_4 can be the cyclopropyl or cyclopentyl group.

According to a 6th combination,

- R_1 represents a phenyl or 3- or 4-pyridinyl group;
- R'_1 represents a hydrogen atom;
- Q represents the -NH- group;
- R_4 represents a $(C_1$-$C_6)$alkyl group.

According to a 7th combination,

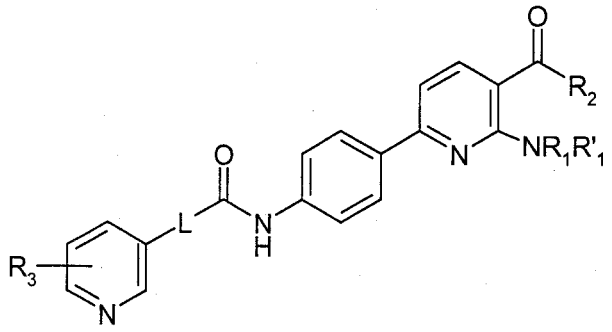
- R_1 represents a phenyl group optionally substituted by one or more halogen atom(s);
- R'_1 represents a hydrogen atom;
- Q represents the -NH- group;
- R_4 represents a $(C_1$-$C_6)$alkyl group optionally substituted by the $-NR_cR_d$ group in which R_c and R_d form, together with the nitrogen atom to which they are connected, a heterocycloalkyl group chosen from the pyrrolidinyl or piperidinyl group.

According to an 8th combination,

- R_1 and R'_1 represent, independently of one another, a hydrogen atom or a $(C_1$-$C_6)$alkyl group;
- Q represents the -NH- group;

- R_4 represents a $(C_1$-$C_6)$alkyl group substituted by the 2-, 3- or 4-pyridinyl group.

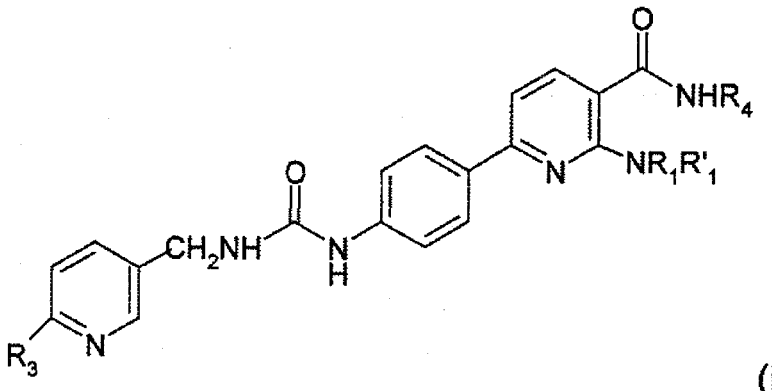
The subgroup of compounds of formula (I'):



(I')

in which R_1, R'_1, R_2, R_3 and L are as defined above, in particular according to one of the combinations 1 to 8, is distinguished. More particularly, L represents the $-(CH_2)_n$-Y- group in which n is an integer ranging from 1 to 4 (n = 1, 2, 3 or 4) and Y represents an oxygen atom or an NH group. More particularly, L represents the $-CH_2NH$- group.

The subgroup of compounds of formula (I''):



(I'')

in which R_1, R'_1, R_4 are as defined above, in particular according to one of the combinations 1 to 8, is also distinguished.

Mention may be made, among the compounds which are the subject-matter of the invention, of those of Table I.

The compounds of the invention can exist in the form of bases or of addition salts with acids. Such addition salts also come within the invention. These salts are advantageously prepared with pharmaceutically acceptable acids but the salts of other acids of use, for

example, in the purification of the isolation of the compounds also come within the invention. The compounds according to the invention can also exist in the form of hydrates or solvates, namely in the form of combinations or associations with one or more molecules of water or with a solvent. Such hydrates and solvates also come within the invention.

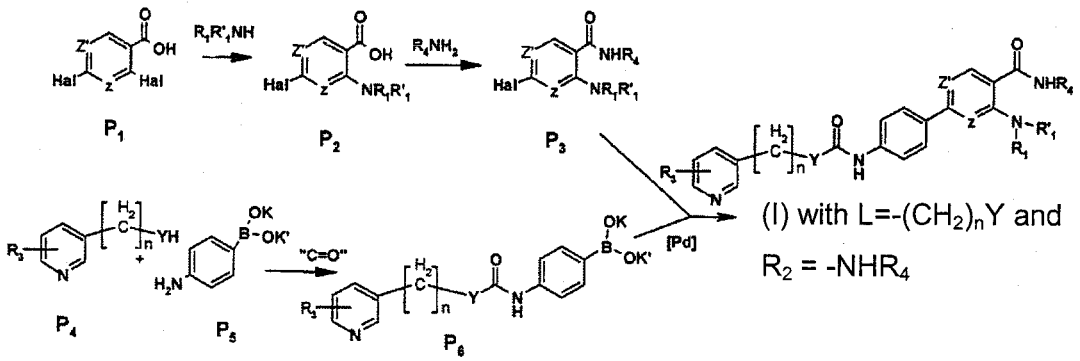
The compounds can comprise one or more asymetric carbon atoms. They can also exist in the form of an enantiomers or diastereoisomers. These enantiomers or diastereoisomers and their mixtures come within the invention.

According to 2nd aspect, the subject-matter of the invention is the process for preparation of the compounds of the invention and some of the reaction intermediates.

Preparation of the compounds of formula (I) for which L = -$(CH_2)_n$Y and R_2 = NHR_4

These compounds can be prepared according to one of the following schemes 1-3.

Scheme 1



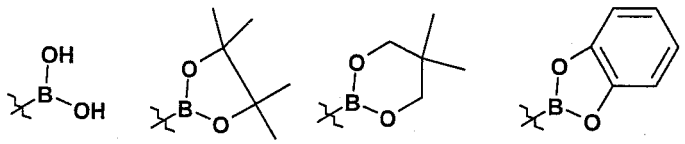
Scheme 1

A coupling of Suzuki type of P_3 and P_6 is carried out. Hal represents the halogen atom (chlorine, bromine, iodine). The coupling is carried out in the presence of a palladium (in the (0) or (II) oxidation state) complex, such as, for example, $Pd(PPh_3)_4$, $PdCl_2(PPh_3)_2$, $Pd(OAc)_2$ or $PdCl_2$(dppf) or bis[di(*tert*-butyl)(4-dimethylaminophenyl)phosphine]dichloropalladium(II). The most frequently used complexes are palladium(0) complexes. The coupling is promoted in the presence of a base, which can, for example, be K_2CO_3, $NaHCO_3$, Et_3N, K_3PO_4, $Ba(OH)_2$, NaOH, KF,

CsF, Cs_2CO_3, and the like. The coupling can be carried out in a mixture of an etheral solvent and of an alcohol, for example a dimethoxyethane/ethanol mixture; the mixture can also be a toluene/water mixture (see ex.19). The temperature can be between 50 and 100°C.

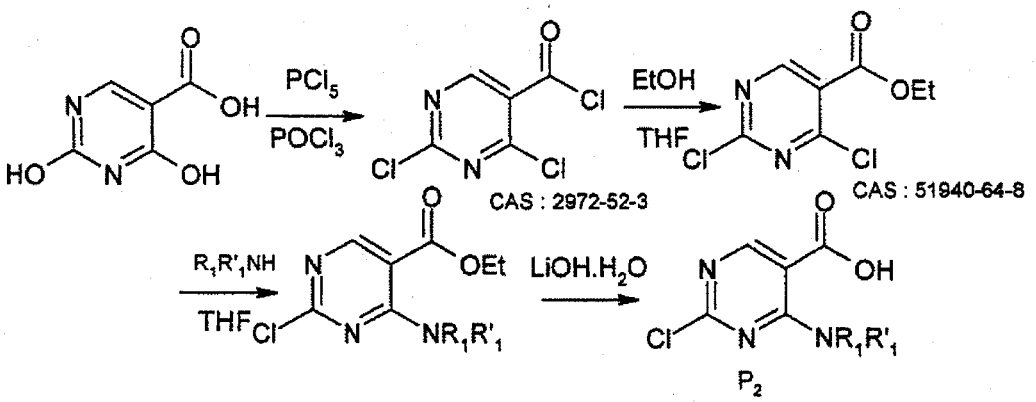
Further details with regard to Suzuki coupling, with regard to the operating conditions and with regard to the palladium complexes which can be used will be found in: N.Miyaura and A.Suzuki, *Chem. Rev.* (1995), 95, 2457-2483; A.Suzuki in Metal-catalyzed cross-coupling reactions, edited by Diederich, F. and Stang, P.J., Wiley-VCH: Weinheim, Germany, 1998, chapter 2, 49-97; and Littke, A. and Fu, G., *Angew. Chem. Int. Ed.* (1999), 38, 3387-3388.

K and K' represent a hydrogen atom or an alkyl or aryl group, optionally connected to one another in order to form, together with the boron atom and the two oxygen atoms, a 5- to 7-membered ring. Use will be made, for example, of one of the following groups:



P_2 is obtained from the acid P_1 by monosubstitution in 2 position with an amine of formula $R_1R'_1NH$. In the case where Z and Z' respectively represent N and CH, P_1 is a 2,6-dihalonicotinic acid, for example 2,6-dichloronicotinic acid, which is commercially available (cf. ex. 1). The reaction can take place at ambient temperature and in a protic solvent, such as an alcohol or water.

In the case where Z and Z' both represent N and Hal represents a chlorine atom, P_2 is obtained from 2,4-dihydroxypyrimidine-5-carboxylic acid (cf. ex. 11).



Scheme 1'

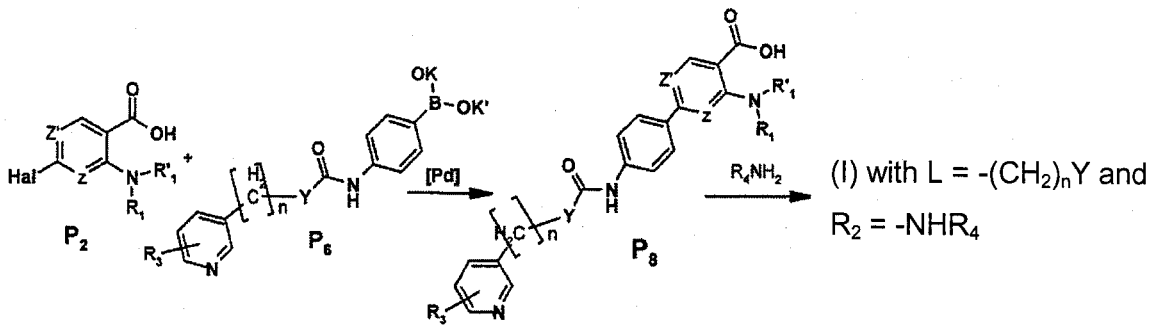
P_3 is prepared by amidation by reacting P_2 with an excess of amine R_4NH_2. Use may advantageously be made of an acid activator (coupling agent), such as, for example (benzotriazol-1-yloxy)tris(dimethylamino)-phosphonium hexafluorophosphate (or BOP, CAS: 56602-33-6, see also B.Castro. and Dormoy, J.R. *Tetrahedron Letters,* **1975**, 16, 1219). The reaction is preferably carried out in the presence of a base (such as triethylamine) at ambient temperature in a solvent, such as tetrahydrofurane (THF) or dimethylformamide (DMF).

P_6 is prepared by reacting P_4 and P_5 in the presence of an agent which makes it possible to introduce the "C=O" unit (for example phosgene, triphosgene or N,N'-disuccinimidyl carbonate DSC). Advantageously, the reaction is carried out in the presence of triphosgene. It is also preferably carried out in the presence of a base, such as, for example triethylamine, and at a temperature of between -5°C and ambient temperature in an etheral solvent, such as THF. 4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)-phenylamine has frequently been used for P_5. Example 8.1 presents an illustrative procedure for this reaction.

P_4 may be either commercially available or prepared according to methods known to the person skilled in the art. For example, the compounds 3-picolylamine (CAS No. 3731-52-0), 3-(2-aminoethyl)pyridine (CAS No. 20173-24-4), 3-pyridinemethanol (CAS No. 100-55-0), 5-aminoethyl 2-pyridinecarbonitrile (CAS No. 181130-14-3), 2-amino-5-aminomethylpyridine (CAS No. 156973-09-0), 2-fluoro-3-aminomethylpyridine (CAS No. 205744-16-7), 2,5,6-trifluoro-3-(aminomethyl)pyridine (CAS No. 771585-56-0), 2-methyl-5-aminomethylpyridine (CAS No. 56622-54-9), 3-methyl-5-aminomethylpyridine

(CAS No. 771574-45-9), 2-methoxy-3-aminoethylpyridine (CAS No. 354824-19-4), 5-aminoethyl-1H-pyridin-2-one (CAS No. 131052-84-1) and 2-(BOC-amino)-5-(aminomethyl)pyridine (CAS No. 187237-37-2) are commercial products. 2-amino-5-aminomethylpyridine can also be prepared according to **EP 0607804**. 2-amino-5-aminomethylpyridine and 6-amino-3-aminomethyl-5-methylpyridine can be prepared according to preparations D and F of **EP 1050534**. 2-fluoro-5-aminomethylpyridine (CAS No. 205744-17-8) can be prepared according to Chinese Journal of Chemistry, **2006**, 24(4), 521-526. 5-aminomethyl-2-(dimethylamino)pyridine (CAS No. 354824-17-2) is commercially available or can be prepared according to Journal of Agricultural and Food Chemistry, **2008**, 56(1), 204-212. 3-fluoro-5-aminomethylpyridine (CAS No. 23586-96-1) and 2-fluoro-3-aminomethylpyridine can be prepared according to **WO 2005066126** (preparations 46 and 47). 2-amino-3-methyl-5-aminomethylpyridine (CAS No. 187163-76-4) can be obtained by catalytic hydrogenation of the compound 6-amino-5-methylpyridinecarbonitrile (CAS No. 183428-91-3), the amine functional group being doubly protected with BOC. Likewise, the catalytic hydrogenation of N-(5-cyano-2-pyridinyl)acetamide (CAS No. 100130-61-8) and N-(5-cyano-2-pyridinyl)isobutyramide makes it possible to obtain the aminomethyl equivalents. Catalytic hydrogenation of 6-isopropylaminonicotinonitrile (CAS No. 160017-00-5) and 6-ethylamino-3-pyridinecarbonitrile (CAS No. 1016813-34-5) likewise produces the aminomethyl equivalents. Catalytic hydrogenation of 6-methylamino-3-pyridinecarbonitrile (CAS No. 261715-36-0) makes it possible to access 2-methylamino-5-aminomethylpyridine.

Scheme 2

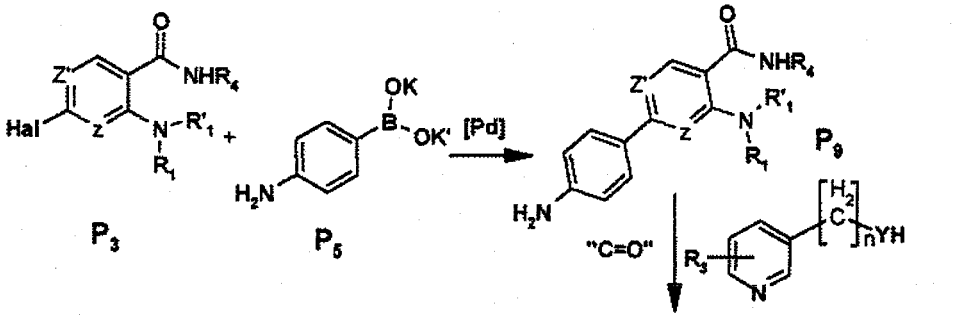


Scheme 2

In **Scheme 2**, the Suzuki coupling (as described above) between P_2 (for example, Hal=Cl when Z and Z' respectively represent N and CH) and P_6 is first carried out in order to result in P_8 and then the R_4 group is introduced by reacting the acid functional group of

P_8 with an excess of amine R_4NH_2 (amidation). An acid activator, such as, for example, BOP, is advantageously used to activate the reaction. In the case where R_4 represents a pyridine group (cf. compounds No. 67 and 68), the activator can, for example, be EDCI (1-(3-dimethylaminopropyl)-3-ethylcarbodiimide hydrochloride).

Scheme 3



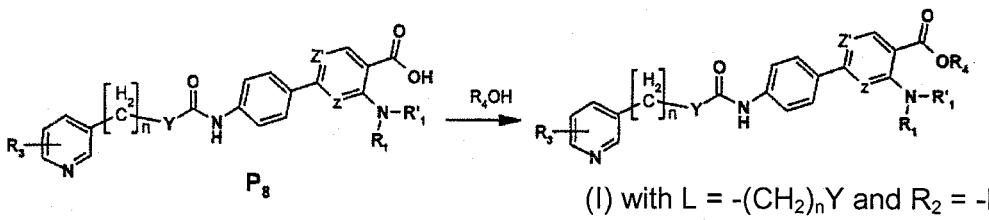
(I) with L = $-(CH_2)_nY$ and R_2 = $-NHR_4$

Scheme 3

In **Scheme 3**, the Suzuki coupling of P_3 and P_5 is carried out in order to give P_9 and then P_9 and P_4 are reacted in the presence of an agent which makes it possible to introduce the "C=O" unit and optionally of a base, such as triethylamine. The reaction is carried out in an etheral solvent, such as THF, preferably at an ambient temperature. Preferably, DSC is used to introduce the "C=O" unit.

Preparation of the compounds of formula (I) for which L = $-(CH_2)_nY-$ and R_2 = $-OR_4$

According to an alternative form of **Scheme 2**, these compounds are prepared by esterification of P_8 and of R_4OH (**Scheme 2'**).

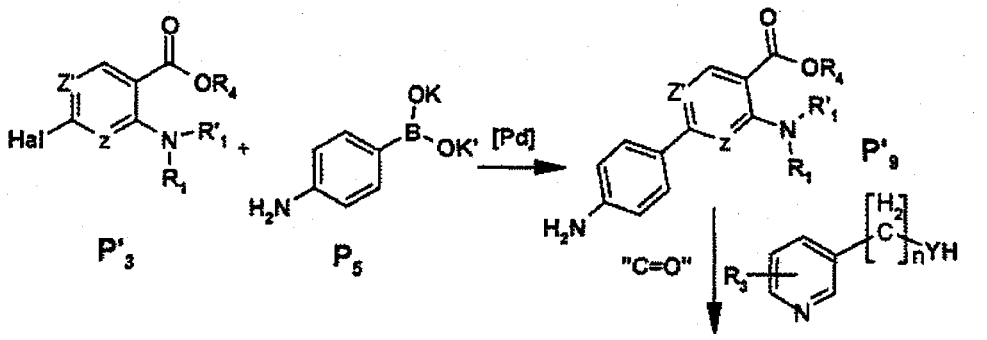


(I) with L = $-(CH_2)_nY$ and R_2 = $-NHR_4$

Scheme 2'

According to an alternative form of **Scheme 3**, it is also possible to use P'_3 in place of P_3.

P'$_3$ is obtained by esterification of P_2 and of R_4OH (**Scheme 3'**):



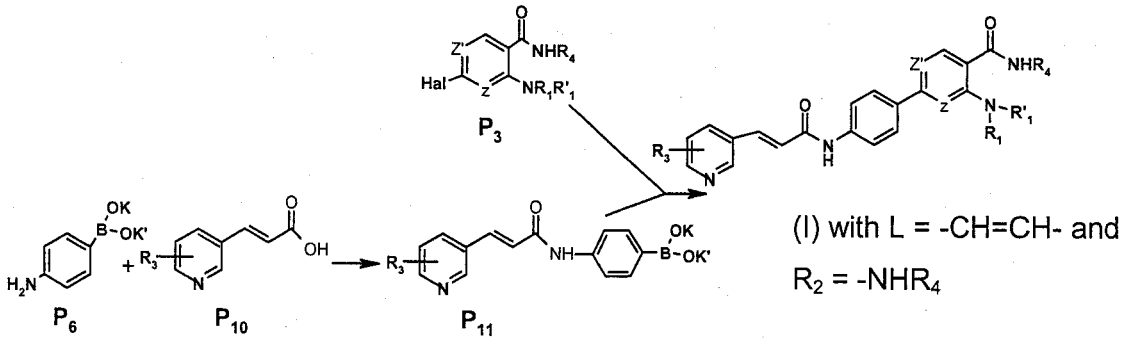
(I) with L = $-(CH_2)_nY$ and $R_2 = -OR_4$

Scheme 3'

Esterification is known to a person skilled in the art and consists in reacting the acid functional group of P_2 or P_8 with the alcohol R_4OH in the optional presence of a strong acid as catalyst (cf. Practical Organic Chemistry, A. I. Vogel, 3rd ed., page 382) or of an acid activator, such as EDCI.

<u>Preparation of the compounds of formula (I) for which L = -CH=CH- and $R_2 = NHR_4$</u>

These compounds are obtained by coupling of Suzuki type of P_3 (for example, Hal = Cl when Z and Z' respectively represent N and CH) and of P_{11}. P_{11} is obtained by an amidation between P_5 and P_{10}. The amidation can advantageously be carried out in the presence of an acid activator, such as, for example, BOP.



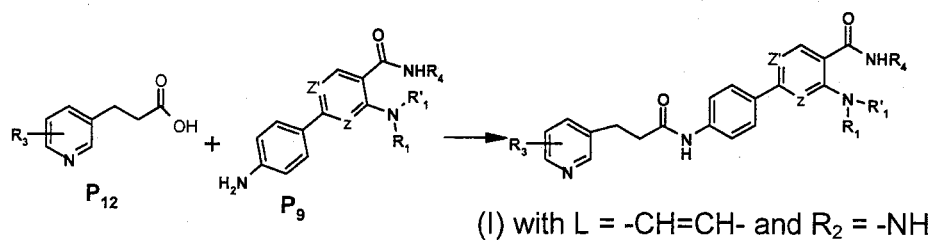
(I) with L = -CH=CH- and $R_2 = -NHR_4$

Scheme 4

P_{10} may either be commercially available or be prepared according to methods known to a person skilled in the art. For example, trans-3-(3-pyridyl)acrylic acid is sold by Sigma-Aldrich. P_{10} can also be prepared according to J.Org.Chem., **1998**, 63, 8785-8789, from

the corresponding β-formylpyridine.

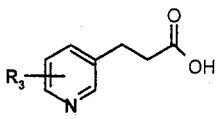
According to **Scheme 5**, P_{10} is reacted with P_9, advantageously in the presence of an acid activator, such as, for example, BOP.



Scheme 5

Preparation of the compounds of formula (I) for which L = $-CH_2CH_2-$ and $R_2 = NHR_4$

For these compounds, use may be made of the preceding **Scheme 4** using P_{12} in place of P_{10}:



P_{12}

P_{12} may either be commercially available or be prepared according to methods known to a person skilled in the art. For example, 3-(3-pyridinyl)propanoic acid is sold by Sigma-Aldrich. P_{12} can also be prepared by hydrogenation of P_{10} (Journal of Medicinal Chemistry, **1993**, 36(22), 3293-9).

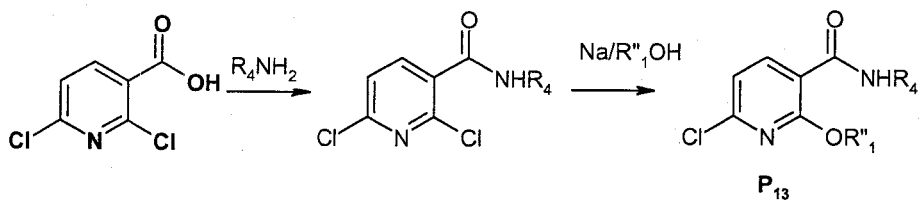
Use may also be made of P_{12} in place of P_{10} in the preceding **Scheme 5**.

Preparation of the compounds of formula (I) for which L = -CH=CH- or $-CH_2CH_2-$ and $R_2 = -OR_4$

P_{11} and P'_3 (in place of P_3) are reacted in the preceding **Scheme 4** in order to obtain compounds of formula (I) for which L = -CH=CH- and $R_2 = -OR_4$. Likewise, starting from P'_3 and P_{12}, the compounds of formula (I) for which L = $-CH_2CH_2-$ and $R_2 = -OR_4$ are obtained.

The compounds for which A represents a (C_1-C_6)alkoxy group are obtained according to Schemes equivalent to the preceding Schemes starting from an equivalent compound

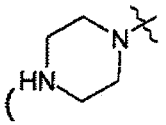
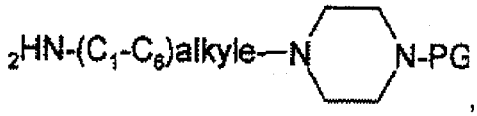
P_{13}.



Scheme 6

P_{13} can be obtained according to **Scheme 6**. Amidation with R_4NH_2 can be carried out in the presence of an acid activator, such as, for example, N,N'-carbonyldiimidazol (CDI) (see in this connection: R.Paul and G.W. Anderson (1960), "N,N'-carbonyldiimidazole, a New Peptide Forming Reagent", *Journal of the American Chemical Society,* **82**: 4596-4600). The reaction can be carried out in a solvent such as THF. The conditions of Ex. 10.1 may act as a model. The following stage is carried out in the presence of the alkoxide R''_1O^-. The reaction can be carried out in THF at a temperature of the order of 70°C. The conditions of Ex. 10.2 may act as a model.

Protection of the primary or secondary amine functional group

It may be necessary to use, in at least one of the stages, a protective group (PG) in order to protect one or more chemical functional group, in particular a primary or secondary amine functional group. For example, when R_c and R_d both represent a hydrogen atom, the amidation of **Scheme 2** is carried out using, for R_4NH_2, the compound H_2N-(C_1-C_6)alkyl-NH-PG, where PG advantageously represents BOC (ter-butoxycarbonyl). Thus, for compound No. 32, the compound H_2N-$(CH_2)_6$-NHBOC was used for R_4NH_2. Likewise, when the heterocycloalkyl group formed by R_c and R_d represents the piperazinyl group  , the -NH- functional group thereof can advantageously be protected. In this case, the following compound 

, where PG advantageously represents BOC, is used. Likewise, when R_3 represents -NH_2 or -NH-alkyl, the -NH- functional group is preferably protected, advantageously using BOC (see, for example, compounds No. 81, 87, 93, 94 and 98), which makes it possible to increase the yield of desired product.

The functional group(s) is/are subsequently obtained by a stage of deprotection (final or intermediate), the conditions of which depend on the nature of the protected functional group(s) and protective group used. In the case of the protection of the $-NH_2$ or -NH- functional groups by BOC, the deprotection stage is carried out in an acid medium using, for example, HCl or triflic acid. If appropriate, the associated salt (hydrochloride or triflate) is thus obtained; see compounds No. 5, 32, 94, 104 or 119. Another method of obtaining the salts consists in bringing the compound into contact in its base form with the acid.

In the preceding Schemes, the starting compounds and the reactants, when their method of preparation is not described, are commercially available or described in the literature, or else can be prepared according to methods which are described therein or which are known to a person skilled in the art. A person skilled in the art can also draw as a model on the operating conditions given in the examples which are described below.

According to a 3rd aspect, the invention relates to a pharmaceutical composition comprising a compound as defined above in combination with a pharmaceutically acceptable excipient. The excipient is chosen from the usual excipients known to a person skilled in the art according to the pharmaceutical form and the method of administration desired. The method of administration can, for example, be via the oral route or via the intravenous route.

According to a 4th aspect, the subject-matter of the invention is a medicament which comprises a compound as defined above, and also the use of a compound as defined above in the manufacture of a medicament. It will be of use in treating a pathological condition, in particular cancer.

This medicament can have a therapeutic use, in particular in the treatment or the prevention of diseases caused or exacerbated by the proliferation of cells and in particular tumour cells.

The medicament (and also a compound according to the invention) can be administered in combination with one (or more) anticancers, in particular chosen from:

- chemotherapy agents, such as alkylating agents, platinum derivatives, antibiotic agents, antimicrotubule agents, taxoids, anthracyclines, group I and II

topoisomerase inhibitors, fluoropyrimidines, cytidine analogues, adenosine analogues, enzymes, and also oestrogenic and androgenic hormones;

- antivascular or antiangiogenic agents.

It is also possible to combine a treatment by radiation. This treatment can be administered simultaneously, separately or else sequentially. The treatment will be adapted by the practitioner according to the patient and the tumour to be treated.

According to a 5th aspect, the invention also relates to a method for the treatment of the pathologies indicated above which comprises the administration to a patient of an effective dose of a compound according to the invention or one of its pharmaceutically acceptable salts or its hydrates or its solvates.

[Examples]

The following examples illustrate the preparation of some compounds in accordance with the invention. These examples are not limiting and serve only to illustrate the present invention. The numbers of the compounds exemplified refer to those given in the table below, in which the chemical structures and the physical properties of some compounds according to the invention are illustrated.

The compounds have been analysed by HPLC-UV-MS coupling (liquid chromatography, ultraviolet (UV) detection and mass detection). The device used is composed of an Agilent chromatographic sequence equipped with an Agilent diode array detector and with a Waters ZQ single quadrupole mass spectrometer or a Waters Quattro-Micro triple quadrupole mass spectrometer.

Mass spectrometry conditions

The liquid phase chromatography/mass spectrometer (LC/MS) spectra were recorded in positive electrospray (ESI) mode, in order to observe the ions resulting from the protonation of compounds analysed (MH^+) or from the formation of adducts with other cations, such as Na^+, K^+, and the like. The ionization parameters are as follows: cone voltage: 20 V; capillary voltage: 3 kV; source temperature: 120°C; desolvation temperature: 450°C; desolvation gas: N_2 at 450 l/h.

The HPLC conditions are chosen from one of the following methods:

Conditions	A	B	C	D	E
Column	Symmetry C18 (50 × 2.1 mm; 3.5 µm)	Symmetry C18 (50 × 2.1 mm; 3.5 µm)	XTerra MS C18 (50 × 2.1 mm; 3.5 µm)	Acquity BEH C18 (50 × 2.1 mm; 1.7 µm)	XTerra C_{18} (2.1 × 50 mm; 3.5 µm) No. 186000400
Eluant A	H_2O + 0.005% TFA at approximately pH 3.1	H_2O + 0.005% TFA at approximately pH 3.1	$AcONH_4$ 10 mM at pH~7	H_2O + 0.05% TFA at approximately pH 3.1/CH_3CN (97/3)	H_2O + 0.005% TFA
Eluant B	CH_3CN + 0.005% TFA	CH_3CN + 0.005% TFA	CH_3CN	CH_3CN + 0.035% TFA	CH_3CN
Gradient	100:0 (0 min) → 10:90 (10 min) → 100:0 (15 min)	100:0 (0 min) → 10:90 (20 min) → 100:0 (30 min)	100:0 (0 min) → 10:90 (10 min) → 100:0 (20 min)	100:0 (0 min) → 5:95 (2.3 min) → 5:95 (2.9 min) → 100:0 (3 min) → 100:0 (3.5 min)	95% of A to 90% of B in 17 min, then 90% of B for 5 min
T. column	30°C	30°C	30°C	40°C	Column not thermostatically controlled
Flow rate	0.4 ml/min	0.4 ml/min	0.4 ml/min	1 ml/min	0.3 ml/min
Detection	λ = 220 nm	λ = 220 nm	λ = 220 nm	λ = 220 nm	λ = 220 nm

TFA: trifluoroacetic acid

Example 1: 2-ethylamino-N-methyl-6-[4-(3-(pyridin-3-ylmethyl)ureido)phenyl]-nicotinamide (compound No. 1)

1.1: 6-Chloro-2-(ethylamino)nicotinic acid

26.1 g (0.136M) of 2,6-dichloronicotinic acid are mixed in a round-bottomed flask with 180 ml of a 70% aqueous solution of ethylamine in water. The solution is stirred at ambient temperature for 5 days and then the solvant is evaporated under reduced pressure. The residue is taken up in 100 ml of water. The reaction medium is cooled with an ice bath and acidified to pH 3 with the 5N HCl solution. Finally, the precipitate is filtered off and washed with cold water in order to be finally dried under vacuum over P_2O_5 at 60°C. 24.93 g (yield yd = 91.4%) of white solid are obtained. M.p. (melting point) = 157-159°C.

1.2: 6-Chloro-2-ethylamino-N-methylnicotinamide

2.09 ml (15 mm) of triethylamine, 5 ml (10 mm) of a 2N solution of methylamine in THF and 2.06 g (5 mm) of BOP are successively added to a solution of 1.003 g (5 mm) of compound obtained in stage 1.1 in 40 ml of THF. The medium is stirred at ambient temperature for 18 h, followed by evaporation of the solvent under reduced pressure.

The residue is taken up in ethyl acetate and then successively washed with water, a 3% solution of $KHSO_4$ in water, a 10% solution of Na_2CO_3 in water and a saturated NaCl solution. 1.06 g of nicotinamide are obtained. The yield is quantitative. (LC/MS; MH+ 214, retention time t_r=7.48 min).

1.3: 1-(Pyridin-3-ylmethyl)-3-[4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)phenyl]urea

57.2 ml (410.8 mm) of triethylamine are introduced dropwise into a mixture of 15 g (68.47 mm) of 4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)phenylamine and of 12.19 g (41.08 mm) of triphosgene in 15 l of THF cooled with an ice/water bath to a temperature of between 0°C and 5°C. After stirring at a temperature of between 0°C and 5°C for 1 h, 8.29 g (76.68 mm) of 3-(aminomethyl)pyridine are added to a reaction medium. The mixture is stirred for 20 h while allowing the temperature to rise to ambient temperature. The THF is evaporated. The ratio is taken up in water and then extracted with ethyl acetate. The organic phase is subsequently dried over Na_2SO_4, filtered and evaporated. The residue is recrystallized from a minimum amount of ethyl acetate. 13 g (yd = 53.8%) of white solid composed of 89% of the expected compound and 11% of the corresponding boronic acid are obtained (LC/MS; MH+ 354 and 272, t_r = 6.25 and 3.65 min).

1.4: 2-Ethylamino-N-methyl-6-[4-(3-(pyridin-3-ylmethyl)ureido)phenyl]nicotinamide

16 ml of saturated $NaHCO_3$ solution, followed by 0.173 g (0.15 mm) of $Pd(PPh_3)_4$), are added, at ambient temperature under an argon atmosphere, to a solution of 0.320 g (1.5 mm) of the compound obtained in stage 1.2 and 0.648 g (1.65 mm) of the compound obtained in stage 1.3 in 40 ml of dimethoxyethane and 8 ml of ethanol. The reaction medium is immersed in an oil bath preheated to 100°C and heating is carried out at this temperature for 3 h. The solvents are evaporated under reduced pressure and the residue is taken up in a dichloromethane (DCM)/water mixture. The precipitate is filtered off. The filtrate is subsequently purified by chromatography on a silica column (DCM:MeOH-10:0.7). After evaporating the solvents, the residue is taken up in ethyl acetate and then filtered. The filtrate is then dried under vacuum at 60°C. 0.387 g of a solid is obtained. The yield is thus 63.7%. M.p.=260-263°C (LC/MS; MH+ 405, t_r = 5.61 min). ^{1}H NMR (d_6-DMSO, 250 MHz): 1.21 (t, 3), 2.75 (d, 3), 3.52 (qd, 2), 4.35 (d, 2), 6.80 (t, 1), 7.09 (d, 1), 7.38 (dd, 1), 7.52 (d, 2), 7.74 (td, 1), 7.93 (d, 1), 8.02 (d, 2), 8.41 (m, 1), 8.47 (m, 1), 8.48 (m, 1), 8.55 (d, 1), 8.88 (s, 1).

Example 2: 2-Amino-N-methyl-6-[4-(3-(pyridin-3-ylmethyl)ureido)phenyl]-nicotinamide (compound No. 3)

2.1: 2-Amino-6-chloronicotinic acid

9.6 g (50 mm) of 2,6-dichloronicotinic acid are mixed in a glass autoclave with 60 ml of 32% aqueous ammonia solution. The reaction medium is immersed in an oil bath preheated to 130°C and heating is carried out at this temperature for 68 h. The solution is allowed to return to ambient temperature. The reaction medium is concentrated under reduced pressure. The residue is taken up in 200 ml of water and ice and acidified to pH 2 with a concentrated HCl of solution. Ethyl acetate is added and the medium is then stirred for 5 minutes and filtered. The aqueous phase is separated by settling and the organic phase is washed with a saturated in NaCl solution. The organic phase is dried over sodium sulphate and filtered, and the solvent is evaporated. 5.83 g of product (Yd: 67.5%) are obtained (LC/MS; MH+ 173, t_r = 6.03 min).

2.2: 2-Amino-6-chloro-N-methylnicotinamide

6.26 ml (45 mm) of triethylamine, 15 ml (30 mm) of a 2N solution of methylamine in THF and 6.17 g (14 mm) of BOP are successively added to a solution of 2.59 g (15 mm) of the compound obtained in stage 1.1 in 50 ml of anhydrous THF. The medium is stirred at ambient temperature for 18 h, followed by evaporation of the solvant under reduced pressure. The residue is taken up in ethyl acetate and then washed successively with water, a 3% solution of $KHSO_4$ in water, a 10% solution of Na_2CO_3 in water and a saturated NaCl solution. 2.046 g of nicotinamide are obtained. The yield is quantitative. M.p.=204-207°C (LC/MS;MH+ 186, t_r = 6.72min).

2.3: 2-Amino-N-methyl-6-[4-(3-(pyridin-3-ylmethyl)ureido)phenyl]nicotinamide

16 ml of saturated $NaHCO_3$ solution, followed by 0.231 g (0.20 mm) of $Pd(PPH_3)_4$ are added, at ambient temperature under an argon atmosphere, to a solution of 0.317 g (2 mm) of the compound obtained in stage 2.2 and 0.777 g (2.20 mm) of the compound obtained in stage 1.3 in 40 ml of dimethoxyethane and 8 ml of ethanol. The reaction medium is immersed in an oil bath and heated at 100°C for 3 h. The solvents are evaporated under reduced pressure. The residue is taken up in a DCM/water mixture. The precipitate is filtered off and then purified by chromatography on a silica column (dichloromethane (DCM):MeOH-10:1). 0.507 g of nicotinamide derivative is obtained. The yield is thus 67.3%. M.p.=234-236°C (LC/MS; MH+ 376, t_r = 4.47 min). ^{1}H NMR (d_6-DMSO, 400 MHz): 2.75 (d, 3), 4.33 (d, 2), 6.79 (t, 1), 7.10 (d, 1), 7.15 (bs, 2), 7.36 (dd,

1), 7.49 (d, 2), 7.72 (td, 1), 7.91 (d, 1), 7.95 (d, 2), 8.34 (q, 1), 8.46 (d, 1), 8.53 (bs, 1), 8.84 (s, 1).

Example 3: 2-(2-(Dimethylamino)ethylamino)-*N*-methyl-6-[4-(3-(pyridin-3-ylmethyl)-ureido)phenyl]nicotinamide (compound No. 7)

3.1: 6-Chloro-2-(2-(dimethylamino)ethylamino)nicotinic acid hydrochloride

24.0 g (0.125 m) of 2,6-dichloronicotinic acid are mixed in a round-bottomed flask with 124.53 ml of N,N-dimethylaminoethylamine. The solution is then stirred at ambient temperature for 6 days. The excess amine is subsequently evaporated under reduced pressure. The residue is taken up in the minimum amount of water. The reaction medium is cooled with an ice bath and acidified to pH 3 with a 5N HCl solution. Finally, the precipitate is filtered off and washed with cold water in order to be finally dried under vacuum over P_2O_5 at 60°C. 26 g (yd = 87.7%) of white solid are obtained. M.p.=170-172°C (LC/MS, MH+ 244, t_r = 4.73 min).

3.2: 6-Chloro-2-(2-(dimethylamino)ethylamino)-*N*-methylnicotinamide

0.62 ml (4.9 mm) of triethylamine, 1.64 ml (3.3 mm) of a 2N solution of methylamine in THF and 0.68 g (1.52 mm) of BOP are successively added to a solution of 0.400 g (1.6 mm) of the compound obtained in stage 3.1 in 20 ml of THF and two drops of DMF. The medium is stirred at ambient temperature overnight, followed by evaporation of the solvent under reduced pressure. The residue is taken up in ethyl acetate and then successively washed with water, a 3% solution of $KHSO_4$ in water, a 10% solution of Na_2CO_3 in water and a saturated NaCl solution. 0.3 g (yd = 71%) of nicotinamide derivative is obtained. (LC/MS; MH+ 257, t_r = 4.24 min).

3.3: 2-(2-(Dimethylamino)ethylamino)-*N*-methyl-6-[4-(3-(pyridin-3-ylmethyl)ureido)-phenyl]nicotinamide

20 ml of saturated $NaHCO_3$ solution, followed by 0.135 g (0.12 mm) of $Pd(PPh_3)_4$, are added, at ambient temperature under an argon atmosphere, to a solution in a three-necked flask of 0.300 g (1.2 mm) of the compound obtained in stage 3.2 and 0.454 g (1.29 mm) of the compound obtained in stage 1.3 in 40 ml of dimethoxyethane and 8 ml of ethanol. The mixture is heated at 100°C for 3 h. The solvents are evaporated under reduced pressure and the residue is taken up in water. The precipitate is filtered off and then purified by flash chromatography (DCM; MeOH 10-30%; NH_4OH 1%). 0.070 g of solid is obtained. The yield is thus 13.8%. M.p.=163-165°C (LC/MS; MH+ 448,

t_r = 4.53 min). ^{1}H NMR (d_6-DMSO, 250 MHz): 2.22 (s, 6), 2.50 (m, 2), 2.75 (d, 3), 3.59 (q, 2), 4.34 (d, 2), 6.82 (t, 1), 7.08 (d, 1), 7.37 (dd, 1), 7.51 (d, 2), 7.73 (d, 1), 7.92 (d, 1), 8.01 (d, 2), 8.36 (q, 1), 8.46 (dd, 1), 8.54 (s, 1), 8.58 (t, 1), 8.88 (s, 1).

Example 4: ***N*-(2-(Diisopropylamino)ethyl)-2-ethylamino-6-[4-(3-(pyridin-3-ylmethyl)ureido)phenyl]nicotinamide** (compound No. 8)

4.1: 2-Ethylamino-6-[4-(3-(pyridin-3-ylmethyl)ureido)phenyl]nicotinic acid

50 ml of saturated $NaHCO_3$ solution, followed by 1.152 g (1.00 mm) of $Pd(PPh_3)_4$, are added, at ambient temperature under an argon atmosphere, to a solution in a three-necked flask of 2.0 g (9.97 mm) of the compound obtained in stage 1.1 and 3.873 g (10.97 mm) of the compound obtained in stage 1.3 in 200 ml of dimethoxyethane and 40 ml of ethanol. The mixtured is heated at 90°C for 20 h. The solvents are evaporated under reduced pressure and the residue is taken up in an ethyl acetate/water mixture. The aqueous phase is separated by settling and then acidified to pH = 6 with a concentrated HCl solution. The precipitate is filtered off, washed with water and dried in an oven. 3.8 g of solid are obtained. Yd: 97.4%. M.p.=216-218°C (LC/MS; MH+ 392, t_r = 5.20 min).

4.2: *N*-(2-(Diisopropylamino)ethyl)-2-ethylamino-6-[4-(3-(pyridin-3-ylmethyl)ureido)-phenyl]nicotinamide

0.27 ml (1.92 mm) of triethylamine, 0.22 ml (1.28 mm) of 2-diisopropylaminoethylamine and 0.263 g (0.60 mm) of BOP are successively added to a solution of 0.250 g (0.64 mm) of the compound obtained in stage 4.1 in 20 ml of THF. The reaction medium is stirred at ambient temperature for 3 days, followed by evaporation of the solvent under reduced pressure. The residue is taken up in DCM and then successively washed with water and a saturated NaCl solution. The organic phase is finally dried and concentrated. The residue is purified by flash chromatography (DCM; MeOH 5-30%; NH_4OH 1%). 0.25 g (yd = 75.5%) of white solid is obtained. M.p.=160-162°C (LC/MS; MH+ 518, t_r = 5.32 min). ^{1}H NMR (d_6-DMSO 250 MHz): 0.98 (d, 12), 1.21 (t, 3), 2.52 (m, 2), 2.97 (m, 2), 3.17 (m, 2), 3.52 (m, 2), 4.34 (d, 2), 6.79 (t, 1), 7.08 (d, 1), 7.36 (dd, 1), 7.50 (d, 2), 7.72 (td, 1), 7.92 (d, 1), 8.00 (d, 2), 8.33 (t, 1), 8.46 (m, 2), 8.54 (s, 1), 8.86 (s, 1).

Example 5: **N-Methyl-2-[(pyridin-4-ylmethyl)amino]-6-[4-(3-(pyridin-3-ylmethyl)-ureido)phenyl]nicotinamide** (compound No. 15)

5.1: 6-Chloro-2-[(pyridin-4-ylmethyl)amino]nicotinic acid

A solution of 1.2 g (6.25 mm) of 2,6-dichloronicotinic acid and of 1.91 ml (18.75 mm) of 4-pyridylmethylamine in 10 ml of isopropanol is heated in a glass autoclave at 90°C for 12 h. The precipitate is filtered off and washed with ethyl acetate. The solvent is evaporated under reduced pressure. The residue is taken up in 2 ml of water. The reaction medium is acidified using acetic acid until precipitation has occurred. The precipitate is filtered off and then washed with cold water in order to be finally dried in an oven over P_2O_5. 1.1 g (yd = 66.7%) of white solid are obtained. M.p.=217-220°C (LC/MS; MH+ 264, t_r = 4.99 min).

5.2: 6-Chloro-*N*-methyl-2-[(pyridin-4-ylmethyl)amino]nicotinamide

0.47 ml (4.6 mm) of triethylamine, 1.52 ml (3.0 mm) of a 2N solution of methylamine in THF and 0.497 g (1.12 mm) of BOP are successively added to a solution of 0.400 g (1.5 mm) of the compound obtained in stage 5.1 in 20 ml of THF. The medium is stirred at ambient temperature for 18 h, followed by evaporation of the solvent under reduced pressure. The residue is taken up in DCM and then successively washed with water, a 3% solution of $KHSO_4$ in water, a 10% solution of Na_2CO_3 in water and a saturated NaCl solution. The organic phase is dried and the DCM is evaporated. The residue is purified by flash chromatography (DCM; MeOH 1-5%). 0.3 g of nicotinamide (yd = 71.4%) is obtained (LC/MS; MH+ 277, t_r = 5.04 min).

5.3: N-Methyl-2-[(pyridin-4-ylmethyl)amino]-6-[4-(3-(pyridin-3-ylmethyl)ureido)phenyl]-nicotinamide

20 ml of a saturated $NaHCO_3$ solution, followed by 0.173 g (0.15 mm) of $Pd(PPh_3)_4$, are added, at ambient temperature under an argon atmosphere, to a solution of 0.300 g (1.1 mm) of the compound obtained in stage 5.2 and 0.421 g (1.19 mm) of the compound obtained in stage 1.3 in 40 ml of dimethoxyethane and 8 ml of ethanol. The mixture is heated at 100°C for 6 h. The solvents are evaporated under reduced pressure and the residue is taken up in a DCM/water mixture. The precipitate is filtered off. The organic phase, after extraction, is concentrated. The precipitate and the residue are subsequently purified by flash chromatography (DCM; MeOH 1-15%). 0.4 g of solid is obtained. The yield is thus 80%. M.p.=218-219°C (LC/MS; MH+ 468, t_r = 4.96 min). ^{1}H NMR (d_6-DMSO, 400 MHz): 2.78 (s, 3), 4.33 (m, 2), 4.75 (m, 2), 6.78 (q, 1), 7.13 (m, 1), 7.35 (m, 3), 7.44 (m, 2), 7.71 (m, 1), 7.84 (m, 2), 7.97 (m, 1), 8.49 (m, 4), 8.53 (m, 1), 8.80 (m, 1), 9.03 (m, 1).

Example 6: 6-{4-[3-(6-Aminopyridin-3-ylmethyl)ureido]phenyl}-2-ethylamino-*N*-methylnicotinamide (compound No. 21)

6.1: 6-(4-Aminophenyl)-2-ethylamino-*N*-methylnicotinamide

20 ml of saturated $NaHCO_3$ solution, followed by 0.325 g (0.28 mm) of $Pd(PPh_3)_4$, are added, at ambient temperature under an argon atmosphere, to a solution of 0.600 g (2.81 mm) of the compound obtained in stage 1.2 and 0.677 g (3.1 mm) of 4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)phenylamine in 40 ml of dimethoxyethane and 8 ml of ethanol. The mixture is heated at 90°C for 3 h. The solvents are evaporated under reduced pressure and the residue is taken up in a DCM/water mixture. The precipitate is filtered off. The organic phase, after washing with water and a saturated NaCl solution, is dried and concentrated. The filtrate and the residue are subsequently purified by flash chromatography (DCM; MeOH 0-1%). 0.680 g of white solid is obtained. The yield is thus 89.5%. (LC/MS; MH+ 271, t_r = 6.01 min).

6.2: 6-{4-[3-(6-Aminopyridin-3-ylmethyl)ureido]phenyl}-2-ethylamino-*N*-methylnicotinamide

0.369 g (3.02 mm) of dimethylaminopyridine and 0.773 g (3.02 mm) of disuccinimidyl carbonate are added, at ambient temperature under an argon atmosphere, to a solution of 0.680 g (2.52 mm) of the compound obtained in stage 6.1 in 80 ml of anhydrous THF and the mixture is then stirred for 12 h. After the addition of 2.10 ml (15.09 mm) of triethylamine and 0.482 g (3.02 mm) of 5-aminomethylpyridin-2-ylamine, the mixture is stirred at ambient temperature for 18 h. The reaction medium is subsequently concentrated. The residue is taken up in water and DCM and then filtered. The insoluble material is again washed with water and DCM in order to be finally dried in an oven. The product is purified by flash chromatography (DCM; MeOH 1-10%). 0.45 g (yd 42.6%) of product is obtained. M.p.=223-226°C (LC/MS; MH+ 420, t_r = 5.26 min). ^1H NMR (d_6-DMSO, 250 MHz): 1.16 (t, 3), 2.67 (d, 3), 3.47 (m, 2), 4.06 (d, 2), 5.80 (bs, 2), 6.38 (d, 1), 6.47 (t, 1), 7.03 (d, 1), 7.31 (dd, 1), 7.45 (d, 2), 7.82 (d, 1), 7.88 (d, 1), 7.96 (d, 2), 8.34 (q, 1), 8.42 (t, 1), 8.66 (s, 1).

Example 7: *N*-Methyl-2-phenylamino-6-[4-(3-(pyridin-3-ylmethyl)ureido)phenyl]-nicotinamide (compound No. 22)

7.1: 6-Chloro-2-(phenylamino)nicotinic acid

1 ml (10.9 mm) of aniline is dissolved in 15 ml of anhydrous THF in a three-necked flask under argon and 16.7 ml (16.7 mm) of lithium bis(trimethylsilyl)amide (1M in THF) are

added dropwise at a temperature of -75°C. This medium is stirred at this temperature for 1 h. 1 g (5.2 mm) of 2,6-dichloronicotinic acid dissolved in 10 ml of anhydrous THF is added to the reaction medium. The medium is allowed to return to ambient temperature and stirred at this temperature for 12 h. 2-3 ml of water are added to the reaction medium. It is then cooled in an ice bath and acidified to pH 2 with a 5N HCl solution. Extraction is carried out with ethyl acetate. The aqueous phase is subsequently extracted several times with ethyl acetate. The organic phases are subsequently washed with water and saturated NaCl solution. The organic phase is dried and then concentrated. (The residue is purified by flash chromatography). 1.1 g (85.3%) of white solid are obtained. M.p.=181-185°C (LC/MS; MH+ 249, t_r = 6.99 min).

7.2: 6-Chloro-*N*-methyl-2-(phenylamino)nicotinamide

0.84 ml (6 mm) of triethylamine, 2.01 ml (4.0 mm) of a 2N solution of methylamine in THF and 0.658 g (1.5 mm) of BOP are successively added to a solution of 0.500 g (2.01 mm) of the compound obtained in stage 7.1 in 20 ml of THF. The medium is stirred at ambient temperature for 18 h, followed by evaporation of the solvent under reduced pressure. The residue is taken up in DCM and then successively washed with water and a saturated NaCl solution. The organic phase is dried and then concentrated. The residue is purified by flash chromatography (DCM:Heptane-1:1). 0.35 g of nicotinamide is obtained. (Yd = 66.5%). (LC/MS; MH+ 262, t_r = 9.49 min).

7.3: *N*-Methyl-2-phenylamino-6-[4-(3-(pyridin-3-ylmethyl)ureido)phenyl]nicotinamide

15 ml of saturated $NaHCO_3$ solution, followed by 0.155 g (0.13 mm) of $Pd(PPh_3)_4$, are added, at ambient temperature under an argon atmosphere, to a solution of 0.350 g (1.3 mm) of the compound obtained in stage 7.2 and 0.520 g (1.5 mm) of the compound obtained in stage 1.3 in 40 ml of dimethoxyethane and 8 ml of ethanol. The mixture is heated at 90°C for 4 h. The solvents are evaporated under reduced pressure and the residue is taken up in a DCM/water mixture. The precipitate is filtered off. The organic phase, after washing with water and a saturated NaCl solution, is dried and concentrated. The precipitate and the residue are subsequently purified by flash chromatography (DCM; MeOH 1-10%). 0.530 g of white solid is obtained. The yield is thus 87.6%. M.p.=234-236°C (LC/MS; MH+ 453, t_r = 6.70 min). ^{1}H NMR (d_6-DMSO, 250 MHz): 2.77 (d, 3), 4.30 (d, 2), 6.79 (t, 1), 6.94 (t, 1), 7.27-7.38 (unresolved peak, 4), 7.52 (d, 2), 7.69 (td, 1), 7.74 (d, 2), 7.99 (d, 2), 8.09 (d, 1), 8.43 (d, 1), 8.51 (d, 1), 8.67 (q, 1), 8.85 (s, 1), 11.15 (s, 1).

Example 8: [4-(6-Ethylamino-5-(methylcarbamoyl)pyridin-2-yl)phenyl]carbamic acid pyridin-3-ylmethyl ester (compound No. 29)

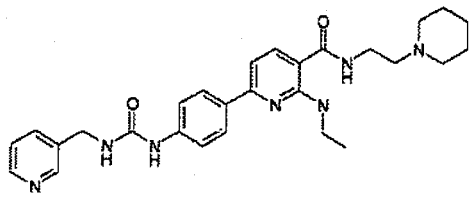
8.1: Pyridin-3-ylmethyl [4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)phenyl]carbamate

5.72 ml (41.08 mm) of triethylamine are introduced dropwise into a mixture of 1.5 g (6.85 mm) of 4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)phenylamine and of 1.219 g (4.11 mm) of triphosgene in 200 ml of THF, cooled with an ice/water bath to a temperature of between 0°C and 5°C. After stirring at a temperature of between 0°C and 5°C for 1 h, 0.837 g (7.67 mm) of 3-pyridylcarbinol is added to the reaction medium. The reaction medium is stirred for 20 h while allowing the temperature to rise to ambient temperature. The THF is evaporated. The residue is taken up in water and then extracted with ethyl acetate. The organic phase is washed with H_2O and then with an H_2O/NaCl solution in order to be subsequently dried over Na_2SO_4, filtered and evaporated. The residue is subsequently purified by flash chromatography (DCM; MeOH 1-5%). 2.0 g (yd = 82.5%) of white solid composed of 76% of the expected compound and 24% of the corresponding boronic acid are obtained (LC/MS; MH+ 355 and 273, t_r = 8.62 and 5.78 min).

8.2: [4-(6-Ethylamino-5-(methylcarbamoyl)pyridin-2-yl)phenyl]carbamic acid pyridin-3-ylmethyl ester

15 ml of saturated $NaHCO_3$ solution, followed by 0.135 g (0.12 mm) of $Pd(PPh_3)_4$, are added, at ambient temperature under an argon atmosphere, to a solution of 0.250 g (1.17 mm) of the compound obtained in stage 1.2 and 0.456 g (1.29 mm) of the compound obtained in stage 8.1 in 38 ml of dimethoxyethane and 7 ml of ethanol. The reaction medium is immersed in an oil bath preheated to 90°C and heating is carried out at this temperature for 3 h. The solvents are evaporated under reduced pressure and the residue is taken up in a DCM/H_2O mixture. The precipitate is filtered off. The filtrate is subsequently purified by flash chromatography on a silica column (DCM; MeOH 5-10%). After evaporating the solvents, the residue is taken up in ethyl acetate and then filtered. The filtrate is then dried under vacuum at 60°C. 0.230 g of solid is obtained. The yield is thus 48.5%. M.p.=234-235°C (LC/MS; MH+ 406, t_r = 6.74 min).

Example 9: 2-Ethylamino-*N*-(2-(piperidin-1-yl)ethyl)-6-[4-(3-(pyridin-3-ylmethyl)-ureido)phenyl]nicotinamide (compound No. 13)



0.27 ml (1.92 mm) of triethylamine, 0.18 ml (1.28 mm) of 2-(piperidin-1-yl)ethylamine and 0.263 g (0.60 mm) of BOP are successively added to a solution of 0.25 g (0.64 mm) of the compound obtained in stage 4.1 in 20 ml of THF. The mixture is stirred at ambient temperature for 18 h. The medium is concentrated and then the residue is taken up in water. Extraction is carried out with DCM and washing is carried out successively with water and then a saturated sodium chloride solution. The organic phase is dried on sodium sulphate, filtered and evaporated. The residue is purified by flash chromatography (DCM; MeOH 1-20%). 0.23 g (yd = 71.9%) is obtained. M.p.=164-165°C. LC/MS; MH+ 502, t_r = 5.31 min. 1H NMR (d_6-DMSO, 250 MHz): 1.21 (t,3), 1.29-1.56 (unresolved peak, 6), 2.33-2.48 (unresolved peak, 6), 3.30 (m,2), 3.52 (m,2), 4.36 (d,2), 6.79 (t,1), 7.09 (d,1), 7.37 (t,1), 7.51 (d,2), 7.73 (d,1), 7.92 (d,1), 8.00 (d,2), 8.33 (t,1), 8.41 (t,1), 8.46 (d,1), 8.54 (s,1), 8.86 (s,1).

Example 10: 2-Ethoxy-N-methyl-6-[4-(3-(pyridin-3-ylmethyl)ureido)phenyl]-nicotinamide (compound No. 63)

10.1: 2,6-Dichloro-N-methylnicotinamide

1.0 g (5.2 mmol) of 2,6-dichloronicotinic acid is dissolved in 10 ml of anhydrous THF in a 25 ml round-bottomed flask under a nitrogen atmosphere. 930 mg (5.7 mmol) of N,N'-carbonyldiimidazole are added and the mixture is stirred at ambient temperature for 30 min. 2.8 ml (5.7 mmol) of a 2.0M solution of methylamine in THF are added and the mixture is stirred at ambient temperature for 4 h. The mixture is hydrolysed with a saturated aqueous NH_4Cl solution (10 ml) and extracted with ethyl acetate (4 x 10 ml). The organic phases are combined and then washed with 10 ml of a saturated aqueous NaCl solution. After separation, the organic phase is dried over $MgSO_4$ and filtered, and the solvent is evaporated under reduced pressure. The residue is purified by flash chromatography on a silica column (40-63 µm) (eluent: AcOEt). The pure fractions are collected and then the solvent is evaporated under reduced pressure in order to obtain 380 mg (1.8 mmol) of the compound in the form of a white powder. Yd: 36%. ^{1}H NMR, $CDCl_3$, 300 MHz: 2.98 (d, *J*=4.9 Hz, 3H), 6,77 (bs, 1H), 7,30 (d, *J*=8.0 Hz, 1H), 7.95 (d,

J=8.0 Hz, 1H).

10.2: 2-Chloro-6-ethoxy-N-methylnicotinamide

380 mg (1.8 mmol) of compound 10.1 are dissolved in 10 ml of absolute ethanol in a 25 ml round-bottomed flask under a nitrogen atmosphere. 47 mg (2.0 mmol) of sodium are added and then the mixture is stirred at 70°C for 16 h. The solvent is evaporated under reduced pressure and the residue is taken up in 25 ml of DCM. The precipitate is filtered off, triturated in ethyl ether and dried. 300 mg (1.4 mmol) of compound are isolated in the form of a white solid. Yd: 74%. ^{1}H NMR, $CDCl_3$ (300 MHz): 1.40 (t, J=7.1 Hz, 3H), 2.92 (d, J=6.7 Hz, 3H), 4.47 (q, J=7.1 Hz, 2H), 6.95 (d, J=8.0 Hz, 1H), 7.73 (bs, 1H), 8.36 (d, J=8.0 Hz, 1H).

10.3: 6-(4-Aminophenyl)-2-ethoxy-N-methylnicotinamide

300 mg (1.4 mmol) of compound 10.2 are dissolved in a mixture of 40 ml of DME and 10 ml of ethanol in a 100 ml round-bottomed flask. 340 mg (1.5 mmol) of *p*-aniline boronic ester are added, followed by 15 ml of a saturated aqueous $NaHCO_3$ solution. The mixture is degassed using a stream of nitrogen, then 162 mg (0.1 mmol) of $Pd(PPh_3)_4$ are added and the mixture is heated at reflux for 16 h. After returning to ambient temperature, the mixture is filtered through a filter paper and the solvents are evaporated under reduced pressure. The residue is taken up in 25 ml of water and then extracted with 3 × 25 ml of AcOEt. The organic phases are combined and then washed with 25 ml of a saturated aqueous NaCl solution. After separation, the organic phase is dried over $MgSO_4$ and filtered, and the solvent is evaporated under reduced pressure. The residue is purified by flash chromatography on a silica column (40-63 µm) (eluent: EtOAc). The pure fractions are collected and then the solvent is evaporated under reduced pressure in order to obtain 380 mg (1.4 mmol) of compound in the form of a pale yellow powder. Yd: quantitative. ^{1}H NMR, $CDCl_3$ (300 MHz): 1.51 (t, J=7.1 Hz, 3H), 3.02 (d, J=4.8 Hz, 3H), 3.90 (bs, 2H), 4.67 (q, J=7.1 Hz, 2H), 6.73 (d, J=8.7 Hz, 2H), 7.37 (d, J=8.0 Hz, 1H), 7.90 (d, J=8.7 Hz, 2H), 8.01 (bs, 1H), 8.49 (d, J=8.0 Hz, 1H).

10.4: 2-Ethoxy-N-methyl-6-[4-(3-(pyridin-3-ylmethyl)ureido)phenyl]nicotinamide

380 mg (1.4 mmol) of compound 10.3 are dissolved in 50 ml of anhydrous THF in a 100 ml round-bottomed flask under a nitrogen atmosphere. 540 mg (2.1 mmol) of N,N'-disuccinimidyl carbonate and 256 mg (2.1 mmol) of dimethylaminopyridine are added and then the mixture is stirred at ambient temperature for 16 h. 585 µl (4.2 mmol) of

triethylamine and a solution of 230 mg (2.1 mmol) of pyridin-3-ylmethylamine dissolved in 10 ml of anhydrous THF are added and then the mixture is stirred at ambient temperature for 8 h. The solvent is evaporated under reduced pressure. The residue is purified by flash chromatography on a silica column (40-63 µm) (eluent: DCM/MeOH, 90/10). The pure fractions are collected and then the solvent is evaporated under reduced pressure in order to obtain 20 mg (0.05 mmol) of the desired compound in the form of a white powder. Yd: 3%; M.p.=200°C. ^{1}H NMR, $CDCl_3$ (300 MHz): 1.44 (t, *J*=7.0 Hz, 3H), 2.84 (d, *J*=4.7 Hz, 3H), 4.34 (d, *J*=5.8 Hz, 2H), 4.60 (q, *J*=7.0 Hz, 2H), 6.81 (t, *J*=5.8 Hz, 1H), 7.37 (m, 1H), 7.54 (d, *J*=8.8 Hz, 2H), 7.59 (d, *J*=8.0 Hz, 1H) ; 7.72 (d, *J*=7.8 Hz, 1H), 8.03 (d, *J*=8.8 Hz, 2H), 8.12 (m, 1H), 8.20 (d, *J*=8.0 Hz, 1H), 8.46 (m, 1H), 8.54 (s, 1H), 8.91 (s, 1H).

Example 11: 4-Ethylamino-2-[4-(3-(pyridin-3-ylmethyl)ureido)phenyl]pyrimidine-5-carboxylic acid (2-(piperidin-1-yl)ethyl)amide (compound No. 80)

11.1: 2,4-Dichloropyrimidine-5-carbonyl chloride

2,4-Dihydroxypyrimidine-5-carboxylic acid (10 g, 64 mmol) is dispersed in $POCl_3$ (45 ml) at 0°C. PCl_5 (46.6 g, 224 mmol) is carefully added and the mixture is stirred under gentle reflux for 16 h. The slightly yellow solution is evaporated under reduced pressure and the solid is washed with toluene, and the solution is filtered and the filtrate evaporated to give 13.4 g (yd: 99%) of the compound. ^{1}H NMR, d_6-DMSO (300 MHz): 9.13 (s, 1H).

11.2: 2,4-Dichloropyrimidine-5-carboxylic acid ethyl ester

Compound 11.1 (13.5 g, 64 mmol) is dissolved in THF (100 ml). Ethanol (15 ml) is added and the mixture is stirred at ambient temperature for 10 min. The solvents are evaporated and an oil is recovered and hydrolysed with a saturated K_2CO_3 solution and extracted with AcOEt (3 × 250 ml). The organic phase is washed with an NaCl solution (100 ml) and dried over Na_2SO_4. After filtering and evaporating, an orange oil is recovered (14 g, yd: 99%). ^{1}H NMR, d_6-DMSO (300 MHz): 9.16 (s, 1H), 4.37 (q, 2H, J=7.11 Hz), 1.34 (t, 3H, J=7.11 Hz).

11.3: 2-Chloro-4-(ethylamino)pyrimidine-5-carboxylic acid ethyl ester

Compound 11.2 (14 g, 63.3 mmol) is dissolved in 150 ml of THF. Triethylamine (13 ml, 94.95 mmol) and a solution of ethylamine in THF (32 ml, 63.3 mmol) are added. The mixture is stirred at ambient temperature for 16 h. It is filtered and the solvent is evaporated. The residue is purified by column chromatography (40-63 µm, eluent:

AcOEt/cyclohexane: 20/80). The fractions are recovered and the solvent is evaporated. A white solid is obtained (9.2 g, yd: 63%). ^{1}H NMR d_6-DMSO (300 MHz): 8.59 (s, 1H), 8.50 (bs, 1H), 4.30 (q, 2H, J=7.08 Hz), 3.47 (m, 2H, J=7.08 Hz), 1.15 (t, 3H, J=7.17 Hz).

11.4: 2-Chloro-4-(ethylamino)pyrimidinecarboxylic acid

Compound 11.3 (9.2 g, 40 mmol) is dissolved in THF (250 mg). Water and then $LiOH.H_2O$ (2.5 g, 60 mmol) are added and the mixture is left stirring at ambient temperature for 16 h. The solvent is evaporated and a 1N HCl solution is added until precipitation is complete. After filtration, the solid is dried at 60°C overnight. 8.0 g (yd: 99%) of the compound are obtained in the form of a white solid. ^{1}H NMR, d_6-DMSO (300 MHz): 8.65 (bs, 1H), 8.55 (s, 1H), 3.45 (m, 2H), 1,15 (t, 3H, J=7.17 Hz).

11.5: 4-Ethylamino-2-[4-(3-pyridin-3-ylmethyl)ureido)phenyl]-pyrimidine-5-carboxylic acid

1.613 g (8 mm) of the compound obtained in stage 11.4, 3.11 g (8.8 mm) of the compound obtained in stage 8.1, 160 ml of DME, 32 ml of ethanol and 40 ml of saturated $NaHCO_3$ solution are placed in a three-necked flask under an argon atmosphere. The mixture is degassed for 30 min and then 0.925 g (0.8 mm) of $Pd(PPh_3)_4$ is added. The mixture is heated at 100°C for 6 h. The solvents are evaporated and the residue is taken up in water. The pH is adjusted to 3-4 with a 1N HCl solution. The precipitate is filtered off and dried under vacuum over P_2O_5. The precipitate is taken up in 400 ml of methanol at reflux and allowed to cool. The product is filtered off and dried under vacuum. 859 mg are obtained and are used as is in the following stage (LC/MS; MH+ 393, t_r = 4.90 min).

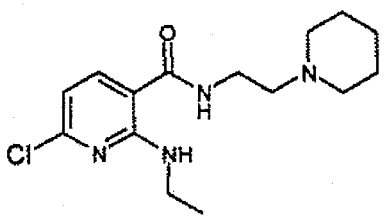
11.6: 4-Ethylamino-2-[4-(3-(pyridin-3-ylmethyl)ureido)phenyl]pyrimidine-5-carboxylic acid (2-(piperidin-1-yl)ethyl)amide

0.44 g (1.12 mm) of the compound obtained in stage 11.5 are placed in 30 ml of THF in a round-bottomed flask. 0.47 ml (3.36 mm) of triethylamine, 0.32 ml (2.24 mm) of 2-(piperidin-1-yl)ethylamine and 0.496 g (1.12 mm) of BOP are added. The mixture is stirred at ambient temperature for 18 h. The solvents are evaporated and the residue is taken up in ethyl acetate. The organic phase is washed with water and then a saturated NaCl solution. It is dried over Na_2SO_4, filtered and evaporated. The residue is purified by flash chromatography (DCM:MeOH 99:1 to 80:20). 220 mg are obtained. Yd: 33.6% (LC/MS; MH+ 503, t_r = 4.71 min). ^{1}H NMR (250 MHz, d_6-DMSO) δ ppm: 1.21 (t, 3), 1.44 (m, 2), 1.60 (m, 4), 2.70 (m, 6), 3.46 (m, 2), 3.58 (quint, 2), 4.35 (d, 2), 6.95 (t, 1), 7.38 (dd, 1), 7.54 (d, 2), 7.74 (dt, 1), 8.27 (d, 2), 8.47 (m, 1), 8.55 (d, 1), 8.72 (m, 3), 9.11 (s,

1).

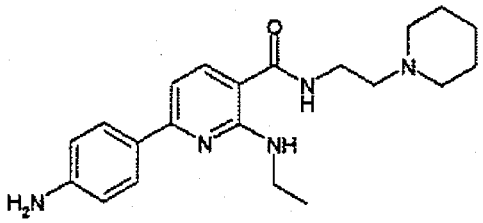
Example 12: 6-{4-[3-(6-(Aminopyridin)-3-ylmethyl)ureido]phenyl}-2-ethylamino-N-(2-(piperidin-1-yl)ethyl)nicotinamide (compound No. 81)

12.1: 6-Chloro-2-ethylamino-N-(2-(piperidin-1-yl)ethyl)nicotinamide



5.0 g (24.92 mm) of 6-chloro-2-(ethylamino)nicotinic acid (Ex. 1.1) are dissolved in 300 ml of THF in a round-bottomed flask. 10.41 ml (74.77 mm) of triethylamine, then 7.08 ml (49.84 mm) of 1-(2-aminoethyl)piperidine and subsequently 11.02 g (24.92 mm) of BOP are added. The mixture is stirred at ambient temperature for 15 h. The solvent is evaporated and the residue is taken up in ethyl acetate. The organic phase is washed with water and then a saturated NaCl solution. It is dried over Na_2SO_4, filtered and evaporated. The residue is purified by flash chromatography (gradient CH_2Cl_2-MeOH 1 to 10%). 7.5 g (yd: 96.8%) are obtained (LC/MS; MH+ 311, t_r = 1.01 min).

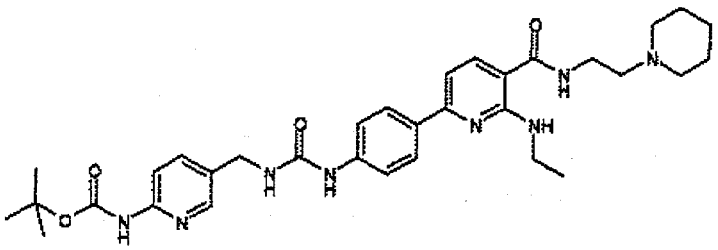
12.2: 6-(4-Aminophenyl)-2-ethylamino-N-(2-(piperidin-1-yl)ethyl)nicotinamide



6.0 g (19.3 mm) of the compound obtained in stage 12.1, 4.65 g (21.23 mm) of 4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)aniline, 400 ml of DME, 60 ml of ethanol and 250 ml of a saturated $NaHCO_3$ solution are placed in a three-necked flask under an argon atmosphere. The mixture is degassed for 30 min and then 2.23 g (1.93 mm) of $Pd(PPh_3)_4$ are added. The mixture is brought to reflux for 10 h. The solvents are evaporated and the residue is taken up in CH_2Cl_2. The organic phase is washed with water and then a saturated NaCl solution. The organic phase is dried over Na_2SO_4,

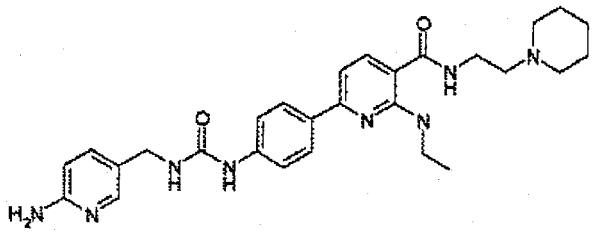
filtered and evaporated. The residue is purified by flash chromatography (gradient CH_2Cl_2-MeOH 1 to 15%). 6.4 g (yd: 90.2%) are obtained (LC/MS; MH+ 368, t_r = 0.65 min).

12.3: [5-(3-{4-[6-Ethylamino-5-(2-(piperidin-1-yl)ethylcarbamoyl)pyridin-2-yl]phenyl}-ureidomethyl)pyridin-2-yl]carbamic acid tert-butyl ester



0.8 g (2.18 mm) of the compound obtained in stage 12.2 are placed in 80 ml of THF in a round-bottomed flask. 0.67 g (2.61 mm) of DSC and 0.319 g (2.61 mm) of DMAP are added. The mixture is stirred at ambient temperature for 18 h. 0.91 ml (6.53 mm) of triethylamine and 0.583 g (2.61 mm) of (5-(aminomethyl)pyridin-2-yl)carbamic acid tert-butyl ester are subsequently added and the mixture is stirred at ambient temperature for 15 h. The solvents are evaporated and filtration is carried out. Purification is carried out by flash chromatography (gradient CH_2Cl_2-MeOH 1 to 20%). 1 g (yd: 74.5%) is obtained. (LC/MS; MH+ 617, t_r = 6.6 min).

12.4: 6-{4-[3-(6-(Aminopyridin)-3-ylmethyl)ureido]phenyl}-2-ethylamino-N-(2-(piperidin-1-yl)ethyl)nicotinamide



0.8 g (1.3 mm) of the compound obtained in stage 12.3 is dissolved in 20 ml of CH_2Cl_2. 11.35 ml (45.4 mm) of a 4M solution of HCl in dioxane are added. The mixture is stirred at ambient temperature for 18 h. It is concentrated. The residue is taken up in an Na_2CO_3 solution, filtered and washed with water. It is dried under vacuum over P_2O_5. 0.38 g (yd:

53%) is obtained. LC/MS; MH+ 517, t_r = 4.94 min. ^{1}H NMR (250 MHz, d_6-DMSO) δ ppm: 1.21 (t, 3 H), 1.29 - 1.61 (m, 6 H), 2.32 - 2.47 (m, 6 H), 3.24 - 3.39 (m, 2 H), 3.44 - 3.58 (m, 2 H), 4.10 (d, 2 H), 5.84 (s, 2 H), 6.42 (d, 1 H), 6.51 (t, 1 H), 7.09 (d, 1 H), 7.35 (d, 1 H), 7.50 (d, 2 H), 7.87 (s, 1 H), 7.94 (d, 1 H), 8.01 (d, 2 H), 8.35 (t, 1 H), 8.42 (t, 1 H), 8.71 (s, 1 H).

Example 13: 2-Ethylamino-N-(2-piperazin-1-yl)ethyl)-6-[4-(3-(pyridin-3-ylmethyl)-ureido)phenyl]nicotinamide (compound No. 5)

^{1}H NMR (d_6-DMSO, 400 MHz): δ 1.22 (t, 3), 3.25 (t, 2), 3.30-3.48 (unresolved peak, 8), 3.54 (q, 2), 3.58 (t, 2), 4.47 (d, 2), 7.12 (d, 1), 7.18 (t, 1), 7.53 (d, 2), 7.86 (dd, 1), 7.98 (d, 1), 8.02 (d, 2), 8.29 (d, 1), 8.41 (unresolved peak, 2), 8.63 (t, 1), 8.74 (d, 1), 8.78 (s, 1), 9.22 (s, 1), 9.27 (unresolved peak, 3).

Example 14: 2-((Cyclopropylmethyl)amino)-N-methyl-6-[4-(3-(pyridin-3-ylmethyl)-ureido)phenyl]nicotinamide (compound No. 48)

^{1}H NMR, d_6-DMSO (300 MHz) δ 0.24 (m, 2H), 0.45 (m, 2H), 1.06 (m, 1H), 2.73 (d, *J*=4.1 Hz, 3H), 3.35 (t, *J*=6.1 Hz, 2H), 4.31 (d, *J*=5.1 Hz, 2H), 6.76 (t, *J*=6.0 Hz, 1H), 7.05 (d, *J*=8.0 Hz, 1H), 7.33 (t, *J*=5.2 Hz, 1H), 7.48 (d, *J*=8.6 Hz, 2H), 7.69 (d, *J*=7.8 Hz, 1H), 7.90 (d, *J*=8.1 Hz, 1H), 7.97 (d, *J*=8.6 Hz, 2H), 8.36 (m, 1H), 8.43 (m, 1H), 8.51 (m, 1H), 8.58 (t, *J*=5.1 Hz, 1H), 8.82 (s, 1H).

Example 15: N-Methyl-6-[4-(3-(pyridin-3-ylmethyl)ureido)phenyl]-2-(pyrrolidin-1-yl)-nicotinamide (compound No. 49)

^{1}H NMR, d_6-DMSO (300 MHz) δ 1.85 (m, 4H), 2.72 (d, *J*=4.6 Hz, 3H), 3.40 (m, 4H), 4.32 (d, *J*=5.8 Hz, 2H), 6.74 (t, *J*=5.9 Hz, 1H), 7.08 (d, *J*=7.7 Hz, 1H), 7.32-7.37 (m, 1H), 7.49 (m, 3H), 7.70 (m, 1H), 7.95 (d, *J*=8.8 Hz, 2H), 8.16 (m, 1H), 8.44 (m, 1H), 8.52 (m, 1H), 8.78 (s, 1H).

Example 16: N-Methyl-6-[4-(3-(pyridin-3-ylmethyl)ureido)phenyl]-2-[(tetrahydrofuran-2-ylmethyl)amino]nicotinamide (compound No. 50)

^{1}H NMR, d_6-DMSO (300 MHz) δ 1.59-1.63 (m, 1H), 1.80-1.93 (m, 3H), 2.74 (d, *J*=4.4 Hz, 3H), 3.52-3.56 (m, 1H), 3.63-3.69 (m, 2H), 3.75-3.85 (m, 1H), 4.03-4.06 (m, 1H), 4.33 (d, *J*=5.8 Hz, 2H), 6.76 (t, *J*=6.0 Hz, 1H), 7.08 (d, *J*=8.1 Hz, 1H), 7.33-7.38 (m, 1H), 7.50 (d, *J*=8.8 Hz, 2H), 7.69-7.73 (m, 1H), 7.92 (d, *J*=8.1 Hz, 1H), 7.99 (d, *J*=8.8 Hz, 2H), 8.37 (m, 1H), 8.45 (m, 1H), 8.53 (m, 1H), 8.66 (t, *J*=5.3 Hz, 1H), 8.83 (s, 1H).

Example 17: 2-(2-Methoxyethylamino)-N-methyl-6-[4-(3-(pyridin-3-ylmethyl)ureido)-phenyl]nicotinamide (compound No. 51)

^{1}H NMR, d_6-DMSO (300 MHz) δ 2.75 (d, *J*=4.3 Hz, 3H), 3.31 (s, 3H), 3.55 (t, *J*=5.2 Hz, 2H), 3.68 (m, 2H), 4.35 (d, *J*=5.7 Hz, 2H), 6.78 (t, *J*=5.7 Hz, 1H), 7.10 (d, *J*=8.1 Hz, 1H), 7.35-7.39 (m, 1H), 7.51 (d, *J*=8.7 Hz, 2H), 7.73 (m, 1H), 7.94 (d, *J*=8.1 Hz, 1H), 8.00 (d, *J*=8.7 Hz, 2H), 8.39 (m, 1H), 8.47 (m, 1H), 8.54 (m, 1H), 8.62 (t, *J*=5.0 Hz, 1H), 8.84 (s, 1H).

Example 18: 2-(2-Hydroxyethylamino)-N-methyl-6-[4-(3-(pyridin-3-ylmethyl)ureido)-phenyl]nicotinamide (compound No. 52)

^{1}H NMR, d_6-DMSO (300 MHz) δ 2.74 (d, *J*=4.4 Hz, 3H), 3.55-3.62 (m, 4H), 4.33 (d, *J*=5.8 Hz, 2H), 4.77 (t, *J*=4.9 Hz, 1H), 6.78 (t, *J*=5.8 Hz, 1H), 7.07 (d, *J*=8.0 Hz, 1H), 7.34-7.39 (m, 1H), 7.50 (d, *J*=8.8 Hz, 2H), 7.71 (m, 1H), 7.91 (d, *J*=8.1 Hz, 1H), 7.99 (d, *J*=8.8 Hz, 2H), 8.38 (m, 1H), 8.45 (m, 1H), 8.53 (m, 1H), 8.61 (m, 1H), 8.85 (s, 1H).

Example 19: 4'-[3-(6-Aminopyridin-3-ylmethyl)ureido]-3-(ethylamino)biphenyl-4-carboxylic acid (2-(piperidin-1-yl)ethyl)amide (compound No. 105)

19.1: 4-Chloro-2-(ethylamino)benzoic acid

1.19 ml (20.94 mmol) of ethylamine as a 70% aqueous solution, 0.7 g (5.24 mmol) of potassium carbonate, 0.066 g (1.05 mmol) of copper powder and 0.42 ml (5.24 mmol) of pyridine are added to a suspension in water (20 ml) of 2 g (10.47 mmol) of 2,4-dichlorobenzoic acid. The medium is heated at 130°C for 5 h and then stirred at ambient temperature for 48 h. The reaction medium is filtered and then a 5N HCl solution is added until the compound has precipitated. The product is filtered off and then dried in an oven in the presence of P_2O_5. 1.7 g (Yd = 85%) of a white powder are obtained. LC/MS; MH^+ = 200, t_r = 8.72 min (conditions: C).

19.2: 4-Chloro-2-ethylamino-N-(2-(piperidin-1-yl)ethyl)benzamide

0.85 ml (6.01 mmol) of 2-(piperidin-1-yl)ethylamine, 1.96 g (6.01 mmol) of BOP and 1.54 ml (15.02 mmol) of triethylamine are added to a solution of 1 g (5.01 mmol) of 4-chloro-2-(ethylamino)benzoic acid in THF (20 ml). The mixture is stirred at ambient temperature for 12 h. The solvent is evaporated under reduced pressure. The residue is taken up in dichloromethane and washed successively with water and a saturated NaCl solution, and then the organic phase is dried on sodium sulphate. The residue is purified

by flash chromatography (gradient: CH_2Cl_2 100% to CH_2Cl_2/MeOH 90%/10%). 1.4 g (Yd = 90%) of a white solid are obtained. LC/MS; MH^+ = 310, t_r = 4.33 min (conditions: A).

19.3: (5-{3-[3'-Ethylamino-4'-(2-(piperidin-1-yl)ethylcarbamoyl)biphenyl-4-yl]-ureidomethyl}pyridin-2-yl)carbamic acid tert-butyl ester

0.68 g (1.45 mmol) of 2-(5-{3-[4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)phenyl]-ureidomethyl}pyridin-2-yl)carbamic acid tert-butyl ester and 0.26 g (6.01 mmol) of potassium carbonate are added to a solution of 0.3 g (0.97 mmol) of 4-chloro-2-ethylamino-N-(2-(piperidin-1-yl)ethyl)benzamide in a toluene/water mixture (18/2 ml). The medium is stirred at ambient temperature and under argon for 30 min and then 0.034 g (0.05 mmol) of bis(di(*tert*-butyl)(4-dimethylaminophenyl)phospine)dichloropalladium(II) is added. The reaction medium is stirred at reflux and under argon for 5 h. The solvant is evaporated under reduced pressure. The residue is taken up in dichloromethane and successively washed with water and a saturated NaCl solution, and then the organic phase is dried over sodium sulphate. The residue is purified by flash chromatography (gradient: CH_2Cl_2 100% to CH_2Cl_2/MeOH 80%/20%). 0.31 g (Yd = 52%) of a yellow solid is obtained. LC/MS; MH^+ = 616, t_r = 4.13 min (conditions: A).

19.4: 4'-[3-(6-Aminopyridin-3-ylmethyl)ureido]-3-(ethylamino)biphenyl-4-carboxylic acid (2-(piperidin-1-yl)ethyl)amide

0.59 g (16.24 mmol) of a solution of hydrochloric acid in ether is added to a solution in dichloromethane (15 ml) of 0.2 g (0.32 mmol) of (5-{3-[3'-ethylamino-4'-(2-(piperidin-1-yl)-ethylcarbamoyl)biphenyl-4-yl]ureidomethyl}pyridin-2-yl)carbamic acid tert-butyl ester. The medium is stirred at ambient temperature for 2 h. The solvent is evaporated under reduced pressure. The residue is taken up in dichloromethane and successively washed with a saturated K_2CO_3 solution, water and a saturated NaCl solution, and then the organic phase is dried over sodium sulphate. The organic phases are combined and then the solvents are evaporated under reduced pressure. 0.1 g (Yd = 45%) of a yellow solid is obtained. LC/MS; MH^+ = 516, t_r = 6.43 min (conditions: C). ^1H NMR (400 MHz, d_6-DMSO) δ ppm 1.23 (t, 3 H), 1.34 - 1.78 (m, 6 H), 2.47 - 3.07 (m, 6 H), 3.17 - 3.27 (m, 2 H), 3.40 - 3.56 (m, 2 H), 4.11 (d, 2 H), 5.82 (s, 2 H), 6.43 (d, 1 H), 6.55 (t, 1 H), 6.78 - 6.85 (m, 2 H), 7.34 (d, 1 H), 7.49 (d, 2 H), 7.58 (d, 2 H), 7.63 (d, 1 H), 7.82 - 7.94 (m, 2 H), 8.37 (br. s., 1 H), 8.74 (s, 1H).

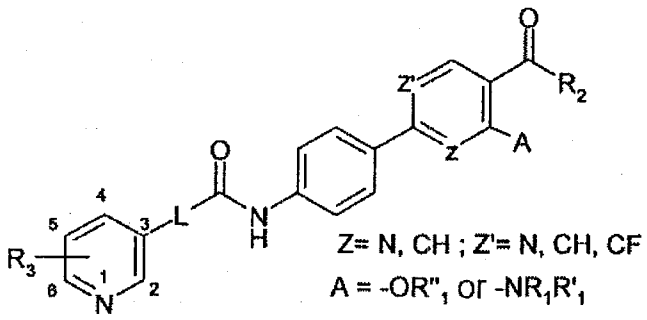
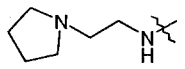
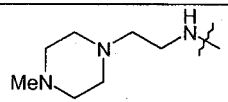
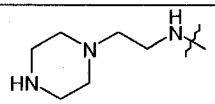
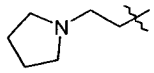
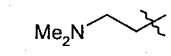
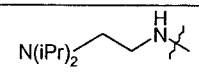
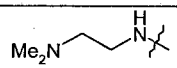
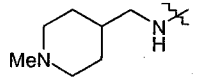
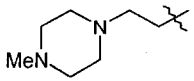
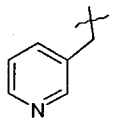
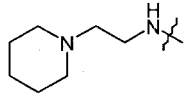
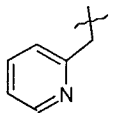
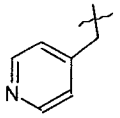
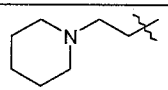
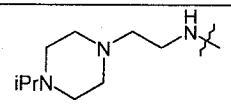
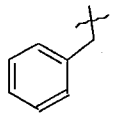
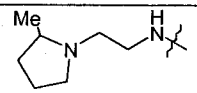
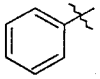
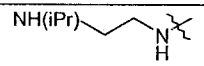
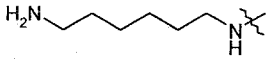
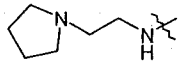
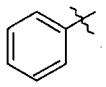
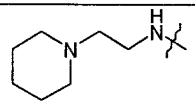


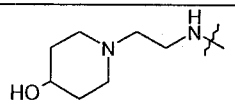
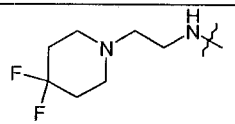
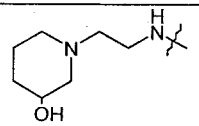
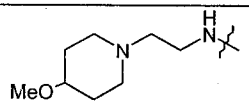
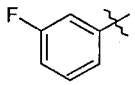
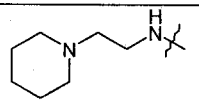
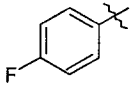
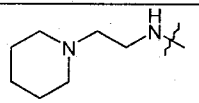
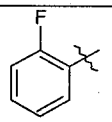
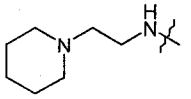
Table I

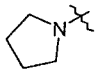
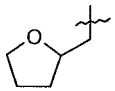
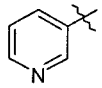
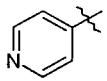
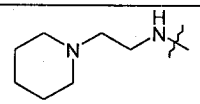
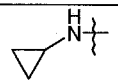
Compound No.	R_3	L	Z/Z'	R_1	R'_1	R''_1	R_2	MS (MH^+)	LC (Method)	M.p. (°C) or NMR	Synthetic scheme
1	H	CH_2NH	N/CH	Et	H		-NHMe	405	5.61(A)	260-263 + NMR (Ex. 1)	Scheme 1 (Ex. 1)
2	H	CH_2NH	N/CH	Et	H			488	5.10(A)	186-187	Scheme 2
3	H	CH_2NH	N/CH	H	H		-NHMe	377	4.47(A)	234-236 + NMR (Ex. 2)	Scheme 1 (Ex. 2)
4	H	CH_2NH	N/CH	Et	H			517	4.73(A)	200-202	Scheme 2
5	H	CH_2NH	N/CH	Et	H			503	4.66(A)	NMR (Ex. 13)	Scheme 2 - in the form of a salt with $CF_3SO_3^-$
6	H	CH_2NH	N/CH		H		-NHMe	474	4.62(A)	166-168	Scheme 1

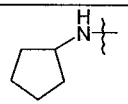
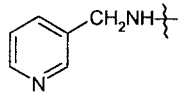
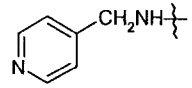
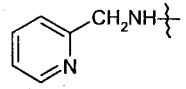
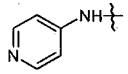
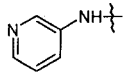
Compound No.	R_3	L	Z/Z'	R_1	R'_1	R''_1	R_2	MS (MH^+)	LC (Method)	M.p. (°C) or NMR	Synthetic scheme
7	H	CH_2NH	N/CH		H		-NHMe	488	4.53(A)	163-165 + NMR (Ex. 3)	Scheme 1 (Ex. 3)
8	H	CH_2NH	N/CH	Et	H			518	5.32(A)	160-162 + NMR	Scheme 2
9	H	CH_2NH	N/CH	Et	H			462	5.01(A)	173-175	Scheme 2
10	H	CH_2NH	N/CH	Et	H			502	5.10(A)	219-221	Scheme 2
11	H	CH_2NH	N/CH		H		-NHMe	503	4.69(A)	180-181	Scheme 1
12	H	CH_2NH	N/CH		H		-NHMe	468	5.06(A)	224-225	Scheme 1
13	H	CH_2NH	N/CH	Et	H			502	5.31(A)	164-165 + NMR (Ex. 9)	Scheme 2 (Ex. 9)
14	H	CH_2NH	N/CH		H		-NHMe	468	4.97(A)	236-237	Scheme 1
15	H	CH_2NH	N/CH		H		-NHMe	468	4.96(A)	218-219 + NMR (Ex. 5)	Scheme 1 (Ex. 5)

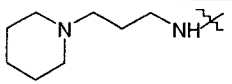
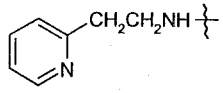
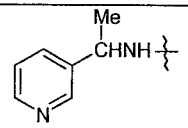
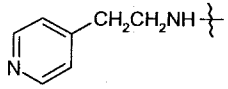
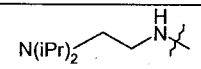
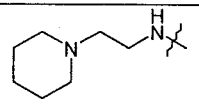
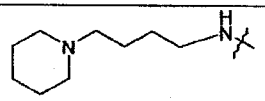
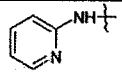
Compound No.	R_3	L	Z/Z'	R_1	R'_1	R''_1	R_2	MS (MH^+)	LC (Method)	M.p. (°C) or NMR	Synthetic scheme
16	H	CH_2NH	N/CH	Et	H		$-NH_2$	391	5.49(A)	240-242	Scheme 1
17	H	CH_2NH	N/CH		H		-NHMe	488	4.86(A)	187-189	Scheme 1
18	H	CH_2NH	N/CH	Et	H			545	5.03(A)	181-183	Scheme 2
19	H	CH_2NH	N/CH		H		-NHMe	467	6.81(A)	231-232	Scheme 1
20	H	CH_2NH	N/CH	Et	H			502	6.50(B)	161-163	Scheme 2
21	NH_2	CH_2NH	N/CH	Et	H		-NHMe	420	5.26(A)	223-226 + NMR (Ex. 6)	Scheme 3 (Ex. 6)
22	H	CH_2NH	N/CH		H		-NHMe	453	6.70(A)	234-236 + NMR (Ex. 7)	Scheme 1 (Ex. 7)
23	H	CH_2NH	N/CH		H		-NHMe	417	5.19(A)	210-214	Scheme 2
24	H	CH_2NH	N/CH	H	H		$-NH_2$	363	4.18(A)	261-263	Scheme 1
25	H	CH_2NH	N/CH	Et	Et		-NHMe	433	5.01(A)	200-204	Scheme 1
26	H	CH_2NH	N/CH	Et	H		$-NHCH_2CH_2OH$	435	6.81(B)	196-198	Scheme 2
27	H	CH_2NH	N/CH	Et	H		$-NHCH_2CH_2OMe$	449	5.78(A)	202-204	Scheme 2
28	H	CH_2NH	N/CH	Et	H		-OEt	420	7.50(A)	195-197	Scheme 1

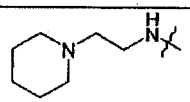
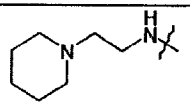
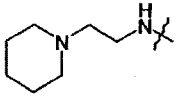
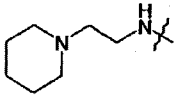
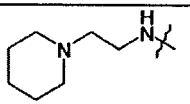
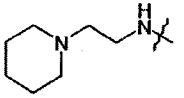
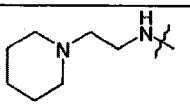
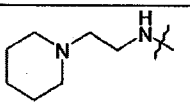
Compound No.	R_3	L	Z/Z'	R_1	R'_1	R''_1	R_2	MS (MH^+)	LC (Method)	M.p. (°C) or NMR	Synthetic scheme
29	H	CH_2O	N/CH	Et	H		-NHMe	406	6.74(A)	234-235	Scheme 1 (Ex. 8)
30	H	CH_2CH_2NH	N/CH	Et	H		-NHMe	419	5.47(A)	203-205	Scheme 1
31	H	CH_2NH	N/CH	Et	H			476	4.90(A)	170-171	Scheme 2
32	H	CH_2NH	N/CH	Et	H			490	5.01(A)		Scheme 2 in the form of a salt with $CF_3SO_3^-$
33	H	CH_2NH	N/CH		H			536	5.53(A)	172-173	Scheme 1
34	H	CH_2NH	N/CH	Et	H		$-NHC(CH_2OH)_3$	495	5.07(A)	120	Scheme 2
35	H	CH_2NH	N/CH	iPr	H		-NHMe	419	6.06(A)	211-212	Scheme 1
36	H	CH_2NH	N/CH		H		-NHMe	459	6.89(A)	132-134	Scheme 1
37	H	CH_2NH	N/CH		H		-NHMe	445	6.54(A)	128-129	Scheme 1
38	H	CH_2NH	N/CH		H		-NHMe	431	6.14(A)	214-216	Scheme 1
39	H	CH_2NH	N/CH		H			550	5.68(A)	167-169	Scheme 1

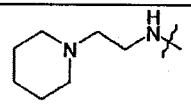
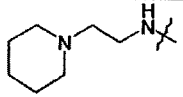
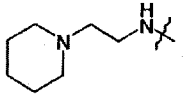
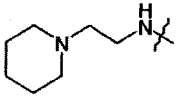
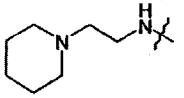
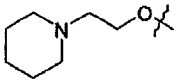
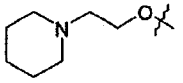
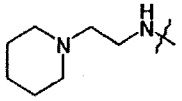
Compound No.	R_3	L	Z/Z'	R_1	R'_1	R''_1	R_2	MS (MH^+)	LC (Method)	M.p. (°C) or NMR	Synthetic scheme
40	H	CH_2NH	N/CH	Et	H			518	4.79(A)	123-125	Scheme 2
41	H	CH_2NH	N/CH	Et	H			538	5.20(A)	158-160	Scheme 2
42	H	CH_2NH	N/CH	Et	H			518	4.84(A)	108-110	Scheme 2
43	H	CH_2NH	N/CH	Et	H			532	5.01(A)	195-197	Scheme 2
44	H	CH_2NH	N/CH		H			568	5.85(A)	214-216	Scheme 1
45	H	CH_2NH	N/CH		H			568	5.78(A)	223-224	Scheme 1
46	H	CH_2NH	N/CH		H			568	5.86(A)	207-209	Scheme 1
47	H	CH_2NH	N/N	Et	H		-NHMe	406	4.88(A)		Scheme 2

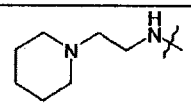
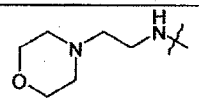
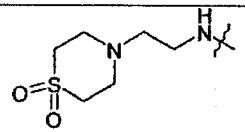
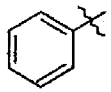
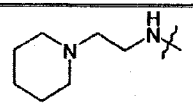
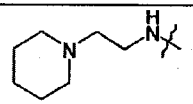
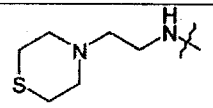
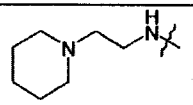
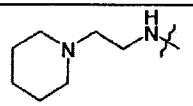
Compound No.	R_3	L	Z/Z'	R_1	R'_1	R''_1	R_2	MS (MH^+)	LC (Method)	M.p. (°C) or NMR	Synthetic scheme
48	H	CH_2NH	N/CH		H		-NHMe	431		NMR (Ex. 14)	Scheme 1
49	H	CH_2NH	N/CH				-NHMe	431		NMR (Ex. 15)	Scheme 1
50	H	CH_2NH	N/CH		H		-NHMe	461		NMR (Ex. 16)	Scheme 1
51	H	CH_2NH	N/CH	$-CH_2CH_2OMe$	H		-NHMe	435		NMR (Ex. 17)	Scheme 1
52	H	CH_2NH	N/CH	$-CH_2CH_2OH$	H		-NHMe	421		NMR (Ex. 18)	Scheme 1
53	H	CH_2NH	N/CH		H		-NHMe	454	4.92(A)	213-215	Scheme 1
54	H	CH_2NH	N/CH		H		-NHMe	454	4.82(A)	320-322	Scheme 1
55	H	CH_2NH	CH/N	Et	H		-NHMe	405	4.56(A)	212-215	Scheme 1
56	H	CH_2CH_2	N/CH	Et	H		-NHMe	404	5.74(A)	233-235	Scheme 5
57	H	CH_2NH	N/CH		H			514	4.89(A)		Scheme 2
58	H	CH_2NH	N/CH		H			443	5.57(A)		Scheme 2

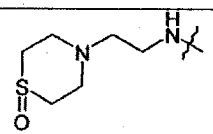
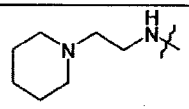
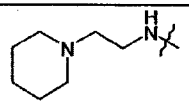
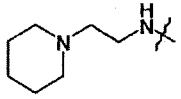
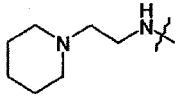
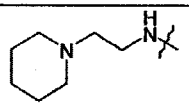
Compound No.	R_3	L	Z/Z'	R_1	R'_1	R''_1	R_2	MS (MH^+)	LC (Method)	M.p. (°C) or NMR	Synthetic scheme
59	H	CH_2NH	N/CH		H		-NH(^{n}Bu)	459	6.47(A)		Scheme 2
60	H	CH_2NH	N/CH		H			471	6.48(A)		Scheme 2
61	H	CH_2NH	N/CH		H		-NHEt	431	5.48(A)		Scheme 2
62	H	CH_2NH	CH/CH	Et	H		-NHMe	404	5.58(A)		Scheme 1
63	H	CH_2NH	N/CH			-OEt	-NHMe			200 + NMR (Ex. 10)	Ex.10
64	H	CH_2NH	N/CH	Et	H			482	5.20(A)	209-211	Scheme 2
65	H	CH_2NH	N/CH	Et	H			482	5.03(A)	206	Scheme 2
66	H	CH_2NH	N/CH	Et	H			482	5.52(A)		Scheme 2
67	H	CH_2NH	N/CH	Et	H			468	5.28(A)		Scheme 2
68	H	CH_2NH	N/CH	Et	H			468	8.01(B)	246-247	Scheme 2

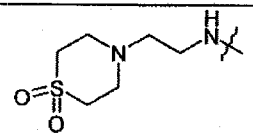
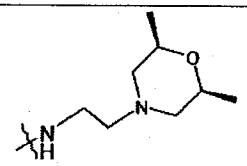
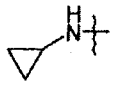
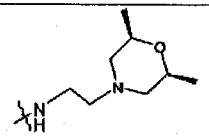
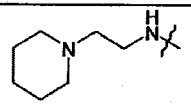
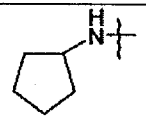
Compound No.	R_3	L	Z/Z'	R_1	R'_1	R''_1	R_2	MS (MH^+)	LC (Method)	M.p. (°C) or NMR	Synthetic scheme
69	H	CH_2NH	N/CH	Et	H			516	5.16(A)		Scheme 2
70	H	CH_2NH	N/CH	Et	H			496	5.33(A)	175-177	Scheme 2
71	H	CH_2NH	N/CH	Et	H			496	5.42(A)	175-176	Scheme 2
72	H	CH_2NH	N/CH	Et	H			496	5.03(A)		Scheme 2
73	H	CH=CH	N/CH	Et	H		-NHMe	402	7.06(A)	295-297	Scheme 4
74	H	CH=CH	N/CH	Et	H			515	7.63(C)	224-226	Scheme 4
75	H	CH=CH	N/CH	Et	H			499	5.93(A)	235-237	Scheme 4
76	H	CH_2NH	N/CH	Et	H			530	5.04(A)		Scheme 2
77	H	CH_2NH	N/CH	Et	H			468	6.51(A)		Scheme 2
78	H	CH_2NH	N/CF	Et	H		-NHMe	423	6.09(A)		Scheme 2

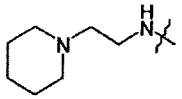
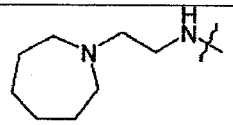
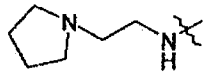
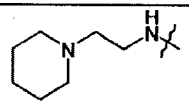
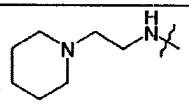
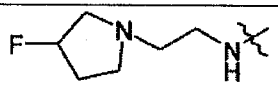
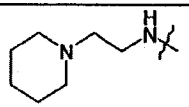
Compound No.	R_3	L	Z/Z'	R_1	R'_1	R''_1	R_2	MS (MH^+)	LC (Method)	M.p. (°C) or NMR	Synthetic scheme
79	H	CH_2NH	N/CF	Et	H			520	3.09(E)		Scheme 2
80	H	CH_2NH	N/N	Et	H			503	4.71(A)	NMR (Ex. 11)	Scheme 2 (Ex. 11)
81	6-NH_2	CH_2NH	N/CH	Et	H			517	4.94(A)	NMR (Ex. 12)	Scheme 3 (Ex. 12)
82	2-F	CH_2NH	N/CH	Et	H			520	6.1(A)		Scheme 3
83	6-Me	CH_2NH	N/CH	Et	H			516	4.99(A)		Scheme 3
84	2,5,6-F	CH_2NH	N/CH	Et	H			556	6.8(A)		Scheme 3
85	5-Me	CH_2NH	N/CH	Et	H			516	5.16(A)		Scheme 3
86	2-OMe	CH_2NH	N/CH	Et	H			532	6.34(A)		Scheme 3

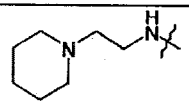
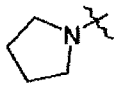
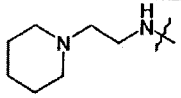
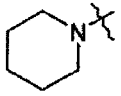
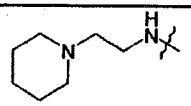
Compound No.	R_3	L	Z/Z'	R_1	R'_1	R''_1	R_2	MS (MH^+)	LC (Method)	M.p. (°C) or NMR	Synthetic scheme
87	5-NH_2	CH_2NH	N/CH	Et	H			517	4.88(A)		Scheme 3
88	5-F	CH_2NH	N/CH	Et	H			520	6.01		Scheme 3
89	6-F	CH_2NH	N/CH	Et	H			520	6.14(A)		Scheme 3
90	6-NMe_2	CH_2NH	N/CH	Et	H			545	5.07(A)		Scheme 3
91	6-CN	CH_2NH	N/CH	Et	H			527	7.42(C)		Scheme 3
92	6-NH-Boc	CH_2NH	N/CH	Et	H			618	1.09(D)		Scheme 3'
93	6-NH_2	CH_2NH	N/CH	Et	H			518	1.35(D)		Scheme 3'
94	6-NH-Me	CH_2NH	N/CH	Et	H			531	0.74(D)		Scheme 3 in the trihydrochloride form

Compound No.	R_3	L	Z/Z'	R_1	R'_1	R''_1	R_2	MS (MH^+)	LC (Method)	M.p. (°C) or NMR	Synthetic scheme
95	5-Me, 6-NH_2	CH_2NH	N/CH	Et	H			531	0.75(D)		Scheme 3
96	6-NH_2	CH_2NH	N/CH	Et	H			519	0.65(D)		Scheme 2
97	6-NH_2	CH_2NH	N/CH	Et	H			567	0.7(D)		Scheme 2
98	6-NH_2	CH_2NH	N/CH		H			565	0.95(D)		Scheme 3
99	6-NH_2	CH_2NH	N/CH		H			529	0.65(D)		Scheme 3
100	6-NH_2	CH_2NH	N/CH	Et	H			535	0.71(D)		Scheme 2
101	6-NHCOMe	CH_2NH	N/CH	Et	H			559	0.71(D)		Scheme 3
102	6-NH_2	CH=CG	N/CH	Et	H			514	0.77(D)		Scheme 5

Compound No.	R_3	L	Z/Z'	R_1	R'_1	R''_1	R_2	MS (MH^+)	LC (Method)	M.p. (°C) or NMR	Synthetic scheme
103	6-NH_2	CH_2NH	N/CH	Et	H			551	0.58(D)		Scheme 2
104	6-NH_2	CH_2NH	N/CH	Et	H		-$NHCH_2CH_2NH$-iPr	491	5.12(A)		Scheme 1 in the trihydrochloride form
105	6-NH_2	CH_2NH	CH/CH	Et	H			516	6.43(A)	NMR (Ex. 19)	Scheme 1 (Ex. 19)
106	5-Me, 6-NH_2	CH_2NH	CH/CH	Et	H			530	0.77(D)		Scheme 3
107	6-NHCO-iPr	CH_2NH	N/CH	Et	H			587	0.88(D)		Scheme 3
108	6-NH-iPr	CH_2NH	N/CH	Et	H			559	0.79(D)		Scheme 3
109	6-NH-Et	CH_2NH	N/CH	Et	H			545	0.75(D)		Scheme 3

Compound No.	R_3	L	Z/Z'	R_1	R'_1	R''_1	R_2	MS (MH^+)	LC (Method)	M.p. (°C) or NMR	Synthetic scheme
110	6-NHCOO-tBu	CH_2NH	N/CH	Et	H			667	0.94(D)		Scheme 3
111	6-NHCOO-tBu	CH_2NH	N/CH	Et	H			647	0.99(D)		Scheme 3
112	6-NH_2	CH_2NH	N/CH		H			458	0.75(D)		Scheme 2
113	6-NH_2	CH_2NH	N/CH		H		-NH-nBu	474	0.96(D)		Scheme 3
114	6-NH_2	CH_2NH	N/CH	Et	H			547	0.73(D)		Scheme 3
115	6-NH_2	CH_2NH	N/CH	Et	H		-$NHCH_2CH_2OH$	450	0.63(D)		Scheme 2
116	6-NH_2	CH_2NH	N/CH					529	5.91(C)		Scheme 3
117	6-NH_2	CH_2NH	N/CH		H			486	0.98(D)		Scheme 2

Compound No.	R_3	L	Z/Z'	R_1	R'_1	R''_1	R_2	MS (MH^+)	LC (Method)	M.p. (°C) or NMR	Synthetic scheme
118	6-NH_2	CH_2NH	N/CH		H		-NH-Et	446	0.74(D)		Scheme 2
119	6-NH_2	CH_2NH	CH/CH		H			528	0.85(D)		Scheme 1 in the trihydrochloride form
120	6-NH_2	CH_2NH	N/CH	Et	H		-$NHCH_2CH_2OMe$	464	0.76(D)		Scheme 3
121	6-NH_2	CH_2NH	CH/CH	Et	H			531	0.76(D)		Scheme 3
122	6-NH_2	CH_2NH	CH/CH	Et	H			503	0.65(D)		Scheme 3
123	6-OH	CH_2NH	N/CH	Et	H			518	5.52(D)		Scheme 3
124	2-NH_2	CH_2NH	N/CH	Et	H			517	5.0(D)		Scheme 3
125	6-NH_2	CH_2NH	N/CH	Et	H			521	0.65(D)		Scheme 2
126	6-NH_2	CH_2NH	N/N	Et	H			518	0.64(D)		Scheme 2

Compound No.	R_3	L	Z/Z'	R_1	R'_1	R''_1	R_2	MS (MH^+)	LC (Method)	M.p. (°C) or NMR	Synthetic scheme
127	6-NH_2	CH_2NH	N/N		H			530	0.67(D)		Scheme 2
128	6-NH_2	CH_2NH	N/CH					543	6.19(C)		Scheme 3
129	6-NH_2	CH_2NH	N/CH					557	0.71(D)		Scheme 3

nBu: n-butyl; tBu: tert-butyl; iPr: isopropyl

for R_3: 6-NH_2 means -NH_2 in the 6 position on the pyridine ring as indicated; 2-F means -F in the 5 position on the pyridine ring

The compounds in Table I have as chemical name (obtained from the Autonom® software):

- 2-Ethylamino-*N*-methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (compound n°1)
- 2-Ethylamino-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-N-(2-pyrrolidin-1-yl-ethyl)-nicotinamide (n°2)
- 2-Amino-N-methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°3)
- 2-Ethylamino-N-[2-(4-methyl-piperazin-1-yl)-ethyl]-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°4)
- 2-Ethylamino-N-(2-piperazin-1-yl-ethyl)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°5)
- N-Methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-2-(2-pyrrolidin-1-yl-ethylamino)-nicotinamide (n°6)
- 2-(2-Dimethylamino-ethylamino)-N-methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°7)
- N-(2-Diisopropylamino-ethyl)-2-ethylamino-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°8)
- N-(2-Dimethylamino-ethyl)-2-ethylamino-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°9)
- 2-Ethylamino-N-(1-methyl-piperidin-4-ylmethyl)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°10)
- N-Methyl-2-[2-(4-methyl-piperazin-1-yl)-ethylamino]-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°11)
- N-Methyl-2-[(pyridin-3-ylmethyl)-amino]-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°12)
- 2-Ethylamino-*N*-(2-piperidin-1-yl-ethyl)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°13)
- N-Methyl-2-[(pyridin-2-ylmethyl)-amino]-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°14)
- N-Methyl-2-[(pyridin-4-ylmethyl)-amino]-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°15)
- 2-Ethylamino-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°16)
- N-Methyl-2-(2-piperidin-1-yl-ethylamino)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°17)
- 2-Ethylamino-N-[2-(4-isopropyl-piperazin-1-yl)-ethyl]-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°18)
- 2-Benzylamino-N-methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°19)
- 2-Ethylamino-*N*-[2-(2-methyl-pyrrolidin-1-yl)-ethyl]-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°20)
- 6-[4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl]-2-ethylamino-N-methyl-nicotinamide (n°21)
- N-Methyl-2-phenylamino-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°22)
- 2-Cyclopropylamino-N-methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°23)
- 2-Amino-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°24)
- 2-Diethylamino-N-methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°25)
- 2-Ethylamino-N-(2-hydroxy-ethyl)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°26)
- 2-Ethylamino-*N*-(2-methoxy-ethyl)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°27)
- 2-Ethylamino-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinic acid ethyl ester (n°28)
- [4-(6-Ethylamino-5-methylcarbamoyl-pyridin-2-yl)-phenyl]-carbamic acid pyridin-3-ylmethyl ester (n°29)
- 2-Ethylamino-N-methyl-6-[4-[3-(2-pyridin-3-yl-ethyl)-ureido]-phenyl]-nicotinamide (n°30)
- 2-Ethylamino-N-(2-isopropylamino-ethyl)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°31)
- N-(6-Amino-hexyl)-2-ethylamino-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°32)
- 2-Phenylamino-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-N-(2-pyrrolidin-1-yl-ethyl)-nicotinamide (n°33)
- 2-Ethylamino-N-(2-hydroxy-1,1-bis-hydroxymethyl-ethyl)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°34)
- 2-Isopropylamino-N-methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°35)
- 2-Cyclohexylamino-N-methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°36)
- 2-Cyclopentylamino-N-methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°37)
- 2-Cyclobutylamino-N-methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°38)
- 2-Phenylamino-N-(2-piperidin-1-yl-ethyl)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°39)
- 2-Ethylamino-N-[2-(4-hydroxy-piperidin-1-yl)-ethyl]-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°40)
- N-[2-(4,4-Difluoro-piperidin-1-yl)-ethyl]-2-ethylamino-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°41)
- 2-Ethylamino-N-[2-(3-hydroxy-piperidin-1-yl)-ethyl]-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°42)
- 2-Ethylamino-N-[2-(4-methoxy-piperidin-1-yl)-ethyl]-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°43)
- 2-(3-Fluoro-phenylamino)-N-(2-piperidin-1-yl-ethyl)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°44)
- 2-(4-Fluoro-phenylamino)-N-(2-piperidin-1-yl-ethyl)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°45)

- 2-(2-Fluoro-phenylamino)-N-(2-piperidin-1-yl-ethyl)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°46)
- 4-Ethylamino-2-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-pyrimidine-5-carboxylic acid methylamide (n°47)
- 2-(Cyclopropylmethyl-amino)-N-methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°48)
- N-Methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-2-pyrrolidin-1-yl-nicotinamide (n°49)
- N-Methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-2-[(tetrahydro-furan-2-ylmethyl)-amino]-nicotinamide (n°50)
- 2-(2-Methoxy-ethylamino)-N-methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°51)
- 2-(2-Hydroxy-ethylamino)-N-methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°52)
- N-Methyl-2-(pyridin-3-ylamino)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°53)
- N-Methyl-2-(pyridin-4-ylamino)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°54)
- 4-Ethylamino-N-methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°55)
- 2-Ethylamino-N-methyl-6-[4-(3-pyridin-3-yl-propionylamino)-phenyl]-nicotinamide (n°56)
- 2-Cyclopropylamino-N-(2-piperidin-1-yl-ethyl)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°57)
- N-Cyclopropyl-2-cyclopropylamino-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°58)
- N-Butyl-2-cyclopropylamino-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°59)
- N-Cyclopentyl-2-cyclopropylamino-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°60)
- 2-Cyclopropylamino-N-ethyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°61)
- 3-Ethylamino-4'-(3-pyridin-3-ylmethyl-ureido)-biphenyl-4-carboxylic acid methylamide (n°62)
- 2-Ethoxy-N-methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°63)
- 2-Ethylamino-N-pyridin-3-ylmethyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°64)
- 2-Ethylamino-N-pyridin-4-ylmethyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°65)
- 2-Ethylamino-N-pyridin-2-ylmethyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°66)
- 2-Ethylamino-N-pyridin-4-yl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°67)
- 2-Ethylamino-N-pyridin-3-yl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°68)
- 2-Ethylamino-N-(3-piperidin-1-yl-propyl)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°69)
- 2-Ethylamino-N-(2-pyridin-2-yl-ethyl)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°70)
- 2-Ethylamino-N-(1-pyridin-3-yl-ethyl)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°71)
- 2-Ethylamino-N-(2-pyridin-4-yl-ethyl)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°72)
- 2-Ethylamino-N-methyl-6-[4-((E)-3-pyridin-3-yl-acryloylamino)-phenyl]-nicotinamide (n°73)
- N-(2-Diisopropylamino-ethyl)-2-ethylamino-6-[4-((E)-3-pyridin-3-yl-acryloylamino)-phenyl]-nicotinamide (n°74)
- 2-Ethylamino-N-(2-piperidin-1-yl-ethyl)-6-[4-((E)-3-pyridin-3-yl-acryloylamino)-phenyl]-nicotinamide (n°75)
- 2-Ethylamino-N-(4-piperidin-1-yl-butyl)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (N°76)
- 2-Ethylamino-N-pyridin-2-yl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°77)
- 2-Ethylamino-5-fluoro-N-methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°78)
- 2-Ethylamino-5-fluoro-N-(2-piperidin-1-yl-ethyl)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide (n°79)
- 4-Ethylamino-2-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-pyrimidine-5-carboxylic acid (2-piperidin-1-yl-ethyl)-amide (n°80)
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-ethylamino-N-(2-piperidin-1-yl-ethyl)-nicotinamide (n°81)
- 2-Ethylamino-6-{4-[3-(2-fluoro-pyridin-3-ylmethyl)-ureido]-phenyl}-N-(2-piperidin-1-yl-ethyl)-nicotinamide (n°82)
- 2-Ethylamino-6-{4-[3-(6-methyl-pyridin-3-ylmethyl)-ureido]-phenyl}-N-(2-piperidin-1-yl-ethyl)-nicotinamide (n°83)
- 2-Ethylamino-N-(2-piperidin-1-yl-ethyl)-6-{4-[3-(2,5,6-trifluoro-pyridin-3-ylmethyl)-ureido]-phenyl}-nicotinamide (n°84)
- 2-Ethylamino-6-{4-[3-(5-methyl-pyridin-3-ylmethyl)-ureido]-phenyl}-N-(2-piperidin-1-yl-ethyl)-nicotinamide (n°85)
- 2-Ethylamino-6-{4-[3-(2-methoxy-pyridin-3-ylmethyl)-ureido]-phenyl}-N-(2-piperidin-1-yl-ethyl)-nicotinamide (n°86)
- 6-{4-[3-(5-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-ethylamino-N-(2-piperidin-1-yl-ethyl)-nicotinamide (n°87)
- 2-Ethylamino-6-{4-[3-(5-fluoro-pyridin-3-ylmethyl)-ureido]-phenyl}-N-(2-piperidin-1-yl-ethyl)-nicotinamide (n°88)
- 2-Ethylamino-6-{4-[3-(6-fluoro-pyridin-3-ylmethyl)-ureido]-phenyl}-N-(2-piperidin-1-yl-ethyl)-nicotinamide (n°89)
- 6-{4-[3-(6-Dimethylamino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-ethylamino-N-(2-piperidin-1-yl-ethyl)-nicotinamide (n°90)
- 6-{4-[3-(6-Cyano-pyridin-3-ylmethyl)-ureido]-phenyl}-2-ethylamino-N-(2-piperidin-1-yl-ethyl)-nicotinamide (n°91)
- 6-{4-[3-(6-tert-Butoxycarbonylamino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-ethylamino-nicotinic acid 2-piperidin-1-yl-ethyl

ester (n°92)

- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-ethylamino-nicotinic acid 2-piperidin-1-yl-ethyl ester (n°93)
- 2-Ethylamino-6-{4-[3-(6-methylamino-pyridin-3-ylmethyl)-ureido]-phenyl}-N-(2-piperidin-1-yl-ethyl)-nicotinamide (n°94)
- 6-{4-[3-(6-Amino-5-methyl-pyridin-3-ylmethyl)-ureido]-phenyl}-2-ethylamino-N-(2-piperidin-1-yl-ethyl)-nicotinamide (n°95)
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-ethylamino-N-(2-morpholin-4-yl-ethyl)-nicotinamide (n°96)
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-N-[2-(1,1-dioxo-1-thiomorpholin-4-yl)-ethyl]-2-ethylamino-nicotinamide (n°97)
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-phenylamino-N-(2-piperidin-1-yl-ethyl)-nicotinamide (n°98)
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-cyclopropylamino-N-(2-piperidin-1-yl-ethyl)-nicotinamide (n°99)
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-ethylamino-N-(2-thiomorpholin-4-yl-ethyl)-nicotinamide (n°100)
- 6-{4-[3-(6-Acetylamino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-ethylamino-N-(2-piperidin-1-yl-ethyl)-nicotinamide (n°101)
- 6-{4-[(E)-3-(6-Amino-pyridin-3-yl)-acryloylamino]-phenyl}-2-ethylamino-N-(2-piperidin-1-yl-ethyl)-nicotinamide (n°102)
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-ethylamino-N-[2-(1-oxo-1-thiomorpholin-4-yl)-ethyl]-nicotinamide (n°103)
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-ethylamino-N-(2-isopropylamino-ethyl)-nicotinamide (n°104)
- 4'-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-3-ethylamino-biphenyl-4-carboxylic acid (2-piperidin-1-yl-ethyl)-amide (n°105)
- 4'-[3-(6-Amino-5-methyl-pyridin-3-ylmethyl)-ureido]-3-ethylamino-biphenyl-4-carboxylic acid (2-piperidin-1-yl-ethyl)-amide (n°106)
- 2-Ethylamino-6-{4-[3-(6-isobutyrylamino-pyridin-3-ylmethyl)-ureido]-phenyl}-N-(2-piperidin-1-yl-ethyl)-nicotinamide (n°107)
- 2-Ethylamino-6-{4-[3-(6-isopropylamino-pyridin-3-ylmethyl)-ureido]-phenyl}-N-(2-piperidin-1-yl-ethyl)-nicotinamide (n°108)
- 2-Ethylamino-6-{4-[3-(6-ethylamino-pyridin-3-ylmethyl)-ureido]-phenyl}-N-(2-piperidin-1-yl-ethyl)-nicotinamide (n°109)
- {5-[3-(4-{5-[2-(1,1-Dioxo-1-thiomorpholin-4-yl)-ethylcarbamoyl]-6-ethylamino-pyridin-2-yl}-phenyl)-ureidomethyl]-pyridin-2-yl}-carbamic acid tert-butyl ester (n°110)
- {5-[3-(4-{5-[2-(cis-2,6-Dimethyl-morpholin-4-yl)-ethylcarbamoyl]-6-ethylamino-pyridin-2-yl}-phenyl)-ureidomethyl]-pyridin-2-yl}-carbamic acid tert-butyl ester (n°111)
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-N-cyclopropyl-2-cyclopropylamino-nicotinamide (n°112)
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-N-butyl-2-cyclopropylamino-nicotinamide (n°113)
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-N-[2-(cis-2,6-dimethyl-morpholin-4-yl)-ethyl]-2-ethylamino-nicotinamide (n°114)
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-ethylamino-N-(2-hydroxy-ethyl)-nicotinamide (n°115)
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-azetidin-1-yl-N-(2-piperidin-1-yl-ethyl)-nicotinamide (n°116)
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-N-cyclopentyl-2-cyclopropylamino-nicotinamide (n°117)
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-cyclopropylamino-N-ethyl-nicotinamide (n°118)
- 4'-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-3-cyclopropylamino-biphenyl-4-carboxylic acid (2-piperidin-1-yl-ethyl)-amide (n°119)
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-ethylamino-N-(2-methoxy-ethyl)-nicotinamide (n°120)
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-N-(2-azepan-1-yl-ethyl)-2-ethylamino-nicotinamide (n°121)
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-ethylamino-N-(2-pyrrolidin-1-yl-ethyl)-nicotinamide (n°122)
- 2-Ethylamino-6-{4-[3-(6-oxo-1,6-dihydro-pyridin-3-ylmethyl)-ureido]-phenyl}-N-(2-piperidin-1-yl-ethyl)-nicotinamide – n°123)
- 6-{4-[3-(2-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-ethylamino-N-(2-piperidin-1-yl-ethyl)-nicotinamide (n°124)
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-ethylamino-N-[2-(3-fluoro-pyrrolidin-1-yl)-ethyl]-nicotinamide (n°125)
- 2-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-4-ethylamino-pyrimidine-5-carboxylic acid (2-piperidin-1-yl-ethyl)-amide (n°126)
- 2-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-4-cyclopropylamino-pyrimidine-5-carboxylic acid (2-piperidin-1-yl-

ethyl)-amide (n°127)

- 6-[4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-N-(2-piperidin-1-yl-ethyl)-2-pyrrolidin-1-yl-nicotinamide (n°128)
- 6'-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-3,4,5,6-tetrahydro-2H-[1,2']bipyridinyl-3'-carboxylic acid (2-piperidin-1-yl-ethyl)-amide (n°129)

The compounds described in Table I have formed the subject of pharmacological trials which make it possible to determine the anticancer activity. They were tested *in vitro* on the following tumour lines: **HCT116** (ATCC-CCL247) and **PC3** (ATCC-CRL1435). The cell proliferation and viability were determined in a test using 3-(4,5-dimethylthiazol-2-yl)-5-(3-carboxymethoxyphenyl)-2-(4-sulphophenyl)-2*H*-tetrazolium (MTS) according to Fujishita T. et al., Oncology, 2003, 64(4), 399-406. In this test, the mitochondrial capacity of the living cells to convert MTS to a coloured compound after incubating the test compound for 72 hours is measured. The concentration of compound which results in 50% loss of cell proliferation and viability is recorded as IC_{50}.

Table II

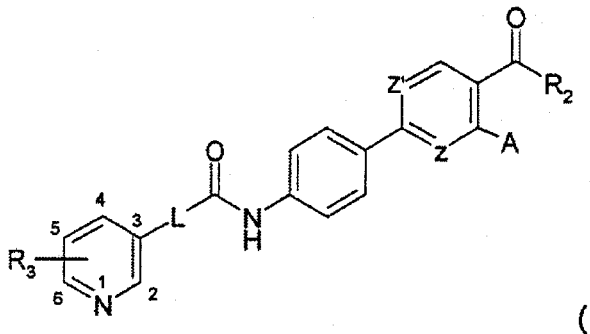
Compound No.	HCT116 (nM)	PC3 (nM)
5	1.8	0.8
12	19	113
13	0.1	0.2
17	294	266
19	34	28
22	0.1	0.1
23	0.1	0.1
25	2.2	1.7
26	6.3	4.4
33	0.37	0.3
47	11	10
49	331	316
51	77	78
55	35	45
62	2.5	1.2
74	116	21
81	0.1	0.1
103	1.8	3
107	221	105
108	271	345

114	0.1	0.1

For the compounds in Table I, an IC_{50}<10 000 nM (10 µM) is found with regard to the **HCT116** and **PC3** lines. It is observed that some of the compounds exhibit an IC_{50} value of <500 nM, some being very active with an IC_{50} of 0.1 nM (cf. values in Table II). Thus, the compounds result in a loss of proliferation and viability of the tumour cells and therefore have an anticancer activity.

CLAIMS

1. Compound of formula (I):



(I)

in which:

- **A** represents an $-NR_1R'_1$ or $(C_1\text{-}C_6)$alkoxy group;
- **Z** and **Z'** respectively represent N and CH; N and CF; N and N; CH and CH; CH and N;
- **L** represents a $-CH=CH-$ or $-CH_2CH_2-$ or $-(CH_2)_n-Y-$ group in which the Y group (attached to the C=O) represents an oxygen atom or an -NH- group and n is an integer ranging from 1 to 4;
- $\mathbf{R_1}$ and $\mathbf{R'_1}$ are such that:

  (i) R_1 represents:

  - a hydrogen atom;
  - an aryl group optionally substituted by one or more halogen atom(s);
  - a heteroaryl group;
  - a $(C_3\text{-}C_6)$cycloalkyl group;
  - a $(C_1\text{-}C_6)$alkyl group, optionally substituted by:
    - one or more hydroxyl or $(C_1\text{-}C_6)$alkoxy, preferably $(C_1\text{-}C_4)$alkoxy, group(s);
    - an aryl group;
    - a $(C_3\text{-}C_6)$cycloalkyl group;
    - a heteroaryl group;
    - a heterocycloalkyl group;
    - an $-NR_aR_b$ group in which R_a and R_b represent, independently of one another, a hydrogen atom or a $(C_1\text{-}C_6)$alkyl, preferably $(C_1\text{-}C_4)$alkyl,

group or form, together with the nitrogen atom to which they are connected, a heterocycloalkyl group optionally comprising another nitrogen atom;

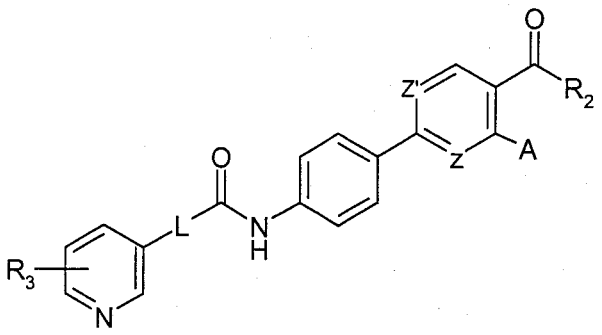
and R'_1 represents a hydrogen atom or a (C_1-C_6)alkyl group;

or

(ii) R_1 and R'_1 form, together with the nitrogen atom to which they are connected, a heterocycloalkyl group;

- **R_2** represents a -Q-R_4 group;
- **Q** represents an oxygen atom or the -NH- group;
- **R_4** represents:
  - a hydrogen atom;
  - a heteroaryl group;
  - a (C_3-C_6)cycloalkyl group;
  - a (C_1-C_6)alkyl group, optionally substituted by:
    - one or more hydroxyl or (C_1-C_6)alkoxy, preferably (C_1-C_4)alkoxy, groups;
    - a heteroaryl group;
    - a heterocycloalkyl group;
    - an $-NR_cR_d$ group in which R_c and R_d represent, independently of one another, a hydrogen atom or a (C_1-C_6)alkyl group or form, together with the nitrogen atom to which they are connected, a heterocycloalkyl group optionally comprising, in the ring, another heteroatom, such as a nitrogen or oxygen atom or the $-S(O)_q$ group, with q = 0, 1 or 2, and optionally being substituted by one or more substituent(s), which are identical to or different from one another when there are several of them, chosen from a halogen atom or an -OH; (C_1-C_4)alkoxy or (C_1-C_4)alkyl group;
- **R_3** represents at least one substituent of the pyridine ring chosen from a hydrogen or fluorine atom or a (C_1-C_4)alkyl, (C_1-C_4)alkoxy, -OH, -CN or $-NR_eR_f$ group in which R_e and R_f represent a hydrogen atom or a (C_1-C_4)alkyl group or else R_e represents a hydrogen atom and R_f represents a (C_1-C_4)alkyl, $-C(=O)O(C_1-C_4)$alkyl or $-C(=O)(C_1-C_4)$alkyl group.

2. Compound of formula:



in which:

- **A** represents a (C_1-C_6)alkoxy group or an -$NR_1R'_1$ group;
- **Z** and **Z'** represent, independently of one another, N or CH;
- **L** represents a –CH=CH- or –CH_2CH_2- or –$(CH_2)_n$-Y- group in which the Y group (attached to the C=O) represents an oxygen atom or an -NH- group and n is an integer ranging from 1 to 4;
- R_1 and R'_1 are such that:

(i) R_1 represents:

- a hydrogen atom;
- an aryl group optionally substituted by one or more halogen atom(s);
- a heteroaryl group;
- a (C_3-C_6)cycloalkyl group;
- a (C_1-C_6)alkyl group, optionally substituted by:
  - one or more hydroxyl or (C_1-C_6)alkoxy, preferably (C_1-C_4)alkoxy, group(s);
  - an aryl group;
  - a (C_3-C_6)cycloalkyl group;
  - a heteroaryl group;
  - a heterocycloalkyl group;
  - an -NR_aR_b group in which R_a and R_b represent, independently of one another, a hydrogen atom or a (C_1-C_6)alkyl, preferably (C_1-C_4)alkyl, group or form, together with the nitrogen atom, a heterocycloalkyl group optionally comprising another nitrogen atom;

and R'_1 represents a hydrogen atom or a (C_1-C_6)alkyl group;

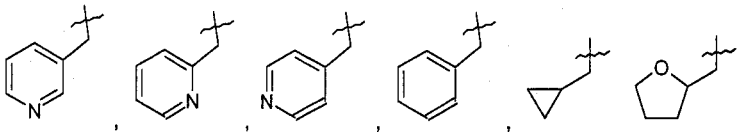
or

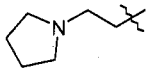
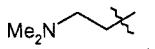
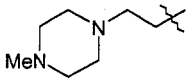
(ii) R_1 and R'_1 form, together with the nitrogen atom, a heterocycloalkyl group;

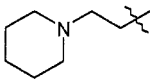
- R_2 represents a $(C_1$-$C_6)$alkoxy, preferably $(C_1$-$C_4)$alkoxy, group or an $-NHR_4$ group;
- R_3 represents a hydrogen or fluorine atom or an $-NH_2$ group;
- R_4 represents:
  - a hydrogen atom;
  - a heteroaryl group;
  - a $(C_3$-$C_6)$cycloalkyl group;
  - a $(C_1$-$C_6)$alkyl group, optionally substituted by:
    - one or more hydroxyl or $(C_1$-$C_6)$alkoxy, preferably $(C_1$-$C_4)$alkoxy, groups;
    - a heteroaryl group;
    - a heterocycloalkyl group;
    - an $-NR_cR_d$ group in which R_c and R_d represent, independently of one another, a hydrogen atom or a $(C_1$-$C_6)$alkyl group or form, together with the nitrogen atom, a heterocycloalkyl group optionally comprising another nitrogen atom and optionally being substituted by one or more substituent(s), which are identical to or different from one another when there are several of them, chosen from: hydroxyl; $(C_1$-$C_6)$alkoxy, preferably $(C_1$-$C_4)$alkoxy; $(C_1$-$C_6)$alkyl, preferably $(C_1$-$C_4)$alkyl; or a halogen atom.

3. Compound according to Claim 1 or 2, characterized in that R_1 is:

- a phenyl group optionally substituted by a fluorine atom or the 3- or 4-pyridinyl; cyclopropyl; cyclobutyl; cyclopentyl; or cyclohexyl group;
- a $(C_1$-$C_6)$alkyl group;
- a $(C_1$-$C_6)$alkyl group substituted by one or more -OH or $(C_1$-$C_4)$alkoxy group(s);
- a $(C_1$-$C_6)$alkyl group substituted by a phenyl; cyclopropyl; 2-, or 3-4-pyridinyl; or 2-tetrahydrofuryl group;
- a $(C_1$-$C_6)$alkyl group substituted by the $-NR_aR_b$ group in which R_a and R_b represent, independently of one another, a hydrogen atom or a $(C_1$-$C_6)$alkyl, preferably $(C_1$-$C_4)$alkyl, group or form, together with the nitrogen atom, a pyrrolidinyl, piperazinyl, piperidinyl or N-[$(C_1$-$C_4)$alkyl]piperidinyl group.

4. Compound according to Claim 3, characterized in that R_1 is one of the following groups:  , , , , , ;

$-CH_2CH_2OH$; $-CH_2CH_2OMe$;  ,  ,  ;

 .

5. Compound according to Claim 1 or 2, characterized in that R_1 and R'_1 together form the pyrrolidinyl group.

6. Compound according to Claim 1 or 2, characterized in that R_1 and R'_1 together form the piperidinyl or azetidinyl group.

7. Compound according to one of Claims 1 to 6, characterized in that R_2 represents the $-NHR_4$ group in which R_4 represents:

- a 3- or 4-pyridinyl, cyclopropyl or cyclopentyl group;
- a (C_1-C_6)alkyl group;
- a (C_1-C_6)alkyl group substituted by one or more -OH or (C_1-C_4)alkoxy group(s);
- a (C_1-C_6)alkyl substituted by the 2-, 3- or 4-pyridinyl group;
- a (C_1-C_6)alkyl group substituted by the morpholinyl, pyrrolidinyl, piperazinyl, piperidinyl or 4-N-[(C_1-C_4)alkyl]piperidinyl group;
- a (C_1-C_6)alkyl group substituted by an $-NR_cR_d$ group in which R_c and R_d represent, independently of one another, a hydrogen atom or a (C_1-C_6)alkyl group or form, together with the nitrogen atom to which they are connected, a pyrrolidinyl, piperidinyl, piperazinyl or N-[(C_1-C_4)alkyl]piperazinyl group optionally substituted by one or more substituent(s), which are identical or different when there are several of them, chosen from: -OH; (C_1-C_4)alkoxy; (C_1-C_4)alkyl; or a halogen atom.

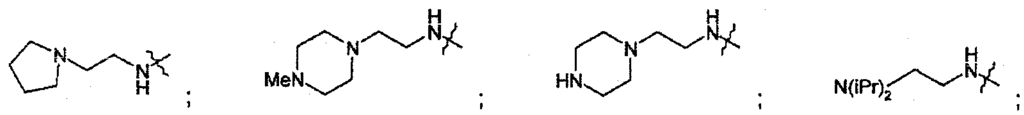
8. Compound according to any one of Claims 1 to 6, characterized in that R_2

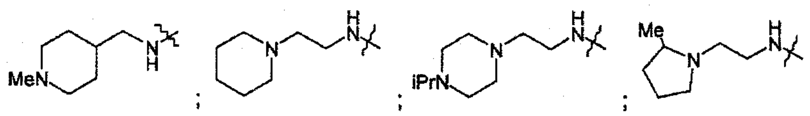
represents an $-NHR_4$ group in which $\mathbf{R_4}$ represents:

- the 2-pyridinyl group;
- a $(C_1\text{-}C_6)$alkyl group substituted by an $-NR_cR_d$ group in which $\mathbf{R_c}$ and $\mathbf{R_d}$ represent, independently of one another, a hydrogen atom or a $(C_1\text{-}C_6)$alkyl group or form, together with the nitrogen atom to which they are connected, an azepanyl, morpholinyl, thiomorpholinyl, 1-oxothiomorpholinyl or 1,1-dioxothiomorpholinyl group.

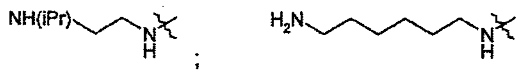
9. Compound according to Claim 7 or 8, characterized in that the $-NR_cR_d$ group is chosen from: 3-hydroxypiperidinyl, 4-hydroxypiperidinyl, 4,4'-difluoropiperidinyl, 4-methoxypiperidinyl, 2-methylpyrrolidinyl, *cis*-2,6-dimethylmorpholinyl or 3-fluoropyrrolidinyl.

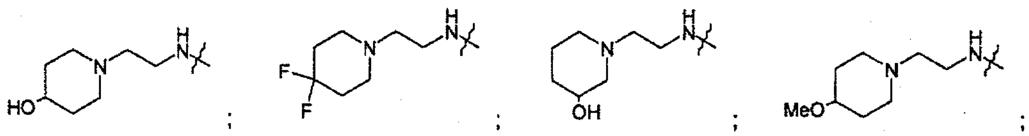
10. Compound according to Claim 7, characterized in that $\mathbf{R_2}$ is chosen from:

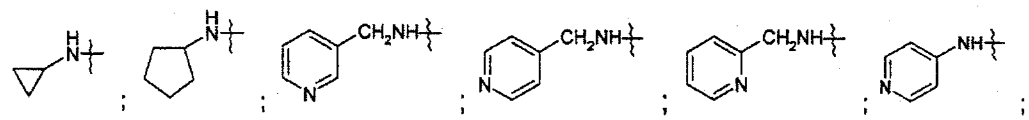


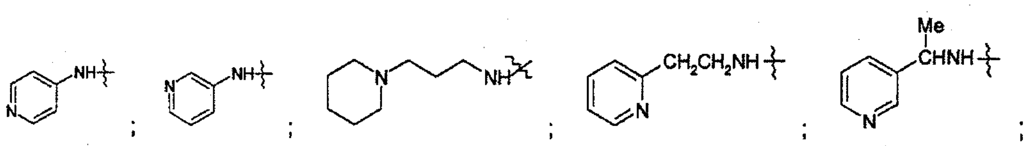

; $-NHCH_2CH_2OH$;

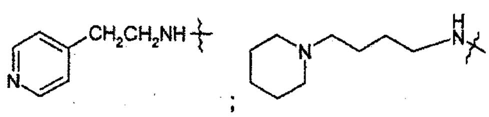
$-NHCH_2CH_2OMe$;


; $-NHC(CH_2OH)_3$;

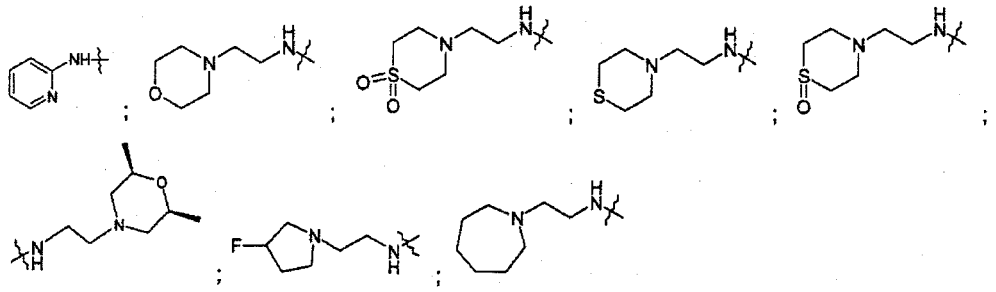








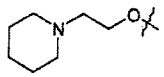
11. Compound according to Claim 7 or 8, characterized in that $\mathbf{R_2}$ is chosen from:



12. Compound according to Claim 1 to 6, characterized in that **R_2** represents the -OR_4 group in which R_4 represents a (C_1-C_4)alkyl group.

13. Compound according to Claim 1 to 6, characterized in that **R_2** represents the -OR_4 group in which R_4 represents a (C_1-C_4)alkyl group substituted by the -NR_cR_d group in which R_c and R_d together form the piperidinyl group.

14. Compound according to Claim 13, characterized in that **R_2** represents



15. Compound according to Claim 1 or 2, characterized in that:
- R_1 and R'_1 represent, independently of one another, a hydrogen atom or a (C_1-C_6)alkyl group;
- Q represents the -NH- group;
- R_4 represents a hydrogen atom or a (C_1-C_6)alkyl group.

16. Compound according to Claim 15, characterized in that R_1 represents a (C_1-C_6)alkyl group and R'_1 represents a hydrogen atom or else R_1 and R'_1 represent two (C_1-C_6)alkyl groups.

17. Compound according to Claim 1 or 2, characterized in that:
- R_1 and R'_1 represent, independently of one another, a hydrogen atom or a (C_1-C_6)alkyl group;
- Q represents the -NH- group;
- R_4 represents a (C_1-C_6)alkyl group substituted by:
    - one or more -OH or (C_1-C_6)alkoxy, preferably (C_1-C_4)alkoxy, groups;

- the $-NR_cR_d$ group in which R_c and R_d represent, independently of one another, a hydrogen atom or a (C_1-C_6)alkyl group or form, together with the nitrogen atom to which they are connected, a heterocycloalkyl group chosen from a pyrrolidinyl, piperidinyl, piperazinyl or N-[(C_1-C_4)alkyl]piperazinyl, azepanyl, morpholinyl, thiomorpholinyl, 1-oxothiomorpholinyl, 1,1-dioxothiomorpholinyl, 3- or 4-hydroxypiperidinyl, 4,4'-difluoropiperidinyl, 4-methoxypiperidinyl, 2-methylpyrrolidinyl, *cis*-2,6-dimethylmorpholinyl or 3-fluoropyrrolidinyl group.

18. Compound according to Claim 1 or 2, characterized in that:

- R_1 represents a (C_1-C_6)alkyl group substituted by:
  - one or more -OH or (C_1-C_6)alkoxy, preferably (C_1-C_4)alkoxy, group(s);
  - an $-NR_aR_b$ group in which R_a and R_b represent, independently of one another, a hydrogen atom or a (C_1-C_6)alkyl, preferably (C_1-C_4)alkyl, group or form, together with the nitrogen atom to which they are connected, a heterocycloalkyl group chosen from a pyrrolidinyl, piperazinyl, piperidinyl or N-[(C_1-C_4)alkyl]piperidinyl group;
- R'_1 represents a hydrogen atom;
- Q represents the -NH- group;
- R_4 represents a (C_1-C_6)alkyl group.

19. Compound according to Claim 1 or 2, characterized in that:

- R_1 represents a (C_1-C_6)alkyl group substituted by a phenyl or 2-, 3- or 4-pyridinyl group;
- R'_1 represents a hydrogen atom;
- Q represents the -NH- group;
- R_4 represents a (C_1-C_6)alkyl group.

20. Compound according Claim 1 or 2, characterized in that:

- R_1 represents a (C_3-C_6)cycloalkyl group;
- R'_1 represents a hydrogen atom;
- Q represents the -NH- group;
- R_4 represents a (C_1-C_6)alkyl group or a (C_3-C_6)cycloalkyl group.

21. Compound according to Claim 1 or 2, characterized in that:

- R_1 represents a phenyl or 3- or 4-pyridinyl group;
- R'_1 represents a hydrogen atom;
- Q represents the -NH- group;
- R_4 represents a $(C_1\text{-}C_6)$alkyl group.

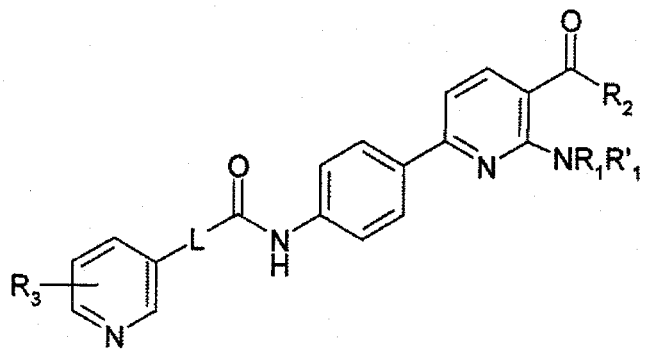
22. Compound according to Claim 1 or 2, characterized in that:

- R_1 represents a phenyl group optionally substituted by one or more halogen atom(s);
- R'_1 represents a hydrogen atom;
- Q represents the -NH- group;
- R_4 represents a $(C_1\text{-}C_6)$alkyl group optionally substituted by the $-NR_cR_d$ group in which R_c and R_d form, together with the nitrogen atom to which they are connected, a heterocycloalkyl group chosen from the pyrrolidinyl or piperidinyl group.

23. Compound according to Claim 1 or 2, characterized in that:

- R_1 and R'_1 represent, independently of one another, a hydrogen atom or a $(C_1\text{-}C_6)$alkyl group;
- Q represents the -NH- group;
- R_4 represents a $(C_1\text{-}C_6)$alkyl group substituted by a 2-, 3- or 4-pyridinyl group.

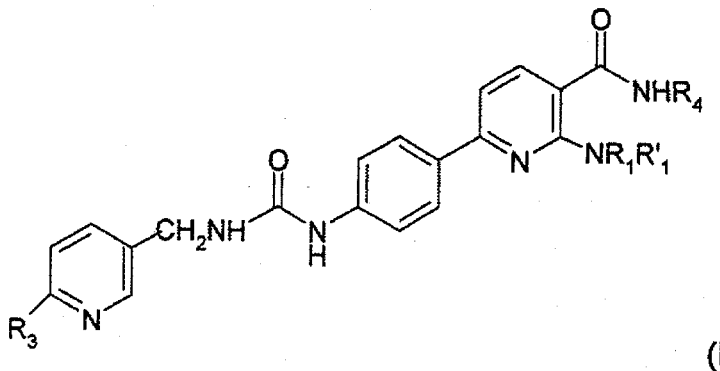
24. Compound of formula (I'):



(I')

in which R_1, R'_1, R_2, L and R_3 are as defined in any one of Claims 1 to 23.

25. Compound of general formula (I''):



(I'')

in which R_1, R'_1, R_3 and R_4 are as defined in any one of Claims 1 to 23.

26. Compound according to one of Claims 1 to 25, characterized in that L represents the $-CH_2NH-$, $-CH_2O-$, $-CH_2CH_2-$ or $-CH=CH-$ group, preferably the $-CH_2NH-$ group.

27. Compound according to any one of Claims 1 to 26, characterized in that R_3 represents a hydrogen atom or the $-NH_2$ group, preferably in the 6 position on the pyridine ring.

28. Compound according to any one of the preceding claims, in the base form or in the form of an addition salt with an acid or in the form of a hydrate or of a solvate.

29. Compound chosen from one of the following:

- 2-Ethylamino-*N*-methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Ethylamino-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-N-(2-pyrrolidin-1-yl-ethyl)-nicotinamide
- 2-Amino-N-methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide

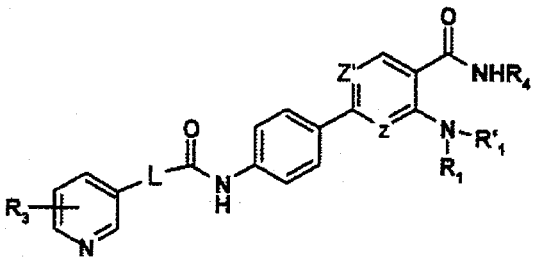
- 2-Ethylamino-N-[2-(4-methyl-piperazin-1-yl)-ethyl]-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Ethylamino-N-(2-piperazin-1-yl-ethyl)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- N-Methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-2-(2-pyrrolidin-1-yl-ethylamino)-nicotinamide
- 2-(2-Dimethylamino-ethylamino)-N-methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- N-(2-Diisopropylamino-ethyl)-2-ethylamino-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- N-(2-Dimethylamino-ethyl)-2-ethylamino-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Ethylamino-N-(1-methyl-piperidin-4-ylmethyl)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- N-Methyl-2-[2-(4-methyl-piperazin-1-yl)-ethylamino]-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- N-Methyl-2-[(pyridin-3-ylmethyl)-amino]-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Ethylamino-*N*-(2-piperidin-1-yl-ethyl)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- N-Methyl-2-[(pyridin-2-ylmethyl)-amino]-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- N-Methyl-2-[(pyridin-4-ylmethyl)-amino]-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Ethylamino-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- N-Methyl-2-(2-piperidin-1-yl-ethylamino)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Ethylamino-N-[2-(4-isopropyl-piperazin-1-yl)-ethyl]-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Benzylamino-N-methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Ethylamino-*N*-[2-(2-methyl-pyrrolidin-1-yl)-ethyl]-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-ethylamino-N-methyl-nicotinamide
- N-Methyl-2-phenylamino-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Cyclopropylamino-N-methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Amino-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Diethylamino-N-methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Ethylamino-N-(2-hydroxy-ethyl)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Ethylamino-*N*-(2-methoxy-ethyl)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Ethylamino-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinic acid ethyl ester
- [4-(6-Ethylamino-5-methylcarbamoyl-pyridin-2-yl)-phenyl]-carbamic acid pyridin-3-ylmethyl ester
- 2-Ethylamino-N-methyl-6-{4-[3-(2-pyridin-3-yl-ethyl)-ureido]-phenyl}-nicotinamide
- 2-Ethylamino-N-(2-isopropylamino-ethyl)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- N-(6-Amino-hexyl)-2-ethylamino-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Phenylamino-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-N-(2-pyrrolidin-1-yl-ethyl)-nicotinamide
- 2-Ethylamino-N-(2-hydroxy-1,1-bis-hydroxymethyl-ethyl)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Isopropylamino-N-methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Cyclohexylamino-N-methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Cyclopentylamino-N-methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Cyclobutylamino-N-methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Phenylamino-N-(2-piperidin-1-yl-ethyl)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Ethylamino-N-[2-(4-hydroxy-piperidin-1-yl)-ethyl]-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- N-[2-(4,4-Difluoro-piperidin-1-yl)-ethyl]-2-ethylamino-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Ethylamino-N-[2-(3-hydroxy-piperidin-1-yl)-ethyl]-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Ethylamino-N-[2-(4-methoxy-piperidin-1-yl)-ethyl]-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-(3-Fluoro-phenylamino)-N-(2-piperidin-1-yl-ethyl)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-(4-Fluoro-phenylamino)-N-(2-piperidin-1-yl-ethyl)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-(2-Fluoro-phenylamino)-N-(2-piperidin-1-yl-ethyl)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 4-Ethylamino-2-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-pyrimidine-5-carboxylic acid methylamide
- 2-(Cyclopropylmethyl-amino)-N-methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- N-Methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-2-pyrrolidin-1-yl-nicotinamide
- N-Methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-2-[(tetrahydro-furan-2-ylmethyl)-amino]-nicotinamide

- 2-(2-Methoxy-ethylamino)-N-methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-(2-Hydroxy-ethylamino)-N-methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- N-Methyl-2-(pyridin-3-ylamino)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- N-Methyl-2-(pyridin-4-ylamino)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 4-Ethylamino-N-methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Ethylamino-N-methyl-6-[4-(3-pyridin-3-yl-propionylamino)-phenyl]-nicotinamide
- 2-Cyclopropylamino-N-(2-piperidin-1-yl-ethyl)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- N-Cyclopropyl-2-cyclopropylamino-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- N-Butyl-2-cyclopropylamino-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- N-Cyclopentyl-2-cyclopropylamino-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Cyclopropylamino-N-ethyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 3-Ethylamino-4'-(3-pyridin-3-ylmethyl-ureido)-biphenyl-4-carboxylic acid methylamide
- 2-Ethoxy-N-methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Ethylamino-N-pyridin-3-ylmethyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Ethylamino-N-pyridin-4-ylmethyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Ethylamino-N-pyridin-2-ylmethyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Ethylamino-N-pyridin-4-yl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Ethylamino-N-pyridin-3-yl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Ethylamino-N-(3-piperidin-1-yl-propyl)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Ethylamino-N-(2-pyridin-2-yl-ethyl)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Ethylamino-N-(1-pyridin-3-yl-ethyl)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Ethylamino-N-(2-pyridin-4-yl-ethyl)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Ethylamino-N-methyl-6-[4-((E)-3-pyridin-3-yl-acryloylamino)-phenyl]-nicotinamide
- N-(2-Diisopropylamino-ethyl)-2-ethylamino-6-[4-((E)-3-pyridin-3-yl-acryloylamino)-phenyl]-nicotinamide
- 2-Ethylamino-N-(2-piperidin-1-yl-ethyl)-6-[4-((E)-3-pyridin-3-yl-acryloylamino)-phenyl]-nicotinamide
- 2-Ethylamino-N-(4-piperidin-1-yl-butyl)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Ethylamino-N-pyridin-2-yl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Ethylamino-5-fluoro-N-methyl-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 2-Ethylamino-5-fluoro-N-(2-piperidin-1-yl-ethyl)-6-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-nicotinamide
- 4-Ethylamino-2-[4-(3-pyridin-3-ylmethyl-ureido)-phenyl]-pyrimidine-5-carboxylic acid (2-piperidin-1-yl-ethyl)-amide
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-ethylamino-N-(2-piperidin-1-yl-ethyl)-nicotinamide
- 2-Ethylamino-6-{4-[3-(2-fluoro-pyridin-3-ylmethyl)-ureido]-phenyl}-N-(2-piperidin-1-yl-ethyl)-nicotinamide
- 2-Ethylamino-6-{4-[3-(6-methyl-pyridin-3-ylmethyl)-ureido]-phenyl}-N-(2-piperidin-1-yl-ethyl)-nicotinamide
- 2-Ethylamino-N-(2-piperidin-1-yl-ethyl)-6-{4-[3-(2,5,6-trifluoro-pyridin-3-ylmethyl)-ureido]-phenyl}-nicotinamide
- 2-Ethylamino-6-{4-[3-(5-methyl-pyridin-3-ylmethyl)-ureido]-phenyl}-N-(2-piperidin-1-yl-ethyl)-nicotinamide
- 2-Ethylamino-6-{4-[3-(2-methoxy-pyridin-3-ylmethyl)-ureido]-phenyl}-N-(2-piperidin-1-yl-ethyl)-nicotinamide
- 6-{4-[3-(5-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-ethylamino-N-(2-piperidin-1-yl-ethyl)-nicotinamide
- 2-Ethylamino-6-{4-[3-(5-fluoro-pyridin-3-ylmethyl)-ureido]-phenyl}-N-(2-piperidin-1-yl-ethyl)-nicotinamide
- 2-Ethylamino-6-{4-[3-(6-fluoro-pyridin-3-ylmethyl)-ureido]-phenyl}-N-(2-piperidin-1-yl-ethyl)-nicotinamide
- 6-{4-[3-(6-Dimethylamino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-ethylamino-N-(2-piperidin-1-yl-ethyl)-nicotinamide
- 6-{4-[3-(6-Cyano-pyridin-3-ylmethyl)-ureido]-phenyl}-2-ethylamino-N-(2-piperidin-1-yl-ethyl)-nicotinamide
- 6-{4-[3-(6-tert-Butoxycarbonylamino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-ethylamino-nicotinic acid 2-piperidin-1-yl-ethyl ester
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-ethylamino-nicotinic acid 2-piperidin-1-yl-ethyl ester
- 2-Ethylamino-6-{4-[3-(6-methylamino-pyridin-3-ylmethyl)-ureido]-phenyl}-N-(2-piperidin-1-yl-ethyl)-nicotinamide
- 6-{4-[3-(6-Amino-5-methyl-pyridin-3-ylmethyl)-ureido]-phenyl}-2-ethylamino-N-(2-piperidin-1-yl-ethyl)-nicotinamide
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-ethylamino-N-(2-morpholin-4-yl-ethyl)-nicotinamide

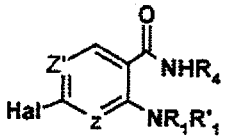
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-N-[2-(1,1-dioxo-1-thiomorpholin-4-yl)-ethyl]-2-ethylamino-nicotinamide
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-phenylamino-N-(2-piperidin-1-yl-ethyl)-nicotinamide
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-cyclopropylamino-N-(2-piperidin-1-yl-ethyl)-nicotinamide
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-ethylamino-N-(2-thiomorpholin-4-yl-ethyl)-nicotinamide
- 6-{4-[3-(6-Acetylamino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-ethylamino-N-(2-piperidin-1-yl-ethyl)-nicotinamide
- 6-{4-[(E)-3-(6-Amino-pyridin-3-yl)-acryloylamino]-phenyl}-2-ethylamino-N-(2-piperidin-1-yl-ethyl)-nicotinamide
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-ethylamino-N-[2-(1-oxo-1-thiomorpholin-4-yl)-ethyl]-nicotinamide
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-ethylamino-N-(2-isopropylamino-ethyl)-nicotinamide
- 4'-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-3-ethylamino-biphenyl-4-carboxylic acid (2-piperidin-1-yl-ethyl)-amide
- 4'-[3-(6-Amino-5-methyl-pyridin-3-ylmethyl)-ureido]-3-ethylamino-biphenyl-4-carboxylic acid (2-piperidin-1-yl-ethyl)-amide
- 2-Ethylamino-6-{4-[3-(6-isobutyrylamino-pyridin-3-ylmethyl)-ureido]-phenyl}-N-(2-piperidin-1-yl-ethyl)-nicotinamide
- 2-Ethylamino-6-{4-[3-(6-isopropylamino-pyridin-3-ylmethyl)-ureido]-phenyl}-N-(2-piperidin-1-yl-ethyl)-nicotinamide
- 2-Ethylamino-6-{4-[3-(6-ethylamino-pyridin-3-ylmethyl)-ureido]-phenyl}-N-(2-piperidin-1-yl-ethyl)-nicotinamide
- {5-[3-(4-{5-[2-(1,1-Dioxo-1-thiomorpholin-4-yl)-ethylcarbamoyl]-6-ethylamino-pyridin-2-yl}-phenyl)-ureidomethyl]-pyridin-2-yl}-carbamic acid tert-butyl ester
- {5-[3-(4-{5-[2-(cis-2,6-Dimethyl-morpholin-4-yl)-ethylcarbamoyl]-6-ethylamino-pyridin-2-yl}-phenyl)-ureidomethyl]-pyridin-2-yl}-carbamic acid tert-butyl ester
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-N-cyclopropyl-2-cyclopropylamino-nicotinamide
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-N-butyl-2-cyclopropylamino-nicotinamide
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-N-[2-(cis-2,6-dimethyl-morpholin-4-yl)-ethyl]-2-ethylamino-nicotinamide
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-ethylamino-N-(2-hydroxy-ethyl)-nicotinamide
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-azetidin-1-yl-N-(2-piperidin-1-yl-ethyl)-nicotinamide
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-N-cyclopentyl-2-cyclopropylamino-nicotinamide
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-cyclopropylamino-N-ethyl-nicotinamide
- 4'-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-3-cyclopropylamino-biphenyl-4-carboxylic acid (2-piperidin-1-yl-ethyl)-amide
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-ethylamino-N-(2-methoxy-ethyl)-nicotinamide
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-N-(2-azepan-1-yl-ethyl)-2-ethylamino-nicotinamide
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-ethylamino-N-(2-pyrrolidin-1-yl-ethyl)-nicotinamide
- 2-Ethylamino-6-{4-[3-(6-oxo-1,6-dihydro-pyridin-3-ylmethyl)-ureido]-phenyl}-N-(2-piperidin-1-yl-ethyl)-nicotinamide
- 6-{4-[3-(2-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-ethylamino-N-(2-piperidin-1-yl-ethyl)-nicotinamide
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-2-ethylamino-N-[2-(3-fluoro-pyrrolidin-1-yl)-ethyl]-nicotinamide
- 2-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-4-ethylamino-pyrimidine-5-carboxylic acid (2-piperidin-1-yl-ethyl)-amide
- 2-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-4-cyclopropylamino-pyrimidine-5-carboxylic acid (2-piperidin-1-yl-ethyl)-amide
- 6-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-N-(2-piperidin-1-yl-ethyl)-2-pyrrolidin-1-yl-nicotinamide
- 6'-{4-[3-(6-Amino-pyridin-3-ylmethyl)-ureido]-phenyl}-3,4,5,6-tetrahydro-2H-[1,2']bipyridinyl-3'-carboxylic acid (2-piperidin-1-yl-ethyl)-amide

in the base form or in the form of an addition salt with an acid or in the form of a hydrate or of a solvate.

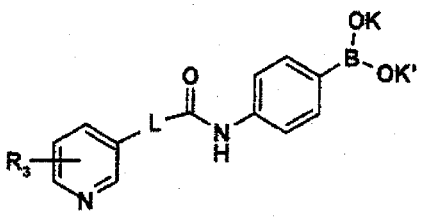
30. Process for the preparation of a compound of formula:



which consists in coupling, in the presence of a palladium, preferably in the (0) or (II) oxidation state, complex and optionally of a base, the compound of formula

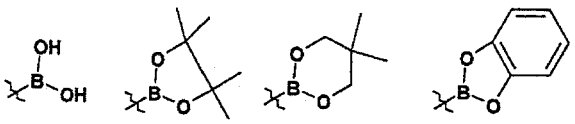


with the compound of formula

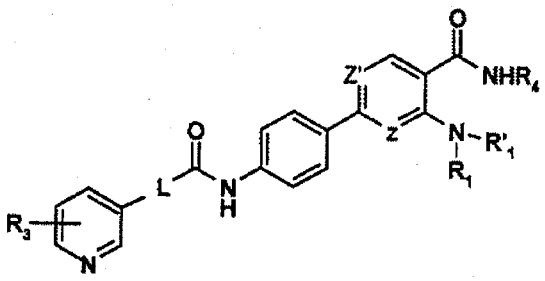


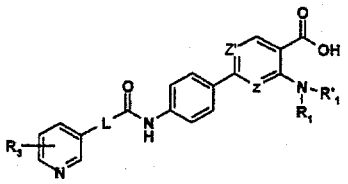
in which formulae R_1, R'_1, R_3, R_4, L, Z and Z' are as defined in one of Claims 1 to 29, Hal represents a halogen atom and K and K' represent a hydrogen atom or an alkyl or aryl group, optionally connected to one another in order to form, together with the boron atom and the two oxygen atoms, a 5- to 7-membered ring.

31. Process according to Claim 30, characterized in that use is made of one of the following -B(OK)(OK') groups:

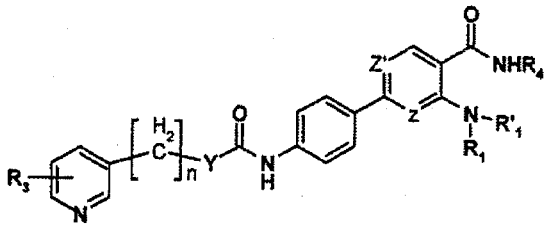


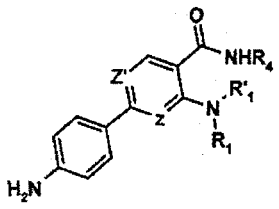
32. Process for the preparation of a compound of formula:

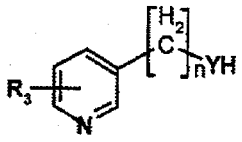


which consists in reacting a compound of formula  with R_4NH_2, advantageously in the presence of an acid activator, preferably BOP, in which formulae R_1, R'_1, R_3, R_4, L, Z and Z' are as defined in one of Claims 1 to 29.

33. Process for the preparation of a compound of formula:



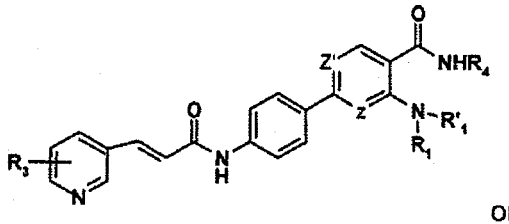
which consists in reacting a compound of formula 

with the compound P_4 of formula 

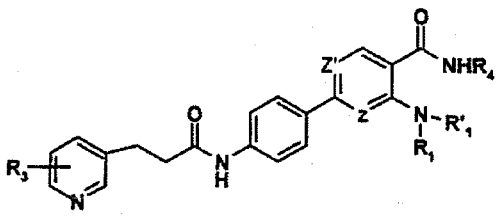
in the presence of an agent which makes it possible to introduce the "C=O" unit and optionally of a base, in which formulae R_1, R'_1, R_3, R_4, L, Z, Z' and n are as defined in one of Claims 1 to 29.

34. Process according to Claim 33, characterized in that the agent which makes it possible to introduce the "C=O" unit is phosgene, triphosgene or N,N'-di-succinimidyl carbonate.

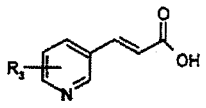
35. Process for the preparation of a compound of formula:



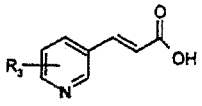
or



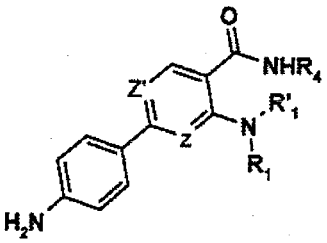
which consists in respectively reacting the compound of formula



or



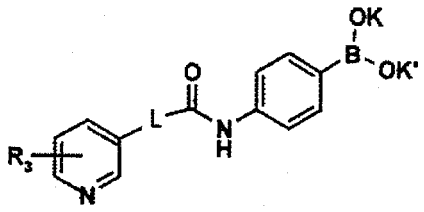
with the compound of formula



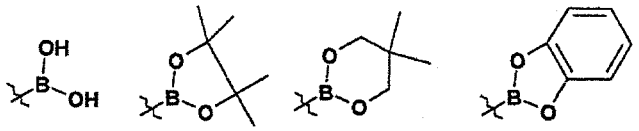
advantageously in the presence of an acid activator, preferably BOP, in which formulae R_1, R'_1, R_3, R_4, Z and Z' are as defined in one of Claims 1 to 29.

36. Process according to one of Claims 30 to 35, characterized in that, when R_3 and/or R_4 comprises a primary or secondary amine functional group, the latter is protected using a protective group PG, preferably BOC, which is subsequently released during a subsequent deprotection stage.

37. Compound of formula:



in which L represents a -CH=CH- or $-CH_2CH_2-$ or $-(CH_2)_n-Y-$ group in which the Y group (attached to the C=O) represents an oxygen atom or an -NH- group and n is an integer ranging from 1 to 4, R_3 is as defined in Claim 1, 2 or 27 and K and K' represent a hydrogen atom or an alkyl or aryl group, optionally connected to one another in order to form, together with the boron atom and the two oxygen atoms, a 5- to 7-membered ring.

38. Compound according to Claim 37, characterized in that -B(OK)(OK') represents one of the following groups: 

39. Medicament, characterized in that it comprises a compound according to one of Claims 1 to 29.

40. Pharmaceutical composition, characterized in that it comprises a compound according to one of Claims 1 to 29 and at least one pharmaceutically acceptable excipient.

41. Use of a compound according to one of Claims 1 to 29 in the manufacture of a medicament intended for the treatment or for the prevention of a cancer.