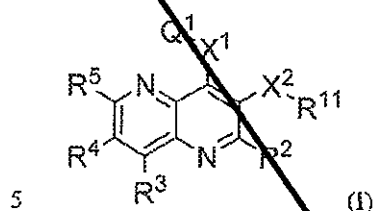


CLAIMS

1. A compound represented by formula (I) or a pharmaceutically acceptable salt thereof;



wherein,

X¹ is selected from the group consisting of a direct bond, -NR¹²-, -O-, and -S-;

R¹² is selected from the group consisting of a hydrogen atom, C₁-C₆ alkyl and C₃-C₁₀ cycloalkyl;

- 10 Q¹ is selected from the group consisting of C₃-C₁₀ cycloalkyl, C₆-C₁₀ aryl, 5- to 10-membered heteroaryl, 3- to 10-membered non-aromatic heterocyclyl, (C₃-C₁₀ cycloalkyl)-C₁-C₆ alkyl, (C₆-C₁₀ aryl)-C₁-C₆ alkyl, (5- to 10-membered heteroaryl)-C₁-C₆ alkyl, and (3- to 10-membered non-aromatic heterocyclyl)-C₁-C₆ alkyl; wherein Q¹ is optionally substituted with one or more substituents independently selected from A¹;

- 15 X² is selected from the group consisting of -CO-, -S-, -SO-, and -SO₂-;

R¹¹ is selected from the group consisting of C₁-C₆ alkyl, C₃-C₁₀ cycloalkyl, C₆-C₁₀ aryl, 5- to 10-membered heteroaryl, and 3- to 10-membered non-aromatic heterocyclyl; wherein R¹¹ is optionally substituted with one or more substituents independently selected from A²;

- 20 R⁵ is selected from the group consisting of a halogen atom, C₃-C₁₀ cycloalkyl, C₆-C₁₀ aryl, 5- to 10-membered heteroaryl, and 3- to 10-membered non-aromatic heterocyclyl; wherein the cycloalkyl, aryl, heteroaryl, and heterocyclyl are optionally substituted with one or more substituents independently selected from A³;

R², R³, and R⁴ are independently selected from the group consisting of a hydrogen

atom, a halogen atom, and C₁-C₅ alkyl;

A¹ and A³ are independently selected from the group consisting of a halogen atom, cyano, -COOR¹³, -CONR¹⁴R¹⁵, formyl, (C₁-C₆ alkyl)carbonyl, C₁-C₆ alkyl, C₂-C₆ alkenyl, C₂-C₆ alkynyl, nitro, -NR¹⁶R¹⁷, -OR¹⁸, -S(O)_nR¹⁹, C₃-C₁₀ cycloalkyl, C₆-C₁₀ aryl, 5- to 10-membered heteroaryl, and 3- to 10-membered non-aromatic heterocyclyl; wherein the alkylcarbonyl, alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, and heterocyclyl are optionally substituted with one or more substituents independently selected from A⁴;

A² is independently selected from the group consisting of a halogen atom, cyano, C₃-C₁₀ cycloalkyl, carboxy, formyloxy, (C₁-C₆ alkyl)carbonyloxy, hydroxy, C₁-C₆ alkoxy, amino, C₁-C₆ alkylamino, and di(C₁-C₆ alkyl)amino;

R¹³, R¹⁴, and R¹⁵ are independently selected from the group consisting of a hydrogen atom, C₁-C₆ alkyl, C₂-C₆ alkenyl, C₂-C₆ alkynyl, C₃-C₁₀ cycloalkyl, C₆-C₁₀ aryl, 5- to 10-membered heteroaryl, and 3- to 10-membered non-aromatic heterocyclyl; wherein the alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, and heterocyclyl are optionally substituted with one or more substituents independently selected from A⁴; or R¹⁴ and R¹⁵ together with the nitrogen atom to which they are attached form 3- to 10-membered nitrogen-containing heterocyclyl, which is optionally substituted with one or more substituents independently selected from A⁴;

R¹⁶ and R¹⁸ are independently selected from the group consisting of a hydrogen atom, C₁-C₆ alkyl, C₂-C₆ alkenyl, C₂-C₆ alkynyl, C₃-C₁₀ cycloalkyl, C₆-C₁₀ aryl, 5- to 10-membered heteroaryl, 3- to 10-membered non-aromatic heterocyclyl, and -COR²⁰; wherein the alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, and heterocyclyl are optionally substituted with one or more substituents independently selected from A⁴; R¹⁷ is selected from the group consisting of a hydrogen atom, and C₁-C₆ alkyl that is optionally substituted with one or more substituents independently selected from A⁴; or R¹⁶ and R¹⁷ together with the nitrogen atom to which they are attached form 3- to 10-membered nitrogen-containing heterocyclyl, which is optionally substituted with one or more substituents independently selected from A⁴;

R^{19} is selected from the group consisting of C_1 - C_6 alkyl, C_3 - C_{10} cycloalkyl, C_6 - C_{10} aryl, and 5- to 10-membered heteroaryl; wherein the alkyl, cycloalkyl, aryl, and heteroaryl are optionally substituted with one or more substituents independently selected from A^4 ;

R^{20} is selected from the group consisting of a hydrogen atom, $-NR^{14}R^{15}$, C_1 - C_5 alkyl, C_2 - C_6 alkenyl, C_2 - C_6 alkynyl, C_3 - C_{10} cycloalkyl, C_6 - C_{10} aryl, 5- to 10-membered heteroaryl, and 3- to 10-membered non-aromatic heterocyclyl; wherein the alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, and heterocyclyl are optionally substituted with one or more substituents independently selected from A^4 ;

n is an integer independently selected from 0 to 2;

A^4 is independently selected from consisting of a halogen atom, cyano, $-COOR^{21}$, $-CONR^{22}R^{23}$, formyl, $(C_1$ - C_6 alkyl)carbonyl, C_1 - C_6 alkyl, C_2 - C_6 alkenyl, C_2 - C_6 alkynyl, nitro, $-NR^{24}R^{25}$, $-OR^{26}$, $-S(O)_nR^{27}$, C_3 - C_{10} cycloalkyl, C_6 - C_{10} aryl, 5- to 10-membered heteroaryl, and 3- to 10-membered non-aromatic heterocyclyl; wherein the alkylcarbonyl, alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, and heterocyclyl are optionally substituted with one or more substituents independently selected from A^5 ;

R^{21} , R^{22} , and R^{23} are independently selected from the group consisting of a hydrogen atom, C_1 - C_6 alkyl, C_2 - C_6 alkenyl, C_2 - C_6 alkynyl, C_3 - C_{10} cycloalkyl, C_6 - C_{10} aryl, 5- to 10-membered heteroaryl, and 3- to 10-membered non-aromatic heterocyclyl; wherein the alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, and heterocyclyl are optionally substituted with one or more substituents independently selected from A^5 ; or R^{22} and R^{23} together with the nitrogen atom to which they are attached form 3- to 10-membered nitrogen-containing heterocyclyl, which is optionally substituted with one or more substituents independently selected from A^5 ;

R^{24} and R^{26} are independently selected from the group consisting of a hydrogen atom, C_1 - C_6 alkyl, C_2 - C_6 alkenyl, C_2 - C_6 alkynyl, C_3 - C_{10} cycloalkyl, C_6 - C_{10} aryl, 5- to 10-membered heteroaryl, 3- to 10-membered non-aromatic heterocyclyl, and $-COR^{28}$; wherein the alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, and heterocyclyl are optionally substituted with one or more substituents independently selected from A^5 ; R^{25} is selected

from the group consisting of a hydrogen atom, and C₁-C₆ alkyl that is optionally substituted with one or more substituents independently selected from A⁵; or R²⁴ and R²⁵ together with the nitrogen atom to which they are attached form 3- to 10-membered nitrogen-containing heterocyclyl, which is optionally substituted with one or more substituents independently selected from A⁵;

R²⁷ is selected from the group consisting of C₁-C₆ alkyl, C₃-C₁₀ cycloalkyl, C₆-C₁₀ aryl, and 5- to 10-membered heteroaryl; wherein the alkyl, cycloalkyl, aryl, and heteroaryl are optionally substituted with one or more substituents independently selected from A⁵;

R²⁸ is independently selected from the group consisting of a hydrogen atom, -NR²²R²³, C₁-C₆ alkyl, C₂-C₆ alkenyl, C₂-C₆ alkynyl, C₃-C₁₀ cycloalkyl, C₆-C₁₀ aryl, 5- to 10-membered heteroaryl, and 3- to 10-membered non-aromatic heterocyclyl; wherein the alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, and heterocyclyl are optionally substituted with one or more substituents independently selected from A⁵;

A⁵ is independently selected from consisting of a halogen atom, cyano, -COOR³¹, -CONR³²R³³, formyl, (C₁-C₆ alkyl)carbonyl, C₁-C₆ alkyl, C₂-C₆ alkenyl, C₂-C₆ alkynyl, nitro, -NR³⁴R³⁵, -OR³⁶, -S(O)_nR³⁷, C₃-C₁₀ cycloalkyl, C₆-C₁₀ aryl, 5- to 10-membered heteroaryl, and 3- to 10-membered non-aromatic heterocyclyl; wherein the alkylcarbonyl, alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, and heterocyclyl are optionally substituted with one or more substituents independently selected from A⁶;

R³¹, R³², and R³³ are independently selected from the group consisting of a hydrogen atom, C₁-C₆ alkyl, C₂-C₆ alkenyl, C₂-C₆ alkynyl, C₃-C₁₀ cycloalkyl, C₆-C₁₀ aryl, 5- to 10-membered heteroaryl, and 3- to 10-membered non-aromatic heterocyclyl; wherein the alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, and heterocyclyl are optionally substituted with one or more substituents independently selected from A⁶; or R³² and R³³ together with the nitrogen atom to which they are attached form 3- to 10-membered nitrogen-containing heterocyclyl, which is optionally substituted with one or more substituents independently selected from A⁶;

R³⁴ and R³⁶ are independently selected from the group consisting of a hydrogen

atom, C₁-C₆ alkyl, C₂-C₆ alkenyl, C₂-C₆ alkynyl, C₃-C₁₀ cycloalkyl, C₆-C₁₀ aryl, 5- to 10-membered heteroaryl, 3- to 10-membered non-aromatic heterocyclyl, and -COR³⁸; wherein the alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, and heterocyclyl are optionally substituted with one or more substituents independently selected from A⁶; R³⁵ is selected

5 from the group consisting of a hydrogen atom, and C₁-C₆ alkyl that is optionally substituted with one or more substituents independently selected from A⁶; or R³⁴ and R³⁵ together with the nitrogen atom to which they are attached form 3- to 10-membered nitrogen-containing heterocyclyl, which is optionally substituted with one or more substituents independently selected from A⁶;

10 R³⁷ is selected from the group consisting of C₁-C₆ alkyl, C₃-C₁₀ cycloalkyl, C₆-C₁₀ aryl, and 5- to 10-membered heteroaryl; wherein the alkyl, cycloalkyl, aryl, and heteroaryl are optionally substituted with one or more substituents independently selected from A⁶;

R³⁸ is independently selected from the group consisting of a hydrogen atom, -NR³²R³³, C₁-C₆ alkyl, C₂-C₆ alkenyl, C₂-C₆ alkynyl, C₃-C₁₀ cycloalkyl, C₆-C₁₀ aryl, 5- to

15 10-membered heteroaryl, and 3- to 10-membered non-aromatic heterocyclyl; wherein the alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, and heterocyclyl are optionally substituted with one or more substituents independently selected from A⁶;

A⁶ is independently selected from consisting of a halogen atom, cyano, carboxy, -COOR⁴¹, -CONR⁴²R⁴³, formyl, (C₁-C₆ alkyl)carbonyl, C₁-C₆ alkyl, C₂-C₆ alkenyl, C₂-C₆ alkynyl, nitro, -NR⁴⁴R⁴⁵, -OR⁴⁶, S(O)_nR⁴⁷, C₃-C₁₀ cycloalkyl, C₆-C₁₀ aryl, 5- to 10-

20 membered heteroaryl, and 3- to 10-membered non-aromatic heterocyclyl; wherein the alkylcarbonyl, alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, and heterocyclyl are optionally substituted with one or more substituents independently selected from the group consisting of a halogen atom, hydroxy, C₁-C₆ alkoxy, amino, C₁-C₆ alkylamino, and di(C₁-

25 C₆ alkyl)amino;

R⁴¹, R⁴², and R⁴³ are independently selected from the group consisting of a hydrogen atom, C₁-C₆ alkyl, C₂-C₆ alkenyl, C₂-C₆ alkynyl, C₃-C₁₀ cycloalkyl, C₆-C₁₀ aryl, 5- to 10-membered heteroaryl, and 3- to 10-membered non-aromatic heterocyclyl; wherein

the alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, and heterocyclyl are optionally substituted with one or more substituents independently selected from the group consisting of a halogen atom, hydroxy, C₁-C₆ alkoxy, amino, C₁-C₆ alkylamino, and di(C₁-C₆ alkyl)amino;

- 5 R⁴⁴ and R⁴⁶ are independently selected from the group consisting of a hydrogen atom, C₁-C₆ alkyl, C₃-C₁₀ cycloalkyl, C₆-C₁₀ aryl, 5- to 10-membered heteroaryl, 3- to 10-membered non-aromatic heterocyclyl, and -COR⁴⁸;

 R⁴⁵ is selected from the group consisting of a hydrogen atom, and C₁-C₆ alkyl;

- R⁴⁷ is selected from the group consisting of C₁-C₆ alkyl, C₃-C₁₀ cycloalkyl, C₆-C₁₀ aryl, and 5- to 10-membered heteroaryl; and
- 10 R⁴⁸ is independently selected from the group consisting of C₁-C₆ alkyl, C₃-C₁₀ cycloalkyl, C₆-C₁₀ aryl, 5- to 10-membered heteroaryl, and 3- to 10-membered non-aromatic heterocyclyl.

2. The compound or a pharmaceutically acceptable salt thereof according to claim 1, wherein Q¹ is selected from the group consisting of C₃-C₇ cycloalkyl, phenyl, pyridyl, pyrazolyl, pyrimidinyl, and piperidyl; wherein Q¹ is optionally substituted with one or more substituents independently selected from A¹.
- 15

3. The compound or a pharmaceutically acceptable salt thereof according to claim 1 or 2, wherein X² is selected from the group consisting of -CO- and -SO₂-; and R¹¹ is selected from the group consisting of C₁-C₆ alkyl and C₃-C₇ cycloalkyl, which are optionally substituted with one or more substituents independently selected from the group consisting of hydroxy and a halogen atom.
- 20

4. The compound or a pharmaceutically acceptable salt thereof according to any one of claims 1 to 3, wherein R⁵ is phenyl substituted with one to three substituents independently selected from the group consisting of hydroxy, a halogen atom, C₁-C₆ alkyl, and C₁-C₆ alkoxy, wherein the alkyl and alkoxy are optionally substituted with one or more halogen atoms.
- 25

5. The compound or a pharmaceutically acceptable salt thereof according to any one

of claims 1 to 4, wherein R^2 is a hydrogen atom.

6. The compound or a pharmaceutically acceptable salt thereof according to any one of claims 1 to 5, wherein R^3 is a hydrogen atom.

7. The compound or a pharmaceutically acceptable salt thereof according to any one of claims 1 to 6, wherein R^4 is a hydrogen atom.

8. The compound or a pharmaceutically acceptable salt thereof according to any one of claims 1 to 7, wherein X^1 is -NH-.

9. The compound or a pharmaceutically acceptable salt thereof according to any one of claims 1 to 8, wherein the optional substituent of Q^1 is selected from the group consisting of hydroxy, amino, C_1 - C_6 alkoxy, C_1 - C_6 alkylamino, di(C_1 - C_6 alkyl)amino, amino- C_1 - C_6 alkyl, (C_1 - C_6 alkylamino)- C_1 - C_6 alkyl, di(C_1 - C_6 alkyl)amino- C_1 - C_6 alkyl, amino- C_1 - C_6 alkoxy, (C_1 - C_6 alkylamino)- C_1 - C_6 alkoxy, di(C_1 - C_6 alkyl)amino- C_1 - C_6 alkoxy, hydroxy- C_1 - C_6 alkyl, (C_1 - C_6 alkoxy)- C_1 - C_6 alkyl, carboxy- C_1 - C_6 alkyl, [(C_1 - C_6 alkoxy)carbonyl]- C_1 - C_6 alkyl, carbamoyl- C_1 - C_6 alkyl, [N-(C_1 - C_6 alkyl) carbamoyl]- C_1 - C_6 alkyl, [N,N-di(C_1 - C_6 alkyl)carbamoyl]- C_1 - C_6 alkyl, (C_1 - C_6 alkyl)carbonylamino, N-(C_1 - C_6 alkyl)carbonyl-N-(C_1 - C_6 alkyl)amino, pyrrolidinyl, piperidyl, piperazinyl;

wherein the pyrrolidinyl, piperidyl, and piperazinyl defined as the optional substituent of Q^1 are optionally substituted with a substituent selected from the group consisting of C_1 - C_6 alkyl, amino, C_1 - C_6 alkylamino, di(C_1 - C_6 alkyl)amino, hydroxy, C_1 - C_6 alkoxy, pyrrolidinyl, piperidyl, and piperazinyl; and

wherein the alkyl moiety of the group defined as the optional substituent of Q^1 is optionally substituted with a substituent selected from the group consisting of amino, C_1 - C_6 alkylamino, di(C_1 - C_6 alkyl)amino, hydroxy, C_1 - C_6 alkoxy, pyrrolidinyl, piperidyl, and piperazinyl.

10. The compound or a pharmaceutically acceptable salt thereof according to claim 9, wherein the optional substituent of Q^1 is selected from the group consisting of hydroxy, amino, di(C_1 - C_6 alkyl)amino, C_1 - C_6 alkyl, di(C_1 - C_6 alkyl)amino- C_1 - C_6 alkyl, di(C_1 - C_6 alkyl)amino- C_1 - C_6 alkoxy, di(C_1 - C_6 alkyl)amino, [(amino- C_1 - C_6 alkyl)carbonyl]amino, N-

(C₁-C₆ alkyl)piperidyl, di(C₁-C₆ alkyl)amino-pyrrolidin-1-yl, amino-pyrrolidin-1-yl, (pyrrolidin-1-yl)-C₁-C₆ alkyl, (C₁-C₆ alkyl)amino-piperidin-1-yl, amino-piperidin-1-yl, hydroxy-C₁-C₆ alkyl, [di(C₁-C₆ alkyl)amino-C₁-C₆ alkyl]amino, [4-(C₁-C₆ alkyl)-piperazin-1-yl]-C₁-C₆ alkyl, (piperazin-1-yl)-C₁-C₆ alkyl, pyrrolidinylcarbonyl-amino, (hydroxy-pyrrolidin-1-yl)-C₁-C₆ alkyl, morpholino-C₁-C₆ alkyl, [N-(hydroxy-C₁-C₆ alkyl)-N-(C₁-C₆ alkyl)amino]-C₁-C₆ alkyl, and (CD₃)₂N-C₁-C₆ alkyl.

11. The compound or a pharmaceutically acceptable salt thereof according to claims 1 to 10, which is selected from the group consisting of the following compounds:

1-(6-chloro-4-((4-((dimethylamino)methyl)cyclohexylamino)-1,5-naphthyridin-3-yl)ethanone;

1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-((4-(dimethylamino)cyclohexyl)amino)-1,5-naphthyridin-3-yl)ethanone;

1-(6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-((4-(dimethylamino)cyclohexyl)amino)-1,5-naphthyridin-3-yl)ethanone;

cyclopropyl(6-(3,5-dichloro-4-hydroxyphenyl)-4-((4-((dimethylamino)methyl)cyclohexylamino)-1,5-naphthyridin-3-yl)methanone;

(6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-((4-((dimethylamino)methyl)cyclohexylamino)-1,5-naphthyridin-3-yl)(cyclopropyl)methanone;

1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-((4-((dimethylamino)methyl)cyclohexyl)amino)-1,5-naphthyridin-3-yl)ethanone;

1-(6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-((4-((dimethylamino)methyl)cyclohexyl)amino)-1,5-naphthyridin-3-yl)ethanone;

1-(6-(3-chloro-4-hydroxy-5-methoxyphenyl)-4-((4-((dimethylamino)methyl)cyclohexyl)amino)-1,5-naphthyridin-3-yl)ethanone;

1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-((4-(2-(dimethylamino)ethyl)cyclohexyl)amino)-1,5-naphthyridin-3-yl)ethanone;

1-(6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-((4-(2-(dimethylamino)ethyl)cyclohexyl)amino)-1,5-naphthyridin-3-yl)ethanone;

- 1-(4-(4-((dimethylamino)methyl)cyclohexylamino)-6-(4-hydroxy-3-(trifluoromethoxy)-phenyl)-1,5-naphthyridin-3-yl)ethanone;
- 2,6-dichloro-4-(8-((4-((dimethylamino)methyl)cyclohexyl)amino)-7-(methylsulfonyl)-1,5-naphthyridin-2-yl)phenol;
- 5 2-chloro-4-(8-((4-((dimethylamino)methyl)cyclohexyl)amino)-7-(methylsulfonyl)-1,5-naphthyridin-2-yl)-6-fluorophenol;
- 2-chloro-4-(8-((4-((dimethylamino)methyl)cyclohexyl)amino)-7-(methylsulfonyl)-1,5-naphthyridin-2-yl)-6-methoxyphenol;
- 2,6-dichloro-4-(8-((4-((dimethylamino)methyl)cyclohexyl)amino)-7-(methylsulfonyl)-1,5-naphthyridin-2-yl)phenol;
- 10 2,6-dichloro-4-(8-((4-((dimethylamino)methyl)phenyl)amino)-7-(methylsulfonyl)-1,5-naphthyridin-2-yl)phenol;
- 2-chloro-4-(8-((4-((dimethylamino)methyl)phenyl)amino)-7-(methylsulfonyl)-1,5-naphthyridin-2-yl)-6-fluorophenol;
- 15 2-chloro-4-(8-((4-((dimethylamino)methyl)phenyl)amino)-7-(methylsulfonyl)-1,5-naphthyridin-2-yl)-6-methoxyphenol;
- 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-((6-(2-(pyrrolidin-1-yl)ethyl)phenyl)amino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-(3-(2-(pyrrolidin-1-yl)ethyl)phenylamino)-1,5-naphthyridin-3-yl)ethanone;
- 20 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-((6-(2-(dimethylamino)ethoxy)pyridin-3-yl)-amino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-((6-(2-(dimethylamino)ethoxy)pyridin-3-yl)amino)-1,5-naphthyridin-3-yl)ethanone;
- 25 1-(6-(3-chloro-4-hydroxy-5-methoxyphenyl)-4-((6-(2-(dimethylamino)ethoxy)pyridin-3-yl)amino)-1,5-naphthyridin-3-yl)ethanone;
- 2,6-dichloro-4-(8-((6-(2-(dimethylamino)ethoxy)pyridin-3-yl)amino)-7-(methylsulfonyl)-1,5-naphthyridin-2-yl)phenol;

- 2-chloro-4-(8-((6-(2-(dimethylamino)ethoxy)pyridin-3-yl)amino)-7-(methylsulfonyl)-1,5-naphthyridin-2-yl)-6-fluorophenol;
- 2-chloro-4-(8-((6-(2-(dimethylamino)ethoxy)pyridin-3-yl)amino)-7-(methylsulfonyl)-1,5-naphthyridin-2-yl)-6-methoxyphenol;
- 5 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-((1-methylpiperidin-4-yl)methylamino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-((4-((dimethylamino)d6)methyl)cyclohexyl)-amino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-((4-(2-(dimethylamino)ethyl)phenyl)amino)-1,5-naphthyridin-3-yl)ethanone;
- 10 1-(6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-((4-(2-(dimethylamino)ethyl)phenyl)-amino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3-chloro-4-hydroxy-5-methoxyphenyl)-4-((4-(2-(dimethylamino)ethyl)phenyl)-amino)-1,5-naphthyridin-3-yl)ethanone;
- 15 2-chloro-4-(8-((4-(dimethylamino)cyclohexyl)amino)-7-(methylsulfonyl)-1,5-naphthyridin-2-yl)-6-fluorophenol;
- 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-((1-(1-methylpiperidin-4-yl)-1H-pyrazol-4-yl)-amino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-(4-((4-methylpiperazin-1-yl)methyl)-phenylamino)-1,5-naphthyridin-3-yl)ethanone;
- 20 1-(6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-(4-((4-methylpiperazin-1-yl)methyl)-phenylamino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-(4-(2-(pyrrolidin-1-yl)ethyl)piperidin-1-yl)-1,5-naphthyridin-3-yl)ethanone;
- 25 1-(6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-(4-(2-(pyrrolidin-1-yl)ethyl)piperidin-1-yl)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-(6-(2-(dimethylamino)ethylamino)pyridin-3-ylamino)-1,5-naphthyridin-3-yl)ethanone;

- 1-(6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-(6-(2-(dimethylamino)ethylamino)-pyridin-3-ylamino)-1,5-naphthyridin-3-yl)ethanone;
- (S)-(4-(6-(3-aminopiperidin-1-yl)pyridin-3-ylamino)-6-(3,5-dichloro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl)(cyclopropyl)methanone;
- 5 1-(4-(2-(3-aminopyrrolidin-1-yl)pyrimidin-5-yl)amino)-6-(3,5-dichloro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl)ethanone;
- 1-(4-(4-(dimethylamino)methyl)cyclohexylamino)-6-(1H-pyrazol-4-yl)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-(4-(hydroxymethyl)cyclohexylamino)-1,5-naphthyridin-3-yl)ethanone;
- 10 1-[6-(3,5-dichloro-4-hydroxyphenyl)-4-{4-[(dimethylamino)methyl]-cyclohexylamino}-1,5-naphthyridin-3-yl]-2-hydroxyethanone;
- 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-(1-methylpiperidin-4-ylamino)-1,5-naphthyridin-3-yl)ethanone;
- 15 1-(6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-(1-methylpiperidin-4-ylamino)-1,5-naphthyridin-3-yl)ethanone;
- 1-[6-(3,5-dichloro-4-hydroxyphenyl)-4-[4-(morpholinomethyl)cyclohexylamino]-1,5-naphthyridin-3-yl]ethanone;
- 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-(4-(((2-hydroxyethyl)(methyl)amino)methyl)-cyclohexylamino)-1,5-naphthyridin-3-yl)ethanone;
- 20 1-(6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-(4-(((2-hydroxyethyl)(methyl)amino)methyl)cyclohexylamino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3,5-difluoro-4-hydroxyphenyl)-4-(4-(((dimethylamino)methyl)cyclohexylamino)-1,5-naphthyridin-3-yl)ethanone;
- 25 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-(((6-(3-(dimethylamino)pyrrolidin-1-yl)pyridin-3-yl)amino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-(((6-(3-(dimethylamino)pyrrolidin-1-yl)-pyridin-3-yl)amino)-1,5-naphthyridin-3-yl)ethanone;

- 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-(6-(3-(methylamino)pyrrolidin-1-yl)pyridin-3-ylamino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-(6-(3-(methylamino)pyrrolidin-1-yl)pyridin-3-ylamino)-1,5-naphthyridin-3-yl)ethanone;
- 5 1-(6-(1H-benzo[d]imidazol-5-yl)-4-(4-((dimethylamino)methyl)cyclohexylamino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(4-(4-((dimethylamino)methyl)cyclohexylamino)-6-(pyridin-4-yl)-1,5-naphthyridin-3-yl)ethanone;
- 5-(7-acetyl-8-(4-((dimethylamino)methyl)cyclohexylamino)-1,5-naphthyridin-2-yl)-pyrimidine-2-carbonitrile;
- 10 1-(6-(3,5-dimethyl-1H-pyrazol-4-yl)-4-(4-((dimethylamino)methyl)cyclohexylamino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(4-(4-((dimethylamino)methyl)cyclohexylamino)-6-(4-hydroxy-3,5-dimethylphenyl)-1,5-naphthyridin-3-yl)ethanone;
- 15 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-(4-(pyrrolidin-1-ylmethyl)phenylamino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-(4-(pyrrolidin-1-ylmethyl)cyclohexylamino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-(4-(pyrrolidin-1-ylmethyl)cyclohexylamino)-1,5-naphthyridin-3-yl)ethanone;
- 20 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-(4-((4-methylpiperazin-1-yl)methyl)cyclohexylamino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(4-(6-(3-aminopiperidin-1-yl)pyridin-3-ylamino)-6-(3,5-dichloro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl)ethanone;
- 25 1-(4-(6-(3-aminopiperidin-1-yl)pyridin-3-ylamino)-6-(3-chloro-5-fluoro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl)ethanone;
- 1-(4-(4-aminocyclohexylamino)-6-(3,5-dichloro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl)ethanone;

1-[4-(4-aminocyclohexylamino)-6-(3-chloro-5-fluoro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl]ethanone;

1-(6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-((4-methylpiperazin-1-yl)methyl)-cyclohexylamino)-1,5-naphthyridin-3-yl]ethanone;

5 1-(4-(3-acetyl-6-(3-chloro-5-fluoro-4-hydroxyphenyl)-1,5-naphthyridin-4-ylamino)-cyclohexyl)-2-amino-3-methylbutanamide;

1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-(4-(piperazin-1-ylmethyl)cyclohexylamino)-1,5-naphthyridin-3-yl)ethanone;

10 (S)-1-(4-(6-(3-aminopiperidin-1-yl)pyridin-3-ylamino)-6-(3,5-dichloro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl)ethanone;

(S)-1-(4-(6-(3-aminopiperidin-1-yl)pyridin-3-ylamino)-6-(3-chloro-5-fluoro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl)ethanone;

N-(4-((3-acetyl-6-(3,5-dichloro-4-hydroxyphenyl)-1,5-naphthyridin-4-yl)amino)cyclohexyl)-2-aminopropanamide;

15 N-(4-(3-acetyl-6-(3-chloro-5-fluoro-4-hydroxyphenyl)-1,5-naphthyridin-4-ylamino)-cyclohexyl)-2-aminopropanamide;

(S)-N-((1R,4S)-4-(3-acetyl-6-(3,5-dichloro-4-hydroxyphenyl)-1,5-naphthyridin-4-ylamino)cyclohexyl)pyrrolidine-2-carboxamide;

20 (S)-N-((1R,4S)-4-(3-acetyl-6-(3-chloro-5-fluoro-4-hydroxyphenyl)-1,5-naphthyridin-4-ylamino)cyclohexyl)pyrrolidine-2-carboxamide;

1-(6-(3-hydroxypyrrolidin-1-yl)-4-(4-(3-hydroxypyrrolidin-1-yl)methyl)cyclohexylamino)-1,5-naphthyridin-3-yl]ethanone;

1-(6-(pyrrolidin-1-yl)-4-(4-(pyrrolidin-1-ylmethyl)cyclohexylamino)-1,5-naphthyridin-3-yl)ethanone;

25 N-(4-(3-acetyl-6-(3,5-dichloro-4-hydroxyphenyl)-1,5-naphthyridin-4-ylamino)-cyclohexyl)-2-amino-3-methylbutanamide;

[6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-[4-(dimethylamino)cyclohexylamino]-1,5-naphthyridin-3-yl](cyclopropyl)methanone;

cyclopropyl[6-(3,5-dichloro-4-hydroxyphenyl)-4-{4-(dimethylamino)cyclohexylamino}-1,5-naphthyridin-3-yl]methanone;

1-(4-{4-[(dimethylamino)methyl]cyclohexylamino}-6-(1H-pyrrolo[2,3-b]pyridin-5-yl)-1,5-naphthyridin-3-yl)ethanone;

5 (5)-{4-[6-(3-aminopiperidin-1-yl)pyridin-3-ylamino]-6-(3-chloro-5-fluoro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl}(cyclopropyl)methanone;

1-(4-{4-[(dimethylamino)methyl]cyclohexylamino}-6-(4-methoxyphenyl)-1,5-naphthyridin-3-yl)ethanone;

10 1-[6-(3,5-dichloro-4-methoxyphenyl)-4-{4-[(dimethylamino)methyl]cyclohexylamino}-1,5-naphthyridin-3-yl]ethanone;

1-(4-{4-[(dimethylamino)methyl]cyclohexylamino}-6-(6-hydroxypyridin-3-yl)-1,5-naphthyridin-3-yl)ethanone;

5-(7-acetyl-8-{4-[(dimethylamino)methyl]cyclohexylamino}-1,5-naphthyridin-2-yl)picolinonitrile;

15 1-(4-{4-[(dimethylamino)methyl]cyclohexylamino}-6-(4-hydroxyphenyl)-1,5-naphthyridin-3-yl)ethanone;

1-[6-(3,5-dichloro-4-hydroxyphenyl)-4-{4-(dimethylamino)cyclohexylmethylamino}-1,5-naphthyridin-3-yl]ethanone;

20 1-[6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-{4-(dimethylamino)cyclohexylmethylamino}-1,5-naphthyridin-3-yl]ethanone;

1-[6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-(4-hydroxycyclohexylamino)-1,5-naphthyridin-3-yl]ethanone;

1-[6-(3,5-dichloro-4-hydroxyphenyl)-4-(4-hydroxycyclohexylamino)-1,5-naphthyridin-3-yl]ethanone;

25 1-[6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-{*cis*-4-[(dimethylamino)methyl]cyclohexylamino}-1,5-naphthyridin-3-yl]ethanone;

1-[6-(3,5-dichloro-4-hydroxyphenyl)-4-{*cis*-4-[(dimethylamino)methyl]cyclohexylamino}-1,5-naphthyridin-3-yl]ethanone;

(R)-1-{4-[6-(3-aminopiperidin-1-yl)pyridin-3-ylamino]-6-(3,5-dichloro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl} ethanone;

(R)-1-{4-[6-(3-aminopiperidin-1-yl)pyridin-3-ylamino]-6-(3-chloro-5-fluoro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl} ethanone;

5 and pharmaceutically acceptable salts thereof.

12. The compound or a pharmaceutically acceptable salt thereof according to claim 1, which is selected from the group consisting of the following compounds:

1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-(*trans*-4-(dimethylamino)cyclohexyl)amino)-1,5-naphthyridin-3-yl} ethanone;

10 cyclopropyl (6-(3,5-dichloro-4-hydroxyphenyl)-4-(*trans*-4-((dimethylamino)methyl)-cyclohexylamino)-1,5-naphthyridin-3-yl) methanone;

(6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-(*trans*-4-((dimethylamino)methyl)-cyclohexylamino)-1,5-naphthyridin-3-yl) (cyclopropyl) methanone;

15 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-(*trans*-4-((dimethylamino)methyl)cyclohexyl)-amino)-1,5-naphthyridin-3-yl} ethanone;

1-(6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-(*trans*-4-((dimethylamino)methyl)-cyclohexyl)amino)-1,5-naphthyridin-3-yl} ethanone;

1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-(*trans*-4-(2-(dimethylamino)ethyl)cyclohexyl)-amino)-1,5-naphthyridin-3-yl} ethanone;

20 (S)-4-(6-(3-aminopiperidin-1-yl)pyridin-3-ylamino)-6-(3,5-dichloro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl(cyclopropyl) methanone;

1-[6-(3,5-dichloro-4-hydroxyphenyl)-4-{*trans*-4-[(dimethylamino)methyl]cyclohexylamino}-1,5-naphthyridin-3-yl]-2-hydroxyethanone;

25 1-(4-(6-(3-aminopiperidin-1-yl)pyridin-3-ylamino)-6-(3,5-dichloro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl)ethanone;

1-(4-(6-(3-aminopiperidin-1-yl)pyridin-3-ylamino)-6-(3-chloro-5-fluoro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl)ethanone;

(S)-1-(4-(6-(3-aminopiperidin-1-yl)pyridin-3-ylamino)-6-(3,5-dichloro-4-hydroxy-

- phenyl)-1,5-naphthyridin-3-yl)ethanone;
 (S)-1-(4-(6-(3-aminopiperidin-1-yl)pyridin-3-ylamino)-6-(3-chloro-5-fluoro-4-hydroxy-phenyl)-1,5-naphthyridin-3-yl)ethanone;
 (S)-{4-[6-(3-aminopiperidin-1-yl)pyridin-3-ylamino]-6-(3-chloro-5-fluoro-4-hydroxy-phenyl)-1,5-naphthyridin-3-yl} (cyclopropyl) methanone;
 5 (R)-1-{4-[6-(3-aminopiperidin-1-yl)pyridin-3-ylamino]-6-(3,5-dichloro-4-hydroxy-phenyl)-1,5-naphthyridin-3-yl} ethanone;
 (R)-1-{4-[6-(3-aminopiperidin-1-yl)pyridin-3-ylamino]-6-(3-chloro-5-fluoro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl} ethanone;
 10 (R)-(4-[[6-(3-aminopiperidin-1-yl)pyridin-3-yl]amino]-6-(3,5-dichloro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl) (cyclopropyl)methanone;
 (R)-(4-[[6-(3-aminopiperidin-1-yl)pyridin-3-yl]amino]-6-(3-chloro-5-fluoro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl) (cyclopropyl) methanone;
 1-[6-(3,5-dichloro-4-hydroxyphenyl)-4-{{trans-4-(dimethylamino)cyclohexyl} amino)-1,5-naphthyridin-3-yl]-2-hydroxyethanone dihydrochloride;
 15 1-[6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-({trans-4-[(dimethylamino)methyl]cyclohexyl} amino)-1,5-naphthyridin-3-yl]-2-hydroxyethanone dihydrochloride;
 1-[6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-({trans-4-[(dimethylamino)methyl]cyclohexyl} amino)-1,5-naphthyridin-3-yl]propan-1-one dihydrochloride;
 20 1-[6-(3,5-dichloro-4-hydroxyphenyl)-4-({trans-4-[(dimethylamino)methyl]cyclohexyl} amino)-1,5-naphthyridin-3-yl]propan-1-one dihydrochloride;
 (S)-1-(4-[[6-(3-aminopiperidin-1-yl)pyridin-3-yl]amino]-6-(3,5-dichloro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl)propan-1-one trihydrochloride;
 25 (S)-1-(4-[[6-(3-aminopiperidin-1-yl)pyridin-3-yl]amino]-6-(3-chloro-5-fluoro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl)propan-1-one trihydrochloride;
 1-[6-(3,5-dichloro-4-hydroxyphenyl)-4-({4-[(R)-3-fluoropyrrolidin-1-yl)methyl]cyclohexyl} amino)-1,5-naphthyridin-3-yl]ethanone dihydrochloride;

- (S)-(4-((6-(3-aminopiperidin-1-yl)pyridin-3-yl)amino)-6-(3-chloro-5-fluoro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl)(cyclobutyl)methanone dihydrochloride;
- (6-(3,5-dichloro-4-hydroxyphenyl)-4-((4-[(dimethylamino)methyl(cyclohexyl)amino)-1,5-naphthyridin-3-yl)(cyclobutyl)methanone dihydrochloride;
- 5 (6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-((4-((dimethylamino)methyl(cyclohexyl) amino)-1,5-naphthyridin-3-yl)(cyclobutyl)methanone dihydrochloride;
- (S)-(4-({6-(3-aminopiperidin-1-yl)pyridin-3-yl}amino)-6-(3-chloro-5-fluoro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl)(cyclobutyl)methanone;
- 10 (R)-1-(4-((6-(3-aminopiperidin-1-yl)pyridin-3-yl)amino)-6-(3,5-dichloro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl)propan-1-one trihydrochloride;
- (R)-1-(4-({6-(3-aminopiperidin-1-yl)pyridin-3-yl}amino)-6-(3,5-dichloro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl)-2-methylpropan-1-one trihydrochloride;
- 1-[6-(3,5-dichloro-5-4-hydroxyphenyl)-4-({trans-4-((dimethylamino)methyl)cyclohexyl} amino)-1,5-naphthyridin-3-yl]-2-methylpropan-1-one dihydrochloride;
- 15 1-[6-chloro-4-({trans-4-[(dimethylamino)methyl(cyclohexyl)amino)-1,5-naphthyridin-3-yl]-2-methylpropan-1-one dihydrochloride;
- and pharmaceutically acceptable salts thereof.
- 20 13. A pharmaceutical composition comprising as an active ingredient a compound or a pharmaceutically acceptable salt thereof according to any one of claims 1 to 12.
14. An MELK inhibitor comprising as an active ingredient a compound or a pharmaceutically acceptable salt thereof according to any one of claims 1 to 12.
15. An MELK-expression modulating agent comprising as an active ingredient a compound or a pharmaceutically acceptable salt thereof according to any one of claims 1 to 12.
- 25 16. An antitumor agent comprising as an active ingredient a compound or a pharmaceutically acceptable salt thereof according to any one of claims 1 to 12.

17. A therapeutic and/or preventive agent for a disease that involves overexpression of MELK, comprising as an active ingredient a compound or a pharmaceutically acceptable salt thereof according to any one of claims 1 to 12.

18. The therapeutic and/or preventive agent according to claim 17, wherein the disease is cancer.

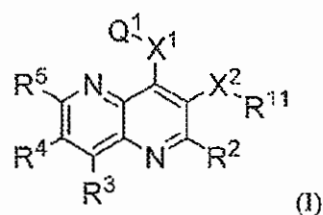
19. The therapeutic and/or preventive agent according to claim 17, wherein the cancer is selected from the group consisting of breast cancer, lung cancer, bladder cancer, lymphoma, and uterine cancer.

20. A method for treating and/or preventing a disease that involves overexpression of MELK, which comprises administering an effective amount of a compound or a pharmaceutically acceptable salt thereof according to any one of claims 1 to 12 to a subject in need thereof.

21. A compound or a pharmaceutically acceptable salt thereof according to any one of claims 1 to 11 for use in a treatment and/or prevention of a disease that involves overexpression of MELK.

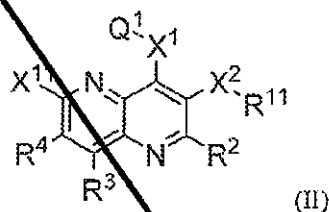
22. Use of a compound or a pharmaceutically acceptable salt thereof according to any one of above-mentioned 1 to 12 in the manufacture of a therapeutic and/or preventive agent for a disease that involves overexpression of MELK.

23. A process for preparing a compound of formula (I):



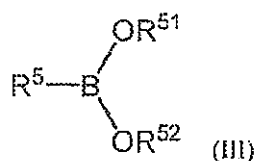
or a pharmaceutically acceptable salt thereof as defined in any one of claims 1 to 12, wherein R⁵ is phenyl optionally substituted with one or more substituents independently selected from A³; and Q¹, X¹, X², R¹¹, R², R³, R⁴, and A³ are the groups as defined in any one of claims 1 to 10; which comprises:

reacting a compound represented by formula (II):



(II)

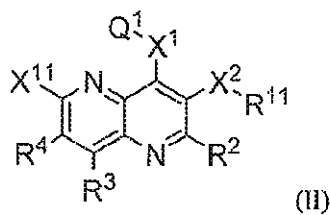
wherein Q¹, X¹, X², R¹¹, R², R³, and R⁴ are the groups as defined above, with the proviso that the groups may have one or more protecting groups, and X¹¹ is a halogen atom; with a
 5 compound represented by formula (III):



(III)

wherein R⁵ is as defined above with the proviso that the group of R⁵ may have one or more protecting groups; and R⁵¹ and R⁵² are independently selected from the group consisting of C₁-C₆ alkyl, or R⁵¹ and R⁵² together with the boron atom to which they are attached forms
 10 5- to 7-membered cyclic boronic acid ester optionally substituted with one or more substituents independently selected from the group consisting of C₁-C₆ alkyl.

24. A compound represented by formula (II) or a pharmaceutically acceptable salt thereof:



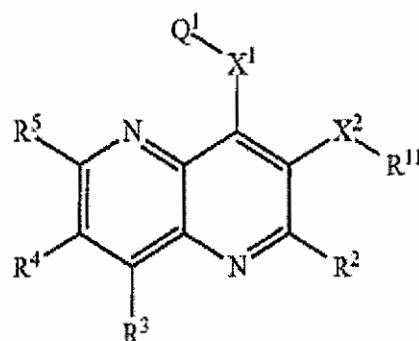
(II)

15 wherein Q¹, X¹, X², R¹¹, R², R³, and R⁴ are the groups as defined in one of claims 1 to 10 with the proviso that the groups may have one or more protecting groups, and X¹¹ is a halogen atom.

The invention claimed is:

1. A compound represented by formula (I) or a pharmaceutically acceptable salt thereof:

(I)



wherein,

X¹ is selected from the group consisting of a direct bond, —NR¹²—, —O—, and —S—;

R¹² is selected from the group consisting of a hydrogen atom, C₁-C₆ alkyl and C₃-C₁₀ cycloalkyl;

Q¹ is selected from the group consisting of C₃-C₁₀ cycloalkyl, C₆-C₁₀ aryl, 5- to 10-membered heteroaryl, 3- to 10-membered non-aromatic heterocyclyl, (C₃-C₁₀ cycloalkyl)-C₁-C₆ alkyl, (C₆-C₁₀ aryl)-C₁-C₆ alkyl, (5- to 10-membered heteroaryl)-C₁-C₆ alkyl, and (3- to 10-membered non-aromatic heterocyclyl)-C₁-C₆ alkyl; wherein Q¹ is optionally substituted with one or more substituents independently selected from A¹;

X² is selected from the group consisting of —CO—, —S—, —SO—, and —SO₂—;

R¹¹ is selected from the group consisting of C₁-C₆ alkyl, C₃-C₁₀ cycloalkyl, C₆-C₁₀ aryl, 5- to 10-membered heteroaryl, and 3- to 10-membered non-aromatic heterocyclyl; wherein R¹¹ is optionally substituted with one or more substituents independently selected from A²;

R⁵ is selected from the group consisting of a halogen atom, C₃-C₁₀ cycloalkyl, C₆-C₁₀ aryl, 5- to 10-membered heteroaryl, and 3- to 10-membered non-aromatic heterocyclyl; wherein the cycloalkyl, aryl, heteroaryl, and heterocyclyl are optionally substituted with one or more substituents independently selected from A³;

R², R³, and R⁴ are independently selected from the group consisting of a hydrogen atom, a halogen atom, and C₁-C₆ alkyl;

A¹ and A³ are independently selected from the group consisting of a halogen atom, cyano, —COOR¹³, —CONR¹⁴R¹⁵, formyl, (C₁-C₆ alkyl)carbonyl, C₁-C₆ alkyl, C₂-C₆ alkenyl, C₂-C₆ alkynyl, nitro, —NR¹⁶R¹⁷, —OR¹⁸, —S(O)_nR¹⁹, C₃-C₁₀ cycloalkyl, C₆-C₁₀ aryl, 5- to 10-membered heteroaryl, and 3- to 10-membered non-aromatic heterocyclyl; wherein the alkylcarbonyl, alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, and heterocyclyl are optionally substituted with one or more substituents independently selected from A⁴;

A² is independently selected from the group consisting of a halogen atom, cyano, C₃-C₁₀ cycloalkyl, carboxy, formyloxy, (C₁-C₆ alkyl)carbonyloxy, hydroxy, C₁-C₆ alkoxy, amino, C₁-C₆ alkylamino, and di(C₁-C₆ alkyl) amino;

R¹³, R¹⁴, and R¹⁵ are independently selected from the group consisting of a hydrogen atom, C₁-C₆ alkyl, C₂-C₆ alkenyl, C₂-C₆ alkynyl, C₃-C₁₀ cycloalkyl, C₆-C₁₀ aryl, 5- to 10-membered heteroaryl, and 3- to 10-membered non-aromatic heterocyclyl; wherein the alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, and heterocyclyl are optionally substituted with one or more substituents independently selected from A⁴; or R¹⁴ and R¹⁵ together with the nitrogen atom to which they are attached form 3- to 10-membered nitrogen-containing heterocyclyl, which is optionally substituted with one or more substituents independently selected from A⁴;

R¹⁶ and R¹⁸ are independently selected from the group consisting of a hydrogen atom, C₁-C₆ alkyl, C₂-C₆ alkenyl, C₂-C₆ alkynyl, C₃-C₁₀ cycloalkyl, C₆-C₁₀ aryl, 5- to 10-membered heteroaryl, 3- to 10-membered non-aromatic heterocyclyl, and —COR²⁰; wherein the alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, and heterocyclyl are optionally substituted with one or more substituents independently selected from A⁴; R¹⁷ is selected from the group consisting of a hydrogen atom, and C₁-C₆ alkyl that is optionally substituted with one or more substituents independently selected from A⁴; or R¹⁶ and R¹⁷ together with the nitrogen atom to which they are attached form 3- to 10-membered nitrogen-containing heterocyclyl, which is optionally substituted with one or more substituents independently selected from A⁴;

R^{19} is selected from the group consisting of C_1 - C_6 alkyl, C_3 - C_{10} cycloalkyl, C_6 - C_{10} aryl, and 5- to 10-membered heteroaryl; wherein the alkyl, cycloalkyl, aryl, and heteroaryl are optionally substituted with one or more substituents independently selected from A^4 ;

R^{20} is selected from the group consisting of a hydrogen atom, $-NR^{14}R^{15}$, C_1 - C_6 alkyl, C_2 - C_6 alkenyl, C_2 - C_6 alkynyl, C_3 - C_{10} cycloalkyl, C_6 - C_{10} aryl, 5- to 10-membered heteroaryl, and 3- to 10-membered non-aromatic heterocyclyl; wherein the alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, and heterocyclyl are optionally substituted with one or more substituents independently selected from A^4 ;

n is an integer independently selected from 0 to 2;

A^4 is independently selected from the group consisting of a halogen atom, cyano, $-COOR^{21}$, $-CONR^{22}R^{23}$, formyl, (C_1 - C_6 alkyl)carbonyl, C_1 - C_6 alkyl, C_2 - C_6 alkenyl, C_2 - C_6 alkynyl, nitro, $-NR^{24}R^{25}$, $-OR^{26}$, $-S(O)_nR^{27}$, C_3 - C_{10} cycloalkyl, C_6 - C_{10} aryl, 5- to 10-membered heteroaryl, and 3- to 10-membered non-aromatic heterocyclyl; wherein the alkylcarbonyl, alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, and heterocyclyl are optionally substituted with one or more substituents independently selected from A^5 ;

R^{21} , R^{22} , and R^{23} are independently selected from the group consisting of a hydrogen atom, C_1 - C_6 alkyl, C_2 - C_6 alkenyl, C_2 - C_6 alkynyl, C_3 - C_{10} cycloalkyl, C_6 - C_{10} aryl, 5- to 10-membered heteroaryl, and 3- to 10-membered non-aromatic heterocyclyl; wherein the alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, and heterocyclyl are optionally substituted with one or more substituents independently selected from A^5 ; or R^{22} and R^{23} together with the nitrogen atom to which they are attached form 3- to 10-membered nitrogen-containing heterocyclyl, which is optionally substituted with one or more substituents independently selected from A^5 ;

R^{24} and R^{26} are independently selected from the group consisting of a hydrogen atom, C_1 - C_6 alkyl, C_2 - C_6 alkenyl, C_2 - C_6 alkynyl, C_3 - C_{10} cycloalkyl, C_6 - C_{10} aryl, 5- to 10-membered heteroaryl, 3- to 10-membered non-aromatic heterocyclyl, and $-\text{COR}^{28}$; wherein the alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, and heterocyclyl are optionally substituted with one or more substituents independently selected from A^5 ; R^{25} is selected from the group consisting of a hydrogen atom, and C_1 - C_6 alkyl that is optionally substituted with one or more substituents independently selected from A^5 ; or R^{24} and R^{25} together with the nitrogen atom to which they are attached form 3- to 10-membered nitrogen-containing heterocyclyl, which is optionally substituted with one or more substituents independently selected from A^5 ;

R^{27} is selected from the group consisting of C_1 - C_6 alkyl, C_3 - C_{10} cycloalkyl, C_6 - C_{10} aryl, and 5- to 10-membered heteroaryl; wherein the alkyl, cycloalkyl, aryl, and heteroaryl are optionally substituted with one or more substituents independently selected from A^5 ;

R^{28} is independently selected from the group consisting of a hydrogen atom, $-\text{NR}^{22}\text{R}^{23}$, C_1 - C_6 alkyl, C_2 - C_6 alkenyl, C_2 - C_6 alkynyl, C_3 - C_{10} cycloalkyl, C_6 - C_{10} aryl, 5- to 10-membered heteroaryl, and 3- to 10-membered non-aromatic heterocyclyl; wherein the alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, and heterocyclyl are optionally substituted with one or more substituents independently selected from A^5 ;

A^5 is independently selected from the group consisting of a halogen atom, cyano, $-\text{COOR}^{31}$, $-\text{CONR}^{32}\text{R}^{33}$, formyl, (C_1 - C_6 alkyl)carbonyl, C_1 - C_6 alkyl, C_2 - C_6 alkenyl, C_2 - C_6 alkynyl, nitro, $-\text{NR}^{34}\text{R}^{35}$, $-\text{OR}^{36}$, $-\text{S}(\text{O})_n\text{R}^{37}$, C_3 - C_{10} cycloalkyl, C_6 - C_{10} aryl, 5- to 10-membered heteroaryl, and 3- to 10-membered non-aromatic heterocyclyl; wherein the alkylcarbonyl, alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, and heterocyclyl are optionally substituted with one or more substituents independently selected from A^6 ;

R^{31} , R^{32} , and R^{33} are independently selected from the group consisting of a hydrogen atom, C_1 - C_6 alkyl, C_2 - C_6 alkenyl, C_2 - C_6 alkynyl, C_3 - C_{10} cycloalkyl, C_6 - C_{10} aryl, 5- to 10-membered heteroaryl, and 3- to 10-membered non-aromatic heterocyclyl; wherein the alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, and heterocyclyl are optionally substituted with one or more substituents independently selected from A^6 ; or R^{32} and R^{33} together with the nitrogen atom to which they are attached form 3- to 10-membered nitrogen-containing heterocyclyl, which is optionally substituted with one or more substituents independently selected from A^6 ;

R^{34} and R^{36} are independently selected from the group consisting of a hydrogen atom, C_1 - C_6 alkyl, C_2 - C_6 alkenyl, C_2 - C_6 alkynyl, C_3 - C_{10} cycloalkyl, C_6 - C_{10} aryl, 5- to 10-membered heteroaryl, 3- to 10-membered non-aromatic heterocyclyl, and $-\text{COR}^{38}$; wherein the alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, and heterocyclyl are optionally substituted with one or more substituents independently selected from A^6 ; R^{35} is selected from the group consisting of a hydrogen atom, and C_1 - C_6 alkyl that is optionally substituted with one or more substituents independently selected from A^6 ; or R^{34} and R^{35} together with the nitrogen atom to which they are attached form 3- to 10-membered nitrogen-containing heterocyclyl, which is optionally substituted with one or more substituents independently selected from A^6 ;

R^{37} is selected from the group consisting of C_1 - C_6 alkyl, C_3 - C_{10} cycloalkyl, C_6 - C_{10} aryl, and 5- to 10-membered heteroaryl; wherein the alkyl, cycloalkyl, aryl, and heteroaryl are optionally substituted with one or more substituents independently selected from A^6 ;

R^{38} is independently selected from the group consisting of a hydrogen atom, $-\text{NR}^{32}\text{R}^{33}$, C_1 - C_6 alkyl, C_2 - C_6 alkenyl, C_2 - C_6 alkynyl, C_3 - C_{10} cycloalkyl, C_6 - C_{10} aryl, 5- to 10-membered heteroaryl, and 3- to 10-membered non-aromatic heterocyclyl; wherein the alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, and heterocyclyl are optionally substituted with one or more substituents independently selected from A^6 ;

A⁶ is independently selected from the group consisting of a halogen atom, cyano, carboxy, —COOR⁴¹, —CONR⁴²R⁴³, formyl, (C₁-C₆ alkyl)carbonyl, C₁-C₆ alkyl, C₂-C₆ alkenyl, C₂-C₆ alkynyl, nitro, —NR⁴⁴R⁴⁵, —OR⁴⁶, S(O)_n, R⁴⁷, C₃-C₁₀ cycloalkyl, C₆-C₁₀ aryl, 5- to 10-membered heteroaryl, and 3- to 10-membered non-aromatic heterocyclyl; wherein the alkylcarbonyl, alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, and heterocyclyl are optionally substituted with one or more substituents independently selected from the group consisting of a halogen atom, hydroxy, C₁-C₆ alkoxy, amino, C₁-C₆ alkylamino, and di(C₁-C₆ alkyl)amino;

R⁴¹, R⁴², and R⁴³ are independently selected from the group consisting of a hydrogen atom, C₁-C₆ alkyl, C₂-C₆ alkenyl, C₂-C₆ alkynyl, C₃-C₁₀ cycloalkyl, C₆-C₁₀ aryl, 5- to 10-membered heteroaryl, and 3- to 10-membered non-aromatic heterocyclyl; wherein the alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, and heterocyclyl are optionally substituted with one or more substituents independently selected from the group consisting of a halogen atom, hydroxy, C₁-C₆ alkoxy, amino, C₁-C₆ alkylamino, and di(C₁-C₆ alkyl)amino;

R⁴⁴ and R⁴⁶ are independently selected from the group consisting of a hydrogen atom, C₁-C₆ alkyl, C₃-C₁₀ cycloalkyl, C₆-C₁₀ aryl, 5- to 10-membered heteroaryl, 3- to 10-membered non-aromatic heterocyclyl, and —COR⁴⁸;

R⁴⁵ is selected from the group consisting of a hydrogen atom, and C₁-C₆ alkyl;

R⁴⁷ is selected from the group consisting of C₁-C₆ alkyl, C₃-C₁₀ cycloalkyl, C₆-C₁₀ aryl, and 5- to 10-membered heteroaryl; and

R⁴⁸ is independently selected from the group consisting of C₁-C₆ alkyl, C₃-C₁₀ cycloalkyl, C₆-C₁₀ aryl, 5- to 10-membered heteroaryl, and 3- to 10-membered non-aromatic heterocyclyl.

2. The compound or a pharmaceutically acceptable salt thereof according to claim 1, wherein Q¹ is selected from the group consisting of C₅-C₇ cycloalkyl, phenyl, pyridyl, pyrazolyl, pyrimidinyl, and piperidyl; wherein Q¹ is optionally substituted with one or more substituents independently selected from A¹.

3. The compound or a pharmaceutically acceptable salt thereof according to claim 1 wherein X^2 is selected from the group consisting of $-\text{CO}-$ and $-\text{SO}_2-$; and R^{11} is selected from the group consisting of C_1 - C_6 alkyl and C_3 - C_7 cycloalkyl, which are optionally substituted with one or more substituents independently selected from the group consisting of hydroxy and a halogen atom.

4. The compound or a pharmaceutically acceptable salt thereof according to claim 1, wherein R^5 is phenyl substituted with one to three substituents independently selected from the group consisting of hydroxy, a halogen atom, C_1 - C_6 alkyl, and C_1 - C_6 alkoxy, wherein the alkyl and alkoxy are optionally substituted with one or more halogen atoms.

5. The compound or a pharmaceutically acceptable salt thereof according to claim 1, wherein R^2 is a hydrogen atom.

6. The compound or a pharmaceutically acceptable salt thereof according to claim 1, wherein R^3 is a hydrogen atom.

7. The compound or a pharmaceutically acceptable salt thereof according to claim 1, wherein R^4 is a hydrogen atom.

8. The compound or a pharmaceutically acceptable salt thereof according to claim 1, wherein X^1 is $-\text{NH}-$.

9. The compound or a pharmaceutically acceptable salt thereof according to claim 1, wherein the optional substituent of Q^1 is selected from the group consisting of hydroxy, amino, C_1 - C_6 alkoxy, C_1 - C_6 alkylamino, di(C_1 - C_6 alkyl)amino, amino- C_1 - C_6 alkyl, (C_1 - C_6 alkylamino)- C_1 - C_6 alkyl, di(C_1 - C_6 alkyl)amino- C_1 - C_6 alkyl, amino- C_1 - C_6 alkoxy, (C_1 - C_6 alkylamino)- C_1 - C_6 alkoxy, di(C_1 - C_6 alkyl)amino- C_1 - C_6 alkoxy, hydroxy- C_1 - C_6 alkyl, (C_1 - C_6 alkoxy)- C_1 - C_6 alkyl, carboxy- C_1 - C_6 alkyl, [(C_1 - C_6 alkoxy)carbonyl]- C_1 - C_6 alkyl, carbamoyl- C_1 - C_6 alkyl, [N-(C_1 - C_6 alkyl) carbamoyl]- C_1 - C_6 alkyl [N,N-di(C_1 - C_6 alkyl)carbamoyl]- C_1 - C_6 alkyl, (C_1 - C_6 alkyl)carbonylamino, N-(C_1 - C_6 alkyl)carbonyl-N-(C_1 - C_6 alkyl)amino, pyrrolidinyl, piperidyl, piperazinyl;

wherein the pyrrolidinyl, piperidyl, and piperazinyl defined as the optional substituent of Q^1 are optionally substituted with a substituent selected from the group consisting of C_1 - C_6 alkyl, amino, C_1 - C_6 alkylamino, di(C_1 - C_6 alkyl)amino, hydroxy, C_1 - C_6 alkoxy, pyrrolidinyl, piperidyl, and piperazinyl; and

wherein the alkyl moiety of the group defined as the optional substituent of Q¹ is optionally substituted with a substituent selected from the group consisting of amino, C₁-C₆ alkylamino, di(C₁-C₆ alkyl)amino, hydroxy, C₁-C₆ alkoxy, pyrrolidinyl, piperidyl, and piperazinyl.

10. The compound or a pharmaceutically acceptable salt thereof according to claim 9, wherein the optional substituent of Q¹ is selected from the group consisting of hydroxy, amino, di(C₁-C₆ alkyl)amino, C₁-C₆ alkyl, di(C₁-C₆ alkyl)amino-C₁-C₆ alkyl, di(C₁-C₆ alkyl)amino-C₁-C₆ alkoxy, di(C₁-C₆ alkyl)amino, [(amino-C₁-C₆ alkyl)carbonyl]amino, N—(C₁-C₆ alkyl)piperidyl, di(C₁-C₆ alkyl)amino-pyrrolidin-1-yl, amino-pyrrolidin-1-yl, (pyrrolidin-1-yl)-C₁-C₆ alkyl, (C₁-C₆ alkyl)amino-piperidin-1-yl, amino-piperidin-1-yl, hydroxy-C₁-C₆ alkyl, [di(C₁-C₆ alkyl)amino-C₁-C₆ alkyl]amino, [4-(C₁-C₆ alkyl)-piperazin-1-yl]-C₁-C₆ alkyl, (piperazin-1-yl)-C₁-C₆ alkyl, pyrrolidinylcarbonyl-amino, (hydroxy-pyrrolidin-1-yl)-C₁-C₆ alkyl, morpholino-C₁-C₆ alkyl, [N-(hydroxy-C₁-C₆ alkyl)-N—(C₁-C₆ alkyl)amino]-C₁-C₆ alkyl, and (CD₃)₂N—C₁-C₆ alkyl.

11. The compound or a pharmaceutically acceptable salt thereof according to claim 1, which is selected from the group consisting of the following compounds:

- 1-(6-chloro-4-(4-((dimethylamino)methyl)cyclohexylamino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-((4-(dimethylamino)cyclohexyl)amino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-((4-(dimethylamino)cyclohexyl)amino)-1,5-naphthyridin-3-yl)ethanone;
- cyclopropyl(6-(3,5-dichloro-4-hydroxyphenyl)-4-(4-((dimethylamino)methyl)-cyclohexylamino)-1,5-naphthyridin-3-yl)methanone;
- (6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-(4-((dimethylamino)methyl)-cyclohexylamino)-1,5-naphthyridin-3-yl)(cyclopropyl)methanone;
- 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-((4-(dimethylamino)methyl)cyclohexyl)-amino)-1,5-naphthyridin-3-yl)ethanone;

- 1-(6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-((4-((dimethylamino)methyl)cyclohexyl)-amino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3-chloro-4-hydroxy-5-methoxyphenyl)-4-((4-((dimethylamino)methyl)-cyclohexyl)amino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-((4-(2-(dimethylamino)ethyl)cyclohexyl)-amino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-(4-(2-(dimethylamino)ethyl)-cyclohexylamino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(4-(4-((dimethylamino)methyl)cyclohexylamino)-6-(4-hydroxy-3-(trifluoromethoxy)-phenyl)-1,5-naphthyridin-3-yl)ethanone;
- 2,6-dichloro-4-(8-((4-((dimethylamino)methyl)cyclohexyl)amino)-7-(methylsulfonyl)-1,5-naphthyridin-2-yl)phenol;
- 2-chloro-4-(8-((4-((dimethylamino)methyl)cyclohexyl)amino)-7-(methylsulfonyl)-1,5-naphthyridin-2-yl)-6-fluorophenol;
- 2-chloro-4-(8-((4-((dimethylamino)methyl)cyclohexyl)amino)-7-(methylsulfonyl)-1,5-naphthyridin-2-yl)-6-methoxyphenol;
- 2,6-dichloro-4-(8-((4-(dimethylamino)cyclohexyl)amino)-7-(methylsulfonyl)-1,5-naphthyridin-2-yl)phenol;
- 2,6-dichloro-4-(8-((4-((dimethylamino)methyl)phenyl)amino)-7-(methylsulfonyl)-1,5-naphthyridin-2-yl)phenol;
- 2-chloro-4-(8-((4-((dimethylamino)methyl)phenyl)amino)-7-(methylsulfonyl)-1,5-naphthyridin-2-yl)-6-fluorophenol;
- 2-chloro-4-(8-((4-((dimethylamino)methyl)phenyl)amino)-7-(methylsulfonyl)-1,5-naphthyridin-2-yl)-6-methoxyphenol;

- 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-((3-(2-(pyrrolidin-1-yl)ethyl)phenyl)amino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-(3-(2-(pyrrolidin-1-yl)ethyl)phenylamino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-((6-(2-(dimethylamino)ethoxy)pyridin-3-yl)-amino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-((6-(2-(dimethylamino)ethoxy)pyridin-3-yl)amino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3-chloro-4-hydroxy-5-methoxyphenyl)-4-((6-(2-(dimethylamino)ethoxy)pyridin-3-yl)amino)-1,5-naphthyridin-3-yl)ethanone;
- 2,6-dichloro-4-(8-((6-(2-(dimethylamino)ethoxy)pyridin-3-yl)amino)-7-(methylsulfonyl)-1,5-naphthyridin-2-yl)phenol;
- 2-chloro-4-(8-((6-(2-(dimethylamino)ethoxy)pyridin-3-yl)amino)-7-(methylsulfonyl)-1,5-naphthyridin-2-yl)-6-fluorophenol;
- 2-chloro-4-(8-((6-(2-(dimethylamino)ethoxy)pyridin-3-yl)amino)-7-(methylsulfonyl)-1,5-naphthyridin-2-yl)-6-methoxyphenol;
- 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-((1-methylpiperidin-4-yl)methylamino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-((4-((dimethylamino-d6)methyl)cyclohexyl)-amino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-((4-(2-(dimethylamino)ethyl)phenyl)amino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-((4-(2-(dimethylamino)ethyl)phenyl)-amino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3-chloro-4-hydroxy-5-methoxyphenyl)-4-((4-(2-(dimethylamino)ethyl)phenyl)-amino)-1,5-naphthyridin-3-yl)ethanone;

- 2-chloro-4-(8-((4-(dimethylamino)cyclohexyl)amino)-7-(methylsulfonyl)-1,5-naphthyridin-2-yl)-6-fluorophenol;
- 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-((1-(1-methylpiperidin-4-yl)-1H-pyrazol-4-yl)-amino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-(4-((4-methylpiperazin-1-yl)methyl)-phenylamino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-(4-((4-methylpiperazin-1-yl)methyl)-phenylamino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-(4-(2-(pyrrolidin-1-yl)ethyl)piperidin-1-yl)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-(4-(2-(pyrrolidin-1-yl)ethyl)piperidin-1-yl)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-(6-(2-(dimethylamino)ethylamino)pyridin-3-ylamino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-(6-(2-(dimethylamino)ethylamino)-pyridin-3-ylamino)-1,5-naphthyridin-3-yl)ethanone;
- (S)-(4-(6-(3-aminopiperidin-1-yl)pyridin-3-ylamino)-6-(3,5-dichloro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl)(cyclopropyl)methanone;
- 1-(4-((2-(3-aminopyrrolidin-1-yl)pyrimidin-5-yl)amino)-6-(3,5-dichloro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl)ethanone;
- 1-(4-(4-((dimethylamino)methyl)cyclohexylamino)-6-(1H-pyrazol-4-yl)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-(4-(hydroxymethyl)cyclohexylamino)-1,5-naphthyridin-3-yl)ethanone;
- 1-[6-(3,5-dichloro-4-hydroxyphenyl)-4-{4-[(dimethylamino)methyl]-cyclohexylamino}-1,5-naphthyridin-3-yl]-2-hydroxyethanone;
- 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-(1-methylpiperidin-4-ylamino)-1,5-naphthyridin-3-yl)ethanone;

- 1-(6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-(1-methylpiperidin-4-ylamino)-1,5-naphthyridin-3-yl)ethanone;
- 1-{6-[3,5-dichloro-4-hydroxyphenyl]-4-[4-(morpholinomethyl)cyclohexylamino]-1,5-naphthyridin-3-yl}ethanone;
- 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-(4-(((2-hydroxyethyl)(methyl)amino)methyl)-cyclohexylamino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-(4-(((2-hydroxyethyl)(methyl)amino)-methyl)cyclohexylamino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3,5-difluoro-4-hydroxyphenyl)-4-(4-((dimethylamino)methyl)cyclohexylamino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-((6-(3-(dimethylamino)pyrrolidin-1-yl)pyridin-3-yl)amino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-((6-(3-(dimethylamino)pyrrolidin-1-yl)-pyridin-3-yl)amino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-(6-(3-(methylamino)pyrrolidin-1-yl)pyridin-3-ylamino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-(6-(3-(methylamino)pyrrolidin-1-yl)-pyridin-3-ylamino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(1H-benzo[d]imidazol-5-yl)-4-(4-((dimethylamino)methyl)cyclohexylamino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(4-(4-((dimethylamino)methyl)cyclohexylamino)-6-(pyridin-4-yl)-1,5-naphthyridin-3-yl)ethanone;
- 5-(7-acetyl-8-(4-((dimethylamino)methyl)cyclohexylamino)-1,5-naphthyridin-2-yl)-pyrimidine-2-carbonitrile;
- 1-(6-(3,5-dimethyl-1H-pyrazol-4-yl)-4-(4-((dimethylamino)methyl)cyclohexylamino)-1,5-naphthyridin-3-yl)ethanone;
- 1-(4-(4-((dimethylamino)methyl)cyclohexylamino)-6-(4-hydroxy-3,5-dimethyl-phenyl)-1,5-naphthyridin-3-yl)ethanone;
- 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-(4-(pyrrolidin-1-ylmethyl)phenylamino)-1,5-naphthyridin-3-yl)ethanone;

1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-(4-(pyrrolidin-1-ylmethyl)cyclohexylamino)-1,5-naphthyridin-3-yl)ethanone;

1-(6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-(4-(pyrrolidin-1-ylmethyl)cyclohexyl-amino)-1,5-naphthyridin-3-yl)ethanone;

1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-(4-((4-methylpiperazin-1-yl)methyl)cyclo-hexylamino)-1,5-naphthyridin-3-yl)ethanone;

1-(4-(6-(3-aminopiperidin-1-yl)pyridin-3-ylamino)-6-(3,5-dichloro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl)ethanone;

1-(4-(6-(3-aminopiperidin-1-yl)pyridin-3-ylamino)-6-(3-chloro-5-fluoro-4-hydroxy-phenyl)-1,5-naphthyridin-3-yl)ethanone;

1-(4-(4-aminocyclohexylamino)-6-(3,5-dichloro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl)ethanone;

1-[4-(4-aminocyclohexylamino)-6-(3-chloro-5-fluoro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl]ethanone;

1-(6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-(4-((4-methylpiperazin-1-yl)methyl)-cyclohexylamino)-1,5-naphthyridin-3-yl)ethanone;

N-(4-(3-acetyl-6-(3-chloro-5-fluoro-4-hydroxyphenyl)-1,5-naphthyridin-4-ylamino)-cyclohexyl)-2-amino-3-methylbutanamide;

1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-(4-(piperazin-1-ylmethyl)cyclohexylamino)-1,5-naphthyridin-3-yl)ethanone;

(S)-1-(4-(6-(3-aminopiperidin-1-yl)pyridin-3-ylamino)-6-(3,5-dichloro-4-hydroxy-phenyl)-1,5-naphthyridin-3-yl)ethanone;

(S)-1-(4-(6-(3-aminopiperidin-1-yl)pyridin-3-ylamino)-6-(3-chloro-5-fluoro-4-hydroxy-phenyl)-1,5-naphthyridin-3-yl)ethanone;

N-(4-(3-acetyl-6-(3,5-dichloro-4-hydroxyphenyl)-1,5-naphthyridin-4-yl)amino)cyclo-hexyl)-2-aminopropanamide;

N-(4-(3-acetyl-6-(3-chloro-5-fluoro-4-hydroxyphenyl)-1,5-naphthyridin-4-ylamino)-cyclohexyl)-2-aminopropanamide;

(S)—N-((1R,4S)-4-(3-acetyl-6-(3,5-dichloro-4-hydroxyphenyl)-1,5-naphthyridin-4-yl-amino)cyclohexyl)pyrrolidine-2-carboxamide;

(S)—N-((1R,4S)-4-(3-acetyl-6-(3-chloro-5-fluoro-4-hydroxyphenyl)-1,5-naphthyridin-4-ylamino)cyclohexyl)pyrrolidine-2-carboxamide;

1-(6-(3-hydroxypyrrolidin-1-yl)-4-(4-((3-hydroxypyrrolidin-1-yl)methyl)cyclohexyl-amino)-1,5-naphthyridin-3-yl)ethanone;

1-(6-(pyrrolidin-1-yl)-4-(4-(pyrrolidin-1-ylmethyl)cyclohexylamino)-1,5-naphthyridin-3-yl)ethanone;

N-(4-(3-acetyl-6-(3,5-dichloro-4-hydroxyphenyl)-1,5-naphthyridin-4-ylamino)-cyclohexyl)-2-amino-3-methylbutanamide;

[6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-[4-(dimethylamino)cyclohexylamino]-1,5-naphthyridin-3-yl](cyclopropyl)methanone;

cyclopropyl[6-(3,5-dichloro-4-hydroxyphenyl)-4-[4-(dimethylamino)cyclohexyl-amino]-1,5-naphthyridin-3-yl]methanone;

1-(4-{4-[(dimethylamino)methyl]cyclohexylamino}-6-(1H-pyrrolo[2,3-b]pyridin-5-yl)-1,5-naphthyridin-3-yl)ethanone;

(S)-{4-[6-(3-aminopiperidin-1-yl)pyridin-3-ylamino]-6-(3-chloro-5-fluoro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl}(cyclopropyl)methanone;

1-(4-{4-[(dimethylamino)methyl]cyclohexyl amino}-6-(4-methoxyphenyl)-1,5-naphthyridin-3-yl)ethanone;

1-[6-(3,5-dichloro-4-methoxyphenyl)-4-{4-[(dimethylamino)methyl]cyclohexyl-amino}-1,5-naphthyridin-3-yl]ethanone;

1-(4-{4-[(dimethylamino)methyl]cyclohexylamino}-6-(6-hydroxypyridin-3-yl)-1,5-naphthyridin-3-yl)ethanone;

5-(7-acetyl-8-{4-[(dimethylamino)methyl]cyclohexylamino}-1,5-naphthyridin-2-yl)picolinonitrile;

1-(4-{4-[(dimethylamino)methyl]cyclohexylamino}-6-(4-hydroxyphenyl)-1,5-naphthyridin-3-yl)ethanone;

1-[6-(3,5-dichloro-4-hydroxyphenyl)-4-{[4-(dimethylamino)cyclohexyl]methyl-amino}-1,5-naphthyridin-3-yl]ethanone;

1-[6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-{[4-(dimethylamino)cyclohexyl]-methylamino}-1,5-naphthyridin-3-yl]ethanone;

1-[6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-(4-hydroxycyclohexylamino)-1,5-naphthyridin-3-yl]ethanone;
 1-[6-(3,5-dichloro-4-hydroxyphenyl)-4-(4-hydroxycyclohexylamino)-1,5-naphthyridin-3-yl]ethanone;
 1-[6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-{cis-4-[(dimethylamino)methyl]cyclohexylamino}-1,5-naphthyridin-3-yl]ethanone;
 1-[6-(3,5-dichloro-4-hydroxyphenyl)-4-{cis-4-[(dimethylamino)methyl]cyclohexylamino}-1,5-naphthyridin-3-yl]ethanone;
 (R)-1-{4-[6-(3-aminopiperidin-1-yl)pyridin-3-ylamino]-6-(3,5-dichloro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl}ethanone;
 (R)-1-{4-[6-(3-aminopiperidin-1-yl)pyridin-3-ylamino]-6-(3-chloro-5-fluoro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl}ethanone;

and pharmaceutically acceptable salts thereof.

12. The compound or a pharmaceutically acceptable salt thereof according to claim 1, which is selected from the group consisting of the following compounds:

1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-(trans-4-(dimethylamino)cyclohexylamino)-1,5-naphthyridin-3-yl)ethanone;
 cyclopropyl(6-(3,5-dichloro-4-hydroxyphenyl)-4-(trans-4-((dimethylamino)methyl)-cyclohexylamino)-1,5-naphthyridin-3-yl) methanone;
 (6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-(trans-4-((dimethylamino)methyl)-cyclohexylamino)-1,5-naphthyridin-3-yl)(cyclopropyl) methanone;
 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-((trans-4-((dimethylamino)methyl)cyclohexyl)-amino)-1,5-naphthyridin-3-yl) ethanone;

1-(6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-((trans-4-
 ((dimethylamino)methyl)-cyclohexyl)amino)-1,5-
 naphthyridin-3-yl) ethanone;
 1-(6-(3,5-dichloro-4-hydroxyphenyl)-4-((trans-4-(2-
 (dimethylamino)ethyl)cyclohexyl)-amino)-1,5-naph-
 thyridin-3-yl) ethanone;
 (S)-(4-(6-(3-aminopiperidin-1-yl)pyridin-3-ylamino)-6-
 (3,5-dichloro-4-hydroxyphenyl)-1,5-naphthyridin-3-
 yl)(cyclopropyl)methanone;
 1-[6-(3,5-dichloro-4-hydroxyphenyl)-4-{trans-4-[(dim-
 ethylamino)methyl]cyclo-hexylamino}-1,5-naphthyltri-
 din-3-yl]-2-hydroxyethanone;
 1-(4-(6-(3-aminopiperidin-1-yl)pyridin-3-ylamino)-6-(3,
 5-dichloro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl)
 ethanone;
 1-(4-(6-(3-aminopiperidin-1-yl)pyridin-3-ylamino)-6-(3-
 chloro-5-fluoro-4-hydroxy-phenyl)-1,5-naphthyridin-
 3-yl)ethanone;
 (S)-1-(4-(6-(3-aminopiperidin-1-yl)pyridin-3-ylamino)-
 6-(3,5-dichloro-4-hydroxy-phenyl)-1,5-naphthyridin-
 3-yl)ethanone;
 (S)-1-(4-(6-(3-aminopiperidin-1-yl)pyridin-3-ylamino)-
 6-(3-chloro-5-fluoro-4-hydroxy-phenyl)-1,5-naphthy-
 ridin-3-yl)ethanone;
 (S)-{4-[6-(3-aminopiperidin-1-yl)pyridin-3-ylamino]-6-
 (3-chloro-5-fluoro-4-hydroxy-phenyl)-1,5-naphthyltri-
 din-3-yl}(cyclopropyl) methanone;
 (R)-1-{4-[6-(3-aminopiperidin-1-yl)pyridin-3-ylamino]-
 6-(3,5-dichloro-4-hydroxy-phenyl)-1,5-naphthyridin-
 3-yl}ethanone;
 (R)-1-{4-[6-(3-aminopiperidin-1-yl)pyridin-3-ylamino]-
 6-(3-chloro-5-fluoro-4-hydroxyphenyl)-1,5-naphthyltri-
 din-3-yl}ethanone;
 (R)-(4-{[6-(3-aminopiperidin-1-yl)pyridin-3-yl]amino}-
 6-(3,5-dichloro-4-hydroxyphenyl)-1,5-naphthyridin-3-
 yl)(cyclopropyl)methanone;
 (R)-(4-{[6-(3-aminopiperidin-1-yl)pyridin-3-yl]amino}-
 6-(3-chloro-5-fluoro-4-hydroxyphenyl)-1,5-naphthyltri-
 din-3-yl)(cyclopropyl) methanone;

1-[6-(3,5-dichloro-4-hydroxyphenyl)-4-({trans-4-(dimethylamino)cyclohexyl}amino)-1,5-naphthyridin-3-yl]-2-hydroxyethanone dihydrochloride;

1-[6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-({trans-4-[(dimethylamino)methyl]cyclohexyl}amino)-1,5-naphthyridin-3-yl]-2-hydroxyethanone dihydrochloride;

1-[6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-({trans-4-[(dimethylamino)methyl]cyclohexyl}amino)-1,5-naphthyridin-3-yl]propan-1-one dihydrochloride;

1-[6-(3,5-dichloro-4-hydroxyphenyl)-4-({trans-4-[(dimethylamino)methyl]cyclohexyl}amino)-1,5-naphthyridin-3-yl]propan-1-one dihydrochloride;

(S)-1-(4-{{[6-(3-aminopiperidin-1-yl)pyridin-3-yl]amino}-6-(3,5-dichloro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl}propan-1-one trihydrochloride;

(S)-1-(4-{{[6-(3-aminopiperidin-1-yl)pyridin-3-yl]amino}-6-(3-chloro-5-fluoro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl}propan-1-one trihydrochloride;

1-[6-(3,5-dichloro-4-hydroxyphenyl)-4-({4-[(R)-3-fluoropyrrolidin-1-yl]methyl}cyclohexyl}amino)-1,5-naphthyridin-3-yl]ethanone dihydrochloride;

(S)-(4-((6-(3-aminopiperidin-1-yl)pyridin-3-yl)amino)-6-(3-chloro-5-fluoro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl)(cyclobutyl)methanone dihydrochloride;

(6-(3,5-dichloro-4-hydroxyphenyl)-4-((4-[(dimethylamino)methyl]cyclohexyl)amino)-1,5-naphthyridin-3-yl)(cyclobutyl)methanone dihydrochloride;

(6-(3-chloro-5-fluoro-4-hydroxyphenyl)-4-((4-[(dimethylamino)methyl]cyclohexyl)amino)-1,5-naphthyridin-3-yl)(cyclobutyl)methanone dihydrochloride;

(S)-(4-{{[6-(3-aminopiperidin-1-yl)pyridin-3-yl]amino}-6-(3-chloro-5-fluoro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl}(cyclobutyl)methanone;

(R)-1-(4-((6-(3-aminopiperidin-1-yl)pyridin-3-yl)amino)-6-(3,5-dichloro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl)propan-1-one trihydrochloride;

(R)-1-(4-{{[6-(3-aminopiperidin-1-yl)pyridin-3-yl]amino}-6-(3,5-dichloro-4-hydroxyphenyl)-1,5-naphthyridin-3-yl}-2-methylpropan-1-one trihydrochloride;

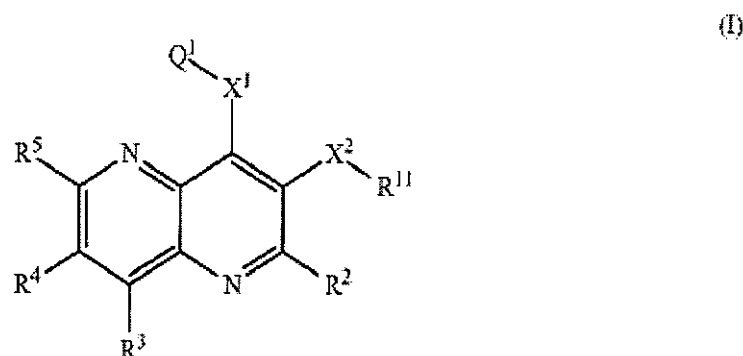
1-[6-(3,5-dichloro-5-4-hydroxyphenyl)-4-({trans-4-[(dimethylamino)methyl]cyclohexyl} amino)-1,5-naphthyridin-3-yl]-2-methylpropan-1-one dihydrochloride;

1-[6-chloro-4-({trans-4-[(dimethylamino)methyl]cyclohexyl} amino)-1,5-naphthyridin-3-yl]-2-methylpropan-1-one dihydrochloride;

and pharmaceutically acceptable salts thereof.

13. A pharmaceutical composition comprising as an active ingredient a compound or a pharmaceutically acceptable salt thereof according to claim 1.

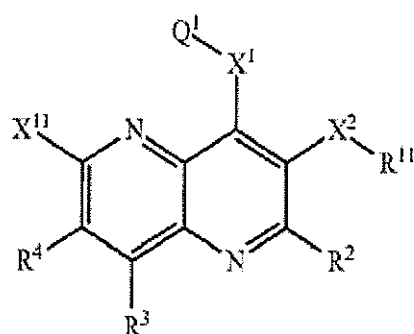
14. A process for preparing a compound of formula (I):



or a pharmaceutically acceptable salt thereof as defined in claim 1, wherein R⁵ is phenyl optionally substituted with one or more substituents independently selected from A³; and Q¹, X¹, X², R¹¹, R², R³, R⁴, and A³ are the groups as defined in any one of claim 1 to 10; which comprises:

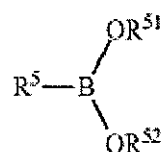
reacting a compound represented by formula (II):

(II)



wherein Q^1 , X^1 , X^2 , R^{11} , R^2 , R^3 , and R^4 are the groups as defined above, with the proviso that the groups may have one or more protecting groups, and X^{11} is a halogen atom; with a compound represented by formula (III):

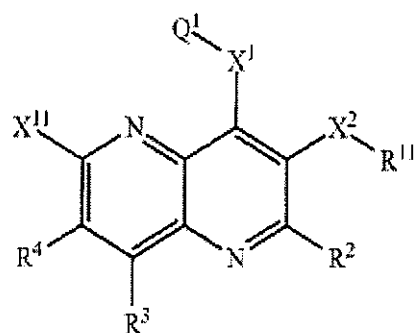
(III)



wherein R^5 is as defined above with the proviso that the group of R^5 may have one or more protecting groups; and R^{51} and R^{52} are independently selected from the group consisting of C_1 - C_6 alkyl, or R^{51} and R^{52} together with the boron atom to which they are attached forms 5- to 7-membered cyclic boronic acid ester optionally substituted with one or more substituents independently selected from the group consisting of C_1 - C_6 alkyl.

15. A compound represented by formula (II) or a pharmaceutically acceptable salt thereof:

(II)



wherein Q^1 , X^1 , X^2 , R^{11} , R^2 , R^3 , and R^4 are the groups as defined in claim 1 with the proviso that the groups may have one or more protecting groups, and X^{11} is a halogen atom.