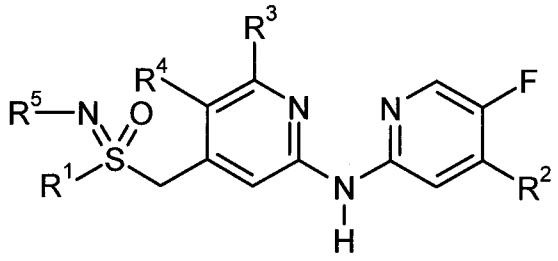
**Patent claims**

1. A compound of general formula (**I**)



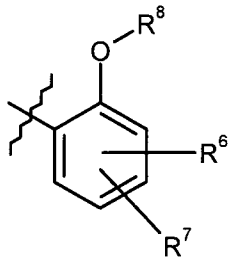
(I)

wherein

$R^1$ represents a $C_1$-$C_6$-alkyl group,

wherein said group is optionally substituted with one substituent, selected from the group of hydroxy, $C_1$-$C_3$-alkoxy, $-NH_2$, alkylamino-, dialkylamino-, or cyclic amines;

$R^2$ represents a group



$R^3$ represents a hydrogen atom, a fluoro atom or a chloro atom, or a methyl, methoxy, difluoromethyl or trifluoromethyl group;

$R^4$ represents a hydrogen atom or a bromo atom;

$R^5$ represents a group selected from a hydrogen atom, cyano, $-C(O)R^9$, $-C(O)OR^9$, $-C(O)NR^{10}R^{11}$;

$R^6$, $R^7$ represent, independently from each other, a group selected from a hydrogen atom, fluoro atom or chloro atom;

$R^8$ represents a $C_1$-$C_3$-alkyl group;

$R^9$ represents a $C_1$-$C_3$-alkyl group, a benzyl group, or trifluoromethyl;

$R^{10}$, $R^{11}$ represent, independently from each other, a group selected from hydrogen, $C_1$-$C_2$-alkyl-;

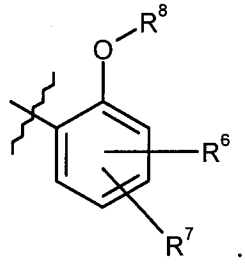
and the enantiomers, diastereomers, salts, solvates or salts of solvates thereof.

2. The compound of general formula (**I**) according to claim 1, wherein

$R^1$ represents a $C_1$-$C_3$-alkyl group,

wherein said group is optionally substituted with one substituent, selected from the group of hydroxy, $-NH_2$;

$R^2$ represents a group



;

$R^3$ represents a hydrogen atom, a fluoro atom or a chloro atom, or a methyl, methoxy, difluoromethyl or trifluoromethyl group;

$R^4$ represents a hydrogen atom or a bromo atom;

$R^5$ represents a group selected from a hydrogen atom, cyano, $-C(O)R^9$, $-C(O)OR^9$, $-C(O)NR^{10}R^{11}$;

$R^6$ represents a fluoro atom;

$R^7$ represents hydrogen;

$R^8$ represents a methyl or ethyl group;

$R^9$ represents a methyl, ethyl or trifluoromethyl group;

$R^{10}$, $R^{11}$ represent, independently from each other, a group selected from hydrogen, $C_1$-$C_2$-alkyl-;

and the enantiomers, diastereomers, salts, solvates or salts of solvates thereof.

3. The compound of general formula (**I**) according to claim 1, wherein

$R^1$ represents a methyl, ethyl, 2-hydroxyethyl or 2-aminoethyl group;

$R^2$ represents a 4-fluoro-2-methoxyphenyl or 4-fluoro-2-ethoxyphenyl group;

$R^3$ represents a hydrogen atom, a fluoro atom or a chloro atom, or a methyl, methoxy, difluoromethyl or trifluoromethyl group;

$R^4$ represents a hydrogen atom or a bromo atom;

$R^5$ represents a hydrogen atom, or a group selected from cyano, $-C(O)CH_3$, $-C(O)CF_3$, $-C(O)OC_2H$, $-C(O)N(H)C_2H_5$;

and the enantiomers, diastereomers, salts, solvates or salts of solvates thereof.

4. The compound according to claim 1, which is

- (*rac*)-5-Fluoro-4-(4-fluoro-2-methoxyphenyl)-*N*-{4-[(*S*-methylsulfonimidoyl)methyl]pyridin-2-yl}pyridin-2-amine;
- (+)-5-Fluoro-4-(4-fluoro-2-methoxyphenyl)-*N*-{4-[(*S*-methylsulfonimidoyl)methyl]pyridin-2-yl}pyridin-2-amine;
- (-)-5-Fluoro-4-(4-fluoro-2-methoxyphenyl)-*N*-{4-[(*S*-methylsulfonimidoyl)methyl]pyridin-2-yl}pyridin-2-amine;

- (*rac*)-5-Fluoro-4-(4-fluoro-2-methoxyphenyl)-*N*-{6-methyl-4-[(*S*-methylsulfonimidoyl)methyl]pyridin-2-yl}pyridin-2-amine;
- (*rac*)-5-Bromo-*N*-[5-fluoro-4-(4-fluoro-2-methoxyphenyl)pyridin-2-yl]-6-methyl-4-[(*S*-methylsulfonimidoyl)methyl]pyridin-2-amine;
- (*rac*)-5-Fluoro-4-(4-fluoro-2-methoxyphenyl)-*N*-{6-methoxy-4-[(*S*-methylsulfonimidoyl)methyl]pyridin-2-yl}pyridin-2-amine;
- (*rac*)-*N*-{6-Chloro-4-[(*S*-methylsulfonimidoyl)methyl]pyridin-2-yl}-5-fluoro-4-(4-fluoro-2-methoxyphenyl)pyridin-2-amine;
- (*rac*)-2-{*S*-[(2-{[5-Fluoro-4-(4-fluoro-2-methoxyphenyl)pyridin-2-yl]amino}pyridin-4-yl)methyl]sulfonimidoyl}ethanol;
- (*rac*)-*N*-(4-{[*S*-(2-Aminoethyl)sulfonimidoyl]methyl}pyridin-2-yl)-5-fluoro-4-(4-fluoro-2-methoxyphenyl)pyridin-2-amine;
- {[(2-{[5-Fluoro-4-(4-fluoro-2-methoxyphenyl)pyridin-2-yl]amino}pyridin-4-yl)methyl](methyl)oxido-$\lambda^6$-sulfanylidene}cyanamide;
- (*rac*)-Ethyl {[(2-{[5-fluoro-4-(4-fluoro-2-methoxyphenyl)pyridin-2-yl]amino}pyridin-4-yl)methyl](methyl)oxido-$\lambda^6$-sulfanylidene}carbamate;
- (*rac*)-1-Ethyl-3-{[(2-{[5-fluoro-4-(4-fluoro-2-methoxyphenyl)pyridin-2-yl]amino}pyridin-4-yl)methyl](methyl)oxido-$\lambda^6$-sulfanylidene}urea;
- (*rac*)-*N*-{[(2-{[5-Fluoro-4-(4-fluoro-2-methoxyphenyl)pyridin-2-yl]amino}pyridin-4-yl)methyl](methyl)oxido-$\lambda^6$-sulfanylidene}acetamide;
- 5-Fluoro-4-(4-fluoro-2-methoxyphenyl)-*N*-{4-[(*S*-methylsulfonimidoyl)methyl]pyridin-2-yl}pyridin-2-amine hydrochloride; enantiomer 2;
- (*rac*)-Ethyl {[(2-{[5-fluoro-4-(4-fluoro-2-methoxyphenyl)pyridin-2-yl]amino}-6-methoxypyridin-4-yl)methyl](methyl)oxido-$\lambda^6$-sulfanylidene}carbamate;
- 5-Fluoro-4-(4-fluoro-2-methoxyphenyl)-*N*-{4-[(*S*-methylsulfonimidoyl)methyl]pyridin-2-yl}pyridin-2-amine hydrochloride; enantiomer 1;
- (*rac*)-5-Fluoro-4-(4-fluoro-2-methoxyphenyl)-*N*-{6-fluoro-4-[(*S*-methylsulfonimidoyl)methyl]pyridin-2-yl}pyridin-2-amine;
- (*rac*)-2,2,2-Trifluoro-*N*-{[(2-fluoro-6-{[5-fluoro-4-(4-fluoro-2-methoxyphenyl)pyridin-2-yl]amino}pyridin-4-yl)methyl](methyl)oxido-$\lambda^6$-sulfanylidene}acetamide;
- (+)-5-Fluoro-4-(4-fluoro-2-methoxyphenyl)-*N*-{6-fluoro-4-[(*S*-methylsulfonimidoyl)methyl]pyridin-2-yl}pyridin-2-amine;
- (-)-5-Fluoro-4-(4-fluoro-2-methoxyphenyl)-*N*-{6-fluoro-4-[(*S*-methylsulfonimidoyl)methyl]pyridin-2-yl}pyridin-2-amine;
- (*rac*)-5-Fluoro-4-(4-fluoro-2-methoxyphenyl)-*N*-{4-[(*S*-methylsulfonimidoyl)methyl]-6-(trifluoromethyl)pyridin-2-yl}pyridin-2-amine;

- (+)-5-Fluoro-4-(4-fluoro-2-methoxyphenyl)-*N*-{4-[(*S*-methylsulfonimidoyl)methyl]-6-(trifluoromethyl)pyridin-2-yl}pyridin-2-amine;
- (-)-5-Fluoro-4-(4-fluoro-2-methoxyphenyl)-*N*-{4-[(*S*-methylsulfonimidoyl)methyl]-6-(trifluoromethyl)pyridin-2-yl}pyridin-2-amine;
- (+)-2,2,2-Trifluoro-*N*-[{[2-{[5-fluoro-4-(4-fluoro-2-methoxyphenyl)pyridin-2-yl]amino}-6-(trifluoromethyl)-pyridin-4-yl]methyl}(methyl)oxido-$\lambda^6$-sulfanylidene]acetamide;
- (-)-2,2,2-Trifluoro-*N*-[{[2-{[5-fluoro-4-(4-fluoro-2-methoxyphenyl)pyridin-2-yl]amino}-6-(trifluoromethyl)-pyridin-4-yl]methyl}(methyl)oxido-$\lambda^6$-sulfanylidene]acetamide;
- (*rac*)-4-(2-Ethoxy-4-fluorophenyl)-5-fluoro-*N*-{6-fluoro-4-[(*S*-methylsulfonimidoyl)methyl]pyridin-2-yl}pyridin-2-amine;
- (*rac*)-*N*-{[(2-{[4-(2-Ethoxy-4-fluoro-phenyl)-5-fluoropyridin-2-yl]amino}-6-fluoropyridin-4-yl)methyl]-(methyl)oxido-$\lambda^6$-sulfanylidene}-2,2,2-trifluoroacetamide;
- (+)-4-(2-Ethoxy-4-fluorophenyl)-5-fluoro-*N*-{6-fluoro-4-[(*S*-methylsulfonimidoyl)methyl]pyridin-2-yl}pyridin-2-amine;
- (-)-4-(2-Ethoxy-4-fluorophenyl)-5-fluoro-*N*-{6-fluoro-4-[(*S*-methylsulfonimidoyl)methyl]pyridin-2-yl}pyridin-2-amine;
- (*rac*)-*N*-{4-[(*S*-Ethylsulfonimidoyl)-methyl]pyridin-2-yl}-5-fluoro-4-(4-fluoro-2-methoxyphenyl)pyridin-2-amine;
- (*rac*)-*N*-{6-(Difluoromethyl)-4-[(*S*-methylsulfonimidoyl)methyl]pyridin-2-yl}-5-fluoro-4-(4-fluoro-2-methoxyphenyl)pyridin-2-amine;
- (+)-5-Fluoro-4-(4-fluoro-2-methoxyphenyl)-*N*-{6-methyl-4-[(*S*-methylsulfonimidoyl)methyl]pyridin-2-yl}pyridin-2-amine;
- (-)-5-Fluoro-4-(4-fluoro-2-methoxyphenyl)-*N*-{6-methyl-4-[(*S*-methylsulfonimidoyl)methyl]pyridin-2-yl}pyridin-2-amine,

and the enantiomers, diastereomers, salts, solvates or salts of solvates thereof.

5. A compound of general formula (**I**) according to any one of claims 1 to 4 or an enantiomer, diastereomer, salt, solvate, or salt of the solvate thereof, for use in the treatment and/or prophylaxis of hyper-proliferative disorders, virally induced infectious diseases and/or of cardiovascular diseases.

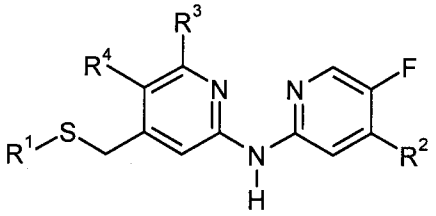
6. A compound of general formula (**I**) according to any one of claims 1 to 4 or an enantiomer, diastereomer, salt, solvate, or salt of the solvate thereof, for use in the treatment and/or prophylaxis of lung carcinomas, prostate carcinomas, cervical carcinomas, colorectal carcinomas, melanomas, ovarian carcinomas or leukemias.

7. A pharmaceutical combination comprising a compound of general formula (**I**) according to any one of claims 1 to 4 or an enantiomer, diastereomer, salt, solvate, or salt of the solvate thereof, in combination with at least one or more further active ingredients.

8. A pharmaceutical composition comprising a compound of general formula (**I**) according to any one of claims 1 to 4 or an enantiomer, diastereomer, salt, solvate, or salt of the solvate thereof, in combination with an inert, nontoxic, pharmaceutically suitable adjuvant.
9. The pharmaceutical combination according to claim 7 for use in the treatment and/or prophylaxis of hyper-proliferative disorders, virally induced infectious diseases and/or of cardiovascular diseases.

10. The pharmaceutical composition according to claim 8 for use in the treatment and/or prophylaxis of hyper-proliferative disorders, virally induced infectious diseases and/or of cardiovascular diseases.

11. A compound of general formula (**5**)

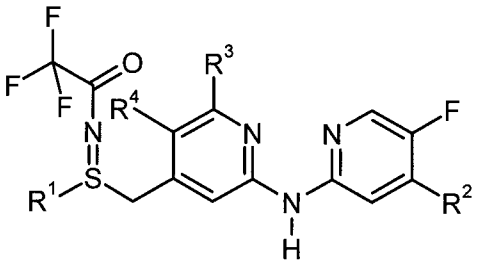


**5**

wherein $R^1$, $R^2$, $R^3$ and $R^4$ are as defined according to any one of claims 1 to 3 for the compounds of general formula (**I**),

or a salt, solvate, or salt of solvate thereof.

12. A compound of general formula (**6**)

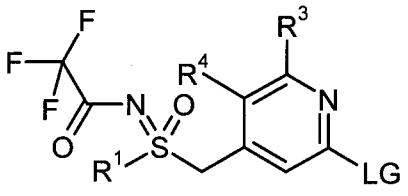


**6**

wherein $R^1$, $R^2$, $R^3$ and $R^4$ are as defined according to any one of claims 1 to 3 for the compounds of general formula (**I**),

or an enantiomer, diastereomer, salt, solvate, or salt of solvate thereof.

13. A compound of general formula (**14**)

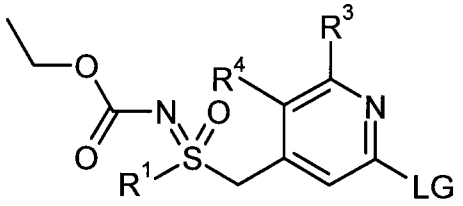


**14**

wherein $R^1$, $R^3$ and $R^4$ are as defined according to any one of claims 1 to 3 for the compounds of general formula (**I**), and wherein LG stands for a leaving group,

or an enantiomer, diastereomer, salt, solvate, or salt of solvate thereof.

14. A compound of general formula (**16**)

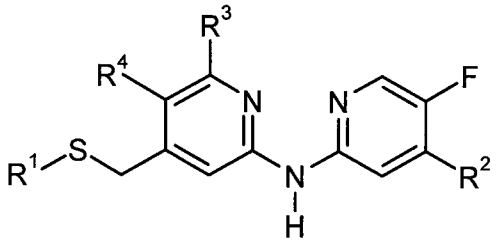


**16**

wherein $R^1$, $R^3$ and $R^4$ are as defined according to any one of claims 1 to 3 for the compounds of general formula (**I**), and wherein LG stands for a leaving group,

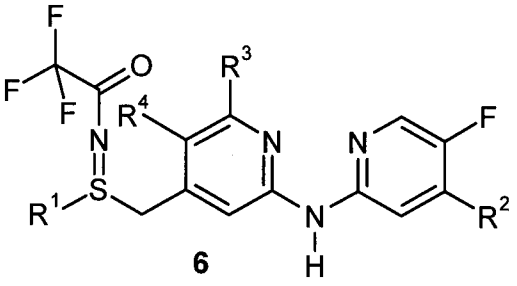
or an enantiomer, diastereomer, salt, solvate, or salt of solvate thereof.

15. A method for the preparation of a compound of formula (**6**), in which $R^1$, $R^2$, $R^3$, and $R^4$ are as defined for the compound of the formula (**I**) according to any one of claims 1 to 3, in which method a compound of formula (**5**), in which $R^1$, $R^2$, $R^3$, and $R^4$ are as defined for the compound of the formula (**I**) according to any one of claims 1 to 3,



**5**

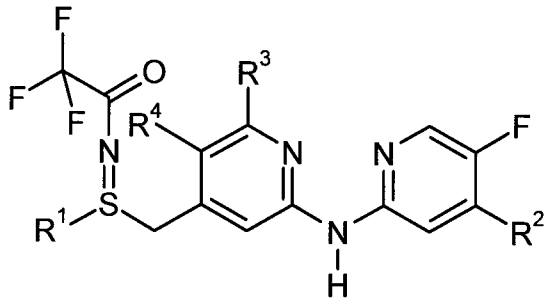
is reacted with trifluoroacetamide and 1,3-dibromo-5,5-dimethylhydantoin in the presence of an alkali salt of *tert*-butanol in a cyclic ether as a solvent, to give a compound of the formula (**6**),



**6**

and in which method the resulting compound is optionally, if appropriate, converted with the corresponding (i) solvents and/or (ii) bases or acids to the solvates, salts and/or solvates of the salts thereof.

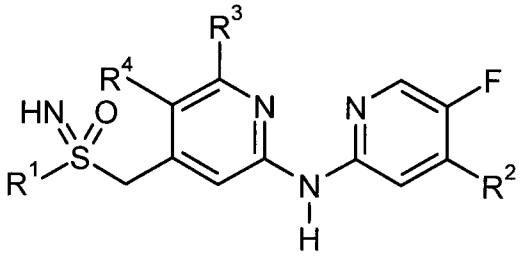
16. A method for the preparation of a compound of formula (**I**), according to any one of the claims 1 to 4, in which method a compound of formula (**6**), in which $R^1$, $R^2$, $R^3$, and $R^4$ are as defined for the compound of the formula (**I**) according to any one of claims 1 to 3,



**6**

is oxidised with an alkali salt of permanganic acid in an aliphatic ketone of the formula $C_1$-$C_2$-C(O)-$C_1$-$C_2$-alkyl as a solvent,

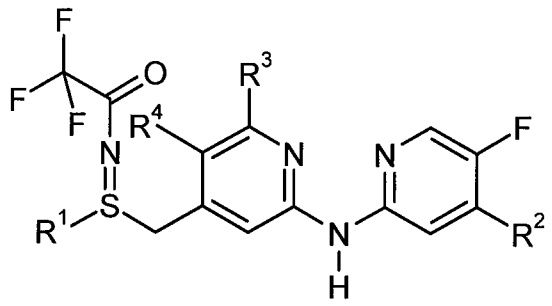
followed, if the trifluoroacetyl group present in the compound of formula (**6**) has not been cleaved off during abovementioned oxidation process, by the removal of said trifluoroacetyl group by treatment of the resulting intermediate with a suitable base in an alcoholic solvent, to give a compound of the formula (**I**), in which $R^5$ is hydrogen,



**(I); $R^5$ = H**

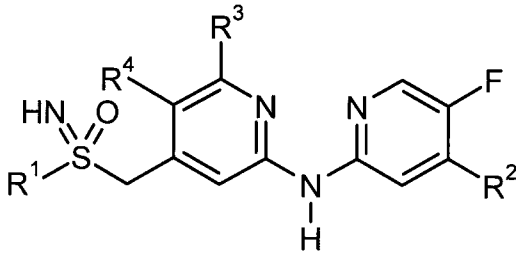
and in which method the resulting compound is optionally, if appropriate, converted with the corresponding (i) solvents and/or (ii) bases or acids to the solvates, salts and/or solvates of the salts thereof.

17. A method for the preparation of a compound of formula (**I**), according to any one of the claims 1 to 4, in which method a compound of formula (**6**), in which $R^1$, $R^2$, $R^3$, and $R^4$ are as defined for the compound of the formula (**I**) according to any one of claims 1 to 3,



**6**

is oxidised with a peroxomonosulfate based oxidant in a solvent selected from an aliphatic alcohol of the formula $C_1$-$C_3$-alkyl-OH, water, and *N*,*N*-dimethylformamide, or a mixture thereof, to give a compound of the formula (**I**), in which $R^5$ is hydrogen,



**(I); $R^5$ = H**

and in which method the resulting compound is optionally, if appropriate, converted with the corresponding (i) solvents and/or (ii) bases or acids to the solvates, salts and/or solvates of the salts thereof.

18. Use of a compound of the formula (**I**) according to any one of claims 1 to 4, or an enantiomer, diastereomer, salt, solvate, or salt of the solvate thereof, in the manufacture of a medicament for the treatment and/or prophylaxis of a disorder relating to or mediated by CDK9 activity, wherein the disorder is a hyper-proliferative disorder, a virally induced infectious disease, or a cardiovascular disease.

19. Use according to claim 18, wherein the disorder is lung carcinoma, prostate carcinoma, cervical carcinoma, colorectal carcinoma, melanoma, ovarian carcinoma or leukemia.