

hydrocarbon residue, unless otherwise indicated.

The term 'cycloalkyl' as used herein refers to a cyclic alkyl, e.g., cyclopropyl, unless otherwise indicated.

The term 'aryl' as used herein refers to a monocyclic or bicyclic aromatic group, e.g., phenyl and naphthyl, unless otherwise indicated.

The term 'heterocycloalkyl' as used herein refers to a cyclic alkyl, e.g., monocyclic or bicyclic alkyl, which contains one or more heteroatoms, preferably one to four heteroatoms, selected from O, N and S, unless otherwise indicated. Examples of monoheterocycloalkyl include piperidinyl, morpholinyl, thiamorpholinyl, pyrrolidinyl, imidazolidinyl, tetrahydrofuranyl, piperazinyl and similar groups thereof, but not limited thereto.

The term 'heteroaryl' as used herein refers to an aromatic group, e.g., monocyclic or bicyclic group, which contains one to four heteroatoms selected from O, N and S, and one or more of ring member carbon ~~ismay be~~ substituted with C=O, unless otherwise indicated. Examples of monocyclic heteroaryl include thiazolyl, oxazolyl, thiophenyl, furanyl, pyrrolyl, imidazolyl, isooxazolyl, pyrazolyl, triazolyl, thiadiazolyl, tetrazolyl, oxadiazolyl, pyridinyl, pyridazinyl, pyrimidinyl, pyrazinyl and similar groups thereof, but not limited thereto. Examples of bicyclic heteroaryl include indolyl, benzothiophenyl, benzofuranyl, benzimidazolyl, benzoxazolyl, benzisoxazolyl, benzthiazolyl, benzthiadiazolyl, benztriazolyl, quinolinyl, isoquinolinyl, furinyl, furopyridinyl, oxochromene, dioxoisindoline and similar groups thereof, but not limited thereto.

The compound of the present invention may also form a pharmaceutically acceptable salt. Such salt may be a pharmaceutically acceptable nontoxic acid addition salt containing anion, but not limited thereto. For example, the salt may include acid addition salts formed by inorganic acids such as hydrochloric acid, sulfuric acid, nitric acid, phosphoric acid, hydrobromic acid, hydriodic acid, and others; organic carbonic acids such as tartaric acid, formic acid, citric acid, acetic acid, trichloroacetic acid, trifluoroacetic acid, gluconic acid, benzoic acid, lactic acid, fumaric acid, maleic acid, and others; and sulfonic acids such as methanesulfonic acid, benzenesulfonic acid, p-toluenesulfonic acid, naphthalensulfonic acid, and others. Among them, acid addition salts formed by sulfuric

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The term 'heteroaryl' as used herein refers to an aromatic group, e.g., monocyclic or bicyclic group, which contains one to four heteroatoms selected from O, N and S, and one or more of ring member carbon may be substituted with C=O, unless otherwise indicated. Examples of monocyclic heteroaryl include thiazolyl, oxazolyl, thiophenyl, furanyl, pyrrolyl, imidazolyl, isooxazolyl, pyrazolyl, triazolyl, thiadiazolyl, tetrazolyl, oxadiazolyl, pyridinyl, pyridazinyl, pyrimidinyl, pyrazinyl and similar groups thereof, but not limited thereto. Examples of bicyclic heteroaryl include indolyl, benzothiophenyl, benzofuranyl, benzimidazolyl, benzoxazolyl, benzisoxazolyl, benzthiazolyl, benzthiadiazolyl, benztriazolyl, quinolinyl, isoquinolinyl, furinyl, furopyridinyl, oxochromene, dioxoisindoline and similar groups thereof, but not limited thereto.

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yl)thieno[3,2-d]pyrimidine-7-carboxamide;

122) N-(1-((1H-indazol-5-yl)amino)-6-methylisoquinolin-5-yl)-4-aminothieno[3,2-d]pyrimidine-7-carboxamide;

123) 4-amino-N-(1-((3-chloro-2,4-difluorophenyl)amino)-6-methylisoquinolin-5-yl)thieno[3,2-d]pyrimidine-7-carboxamide;

124) 4-amino-N-(1-((3-(dimethylamino)propyl)amino)-6-methylisoquinolin-5-yl)thieno[3,2-d]pyrimidine-7-carboxamide; and

125) 4-amino-N-(6-methyl-1-(piperidin-1-yl)isoquinolin-5-yl)thieno[3,2-d]pyrimidine-7-carboxamide.

7. A pharmaceutical composition comprising the compound of any one of claims 1 to 6 as an active ingredient.

~~8. The pharmaceutical composition of claim 7, wherein the pharmaceutical composition is used for preventing or treating a disease caused by abnormal activation of a protein kinase.~~

~~9. The pharmaceutical composition of claim 8, wherein said protein kinase is selected from the group consisting of: ALK, AMPK, Aurora A, Aurora B, Aurora C, Axl, Blk, Bmx, BTK, CaMK, CDK2/cyclinE, CDK5/p25, CHK1, CK2, c-RAF, DDR1, DDR2, DMPK, EGFR1, Her2, Her4, EphA1, EphB1, FAK, FGFR2, FGFR3, FGFR4, Flt 1, Flt 3, Flt 4, Fms (CSF 1), Fyn, GSK3beta, HIPK1, IKKbeta, IGFR 1R, IR, Itk, JAK2, JAK3, KDR, Kit, Lek, Lyn, MAPK1, MAPKAP K2, MEK1, Met, MKK6, MLCK, NEK2, p70S6K, PAK2, PDGFR alpha, PDGFR beta, PDK1, Pim 1, PKA, PKBalpha, PKCalpha, Plk1, Ret, ROCK I, Rsk1, SAPK2a, SGK, Src, Syk, Tie 2, Tec, Trk and ZAP 70.~~

~~10. The pharmaceutical composition of claim 8, wherein said disease is selected from the group consisting of: gastric cancer, lung cancer, liver cancer, colorectal cancer, small intestine cancer, pancreatic cancer, brain cancer, bone cancer, melanoma, breast~~

~~cancer, sclerosing adenosis, uterine cancer, cervical cancer, head and neck cancer, esophagus cancer, thyroid cancer, parathyroid cancer, renal cancer, sarcoma, prostate cancer, urethral cancer, bladder cancer, blood cancer, lymphoma, fibroadenoma, inflammation, diabetes, obesity, psoriasis, rheumatoid arthritis, hemangioma, acute or chronic kidney disease, coronary restenosis, autoimmune diseases, asthma, neurodegenerative diseases, acute infection or ocular diseases caused by angiogenesis.~~

1418. The pharmaceutical composition of claim 7, wherein the pharmaceutical composition further comprises a drug selected from the group consisting of cell signal transduction inhibitors, mitosis inhibitors, alkylating agents, antimetabolites, antibiotics, growth factor inhibitors, cell cycle inhibitors, topoisomerase inhibitors, biological reaction modifiers, antihormonal agents, antiandrogen, cell differentiation/proliferation/survival inhibitors, apoptosis inhibitors, inflammation inhibitors and P-glycoprotein inhibitors.

1429. A pharmaceutical formulation comprising the pharmaceutical composition of claim 7.

14310. The pharmaceutical formulation of claim 1429, wherein said formulation is an oral formulation.

14411. The pharmaceutical formulation of claim 1429, wherein said formulation is in the form of a tablet, a pill, powder, a capsule, syrup, an emulsion or a microemulsion.

14512. The pharmaceutical formulation of claim 1429, which is used in combination or developed into a combined formulation with a drug selected from the group consisting of cell signal transduction inhibitors, mitosis inhibitors, alkylating agents, antimetabolites, antibiotics, growth factor inhibitors, cell cycle inhibitors, topoisomerase inhibitors, biological reaction modifiers, antihormonal agents, antiandrogen, cell differentiation/proliferation/survival inhibitors, apoptosis inhibitors, inflammation inhibitors and P-glycoprotein inhibitors.

1613. ~~A~~The use of the compound of claim 1 ~~for~~in the manufacture of a medicament for preventing or treating a disease caused by abnormal activation of a protein kinaseselected from the group consisting of gastric cancer, lung cancer, liver cancer, colorectal cancer, small intestine cancer, pancreatic cancer, brain cancer, bone cancer, melanoma, breast cancer, sclerosing adenosis, uterine cancer, cervical cancer, head and neck cancer, esophagus cancer, thyroid cancer, parathyroid cancer, renal cancer, sarcoma, prostate cancer, urethral cancer, bladder cancer, blood cancer, lymphoma and fibroadenoma.

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125) 4-amino-N-(6-methyl-1-(piperidin-1-yl)isoquinolin-5-yl)thieno[3,2-d]pyrimidine-7-carboxamide.

7. A pharmaceutical composition comprising the compound of any one of claims 1 to 6 as an active ingredient.
8. The pharmaceutical composition of claim 7, wherein the pharmaceutical composition further comprises a drug selected from the group consisting of cell signal transduction inhibitors, mitosis inhibitors, alkylating agents, antimetabolites, antibiotics, growth factor inhibitors, cell cycle inhibitors, topoisomerase inhibitors, biological reaction modifiers, antihormonal agents, antiandrogen, cell differentiation/proliferation/survival inhibitors, apoptosis inhibitors, inflammation inhibitors and P-glycoprotein inhibitors.
9. A pharmaceutical formulation comprising the pharmaceutical composition of claim 7.
10. The pharmaceutical formulation of claim 9, wherein said formulation is an oral formulation.
11. The pharmaceutical formulation of claim 9, wherein said formulation is in the form of a tablet, a pill, powder, a capsule, syrup, an emulsion or a microemulsion.
12. The pharmaceutical formulation of claim 9, which is used in combination or

developed into a combined formulation with a drug selected from the group consisting of cell signal transduction inhibitors, mitosis inhibitors, alkylating agents, antimetabolites, antibiotics, growth factor inhibitors, cell cycle inhibitors, topoisomerase inhibitors, biological reaction modifiers, antihormonal agents, antiandrogen, cell differentiation/proliferation/survival inhibitors, apoptosis inhibitors, inflammation inhibitors and P-glycoprotein inhibitors.

13. The use of the compound of claim 1 in the manufacture of a medicament for preventing or treating a disease selected from the group consisting of gastric cancer, lung cancer, liver cancer, colorectal cancer, small intestine cancer, pancreatic cancer, brain cancer, bone cancer, melanoma, breast cancer, sclerosing adenosis, uterine cancer, cervical cancer, head and neck cancer, esophagus cancer, thyroid cancer, parathyroid cancer, renal cancer, sarcoma, prostate cancer, urethral cancer, bladder cancer, blood cancer, lymphoma and fibroadenoma.