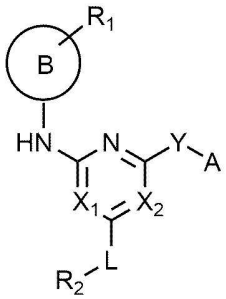
Claims

1. A compound represented by the following Chemical Formula 1, or a pharmaceutically acceptable salt thereof:

[Chemical Formula 1]



wherein, in Chemical Formula 1,

B is a ~~5-membered or 6-membered heterocycle containing 1 to 3 heteroatoms each independently selected from the group consisting of N, O and S, provided that the 5-membered or 6-membered heterocycle includes at least one N~~thiazole, pyrazole, pyridine, or pyrimidine ring,

R_1 is hydrogen, halogen, C_{1-4} alkyl, or C_{1-4} haloalkyl,

X_1 and X_2 are each CH~~independently N, or CR'~~,

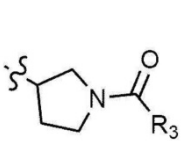
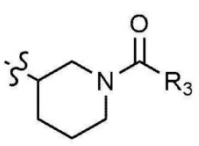
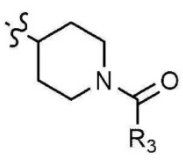
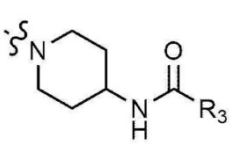
~~wherein R' is hydrogen or halogen,~~

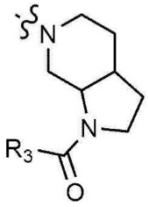
L is C_{1-4} alkylene or -O-,

R_2 is ~~cyano; C_{6-10} aryl;~~ pyridinyl; morpholino; piperazinyl; or piperidinyl,

wherein, the piperazinyl and the piperidinyl are each independently, unsubstituted, or substituted with C_{1-4} alkyl, C_{1-4} alkyl substituted with cyano, C_{1-4} alkyl substituted with amino, C_{1-4} alkyl substituted with C_{1-4} alkoxy, or -CO-(C_{1-4} alkyl),

Y is ~~a bond, -~~O-, -NH-, or -N(C_{1-4} alkyl)-,

A is  ,  ,  ,  ,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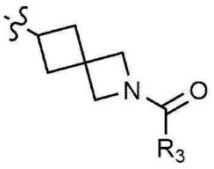

,

wherein R_3 is C_{1-4} alkyl, C_{1-4} haloalkyl, C_{2-4} alkenyl, C_{2-4} haloalkenyl, C_{2-4} alkynyl, or C_{2-4} haloalkynyl.

2. The compound or a pharmaceutically acceptable salt thereof according to claim 1, wherein

~~B is thiazole, pyrazole, pyridine, or pyrimidine ring, and~~

R_1 is hydrogen, chloro, methyl, or trifluoromethyl.

~~3. The compound or a pharmaceutically acceptable salt thereof according to claim 1, wherein~~

~~both X_1 and X_2 are CH; or~~

~~one of X_1 and X_2 is CF and the other is CH; or~~

~~one of X_1 and X_2 is N and the other is CH.~~

3~~4~~. The compound or a pharmaceutically acceptable salt thereof according to claim 1, wherein

L is methylene, or -O-.

4~~5~~. The compound or a pharmaceutically acceptable salt thereof according to claim 1, wherein

R_2 is ~~cyano; phenyl;~~ pyridinyl; morpholino; piperazinyl substituted with methyl; piperazinyl substituted with ethyl; piperazinyl substituted with 2-cyanoethyl; piperazinyl substituted with 3-aminopropyl; piperazinyl substituted with 2-methoxyethyl; piperazinyl substituted with -CO-(methyl); unsubstituted piperidinyl; or piperidinyl substituted with methyl.

5~~6~~. The compound or a pharmaceutically acceptable salt thereof according to claim 1, wherein

Y is a ~~bond, -~~O-, -NH-, or -N(methyl)-.

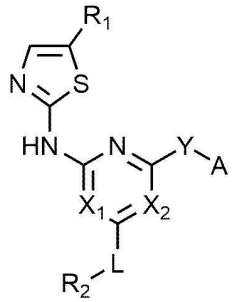
6~~7~~. The compound or a pharmaceutically acceptable salt thereof according to claim 1, wherein

R_3 is $-CH_2CH_2Cl$, $-CH=CH_2$, $-CH=CHCH_3$, -CH=CHCl, -C≡CH, or $-C\equiv CCH_3$.

7~~8~~. The compound or a pharmaceutically acceptable salt thereof according to claim 1, wherein

the compound represented by Chemical Formula 1 is represented by the following Chemical Formula 1-1:

[Chemical Formula 1-1]



wherein, in Chemical Formula 1-1,

R_1 is hydrogen, C_{1-4} alkyl, or C_{1-4} haloalkyl,

X_1 and X_2 are each CH~~independently N, or CR'~~,

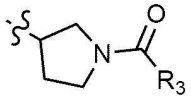
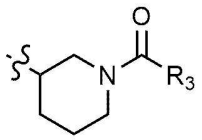
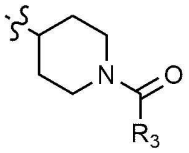
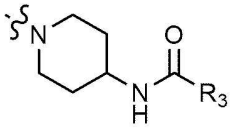
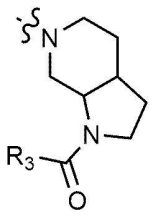
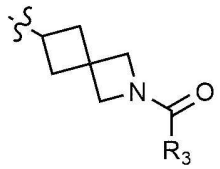
~~wherein R' is hydrogen or halogen,~~

L is C_{1-4} alkylene or -O-,

R_2 is ~~cyano; C_{6-10} aryl;~~ pyridinyl; morpholino; piperazinyl; or piperidinyl,

wherein the piperazinyl and piperidinyl are each independently, unsubstituted, or substituted with C_{1-4} alkyl, C_{1-4} alkyl substituted with cyano, C_{1-4} alkyl substituted with amino, C_{1-4} alkyl substituted with C_{1-4} alkoxy, or -CO-(C_{1-4} alkyl),

Y is a ~~bond, -~~O-, -NH-, or -N(C_{1-4} alkyl)-,

A is  ,  ,  ,  ,  , or  ,

wherein, R_3 is C_{1-4} haloalkyl, C_{2-4} alkenyl, C_{2-4} haloalkenyl, or C_{2-4} alkynyl.

8~~9~~. The compound or a pharmaceutically acceptable salt thereof according to claim 8, wherein

R_1 is C_{1-4} alkyl,

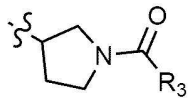
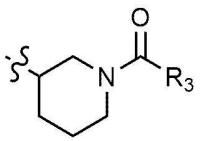
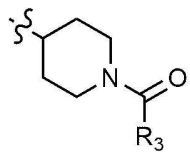
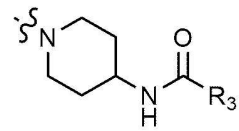
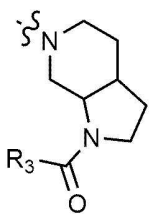
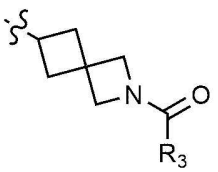
X_1 and X_2 are each ~~independently N or~~ CH,

L is C_{1-4} alkylene or -O-,

R_2 is ~~cyano; C_{6-10} aryl;~~ pyridinyl; morpholino; piperazinyl; or piperidinyl,

wherein, the piperazinyl and piperidinyl are each independently, unsubstituted, or substituted with C_{1-4} alkyl, C_{1-4} alkyl substituted with cyano, C_{1-4} alkyl substituted with C_{1-4} alkoxy, or -CO-(C_{1-4} alkyl),

Y is a ~~bond, -~~O-, -NH-, or -N(C_{1-4} alkyl)-,

A는  ,  ,  ,  ,  , or  ,

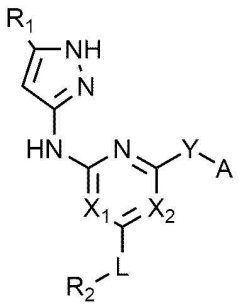
wherein, R_3 is C_{2-4} alkenyl, or C_{2-4} alkynyl.

9~~10~~. The compound or a pharmaceutically acceptable salt thereof according to claim

1, wherein

the compound represented by Chemical Formula 1 is represented by the following Chemical Formula 1-2:

[Chemical Formula 1-2]



wherein, in Chemical Formula 1-2,

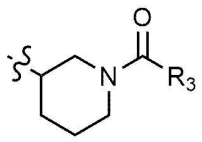
R_1 is hydrogen, or halogen,

X_1 and X_2 are each ~~independently N, or~~ CH,

L is C_{1-4} alkylene,

R_2 is morpholino,

Y is -NH-,

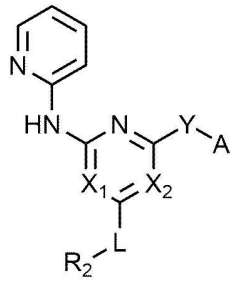
A is  ,

wherein, R_3 is C_{2-4} alkenyl.

<u>10</u>~~11~~. The compound or a pharmaceutically acceptable salt thereof according to claim 1, wherein

the compound represented by Chemical Formula 1 is represented by the following Chemical Formula 1-3:

[Chemical Formula 1-3]



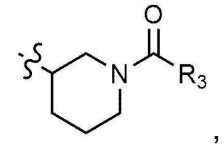
wherein, in Chemical Formula 1-3,

X_1 and X_2 are each ~~independently N or~~ CH,

L is C_{1-4} alkylene,

R_2 is morpholino,

Y is -NH-,

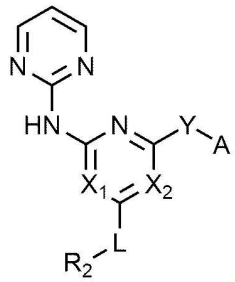
A is  ,

wherein, R_3 is C_{2-4} alkenyl.

11~~12~~. The compound or a pharmaceutically acceptable salt thereof according to claim 1, wherein

the compound represented by Chemical Formula 1 is represented by the following Chemical Formula 1-4:

[Chemical Formula 1-4]



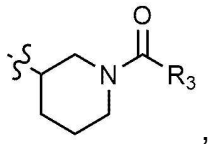
wherein, in Chemical Formula 1-4,

X_1 and X_2 are each ~~independently N or~~ CH,

L is C_{1-4} alkylene,

R_2 is morpholino,

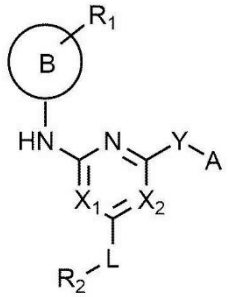
Y is -NH-,

A is  ,

wherein, R_3 is C_{2-4} alkenyl.

12. A compound represented by the following Chemical Formula 1, or a pharmaceutically acceptable salt thereof:

[Chemical Formula 1]



wherein, in Chemical Formula 1,

B is a thiazole ring,

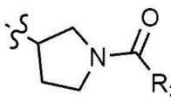
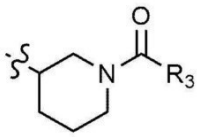
R_1 is C_{1-4} alkyl,

X_1 and X_2 are CH,

L is methylene,

R_2 is morpholino; piperazinyl substituted with ethyl; or unsubstituted piperidinyl,

Y is -O-, or -NH-,

A is  , or  ,wherein R_3 is C_{2-4} alkenyl, or C_{2-4} alkynyl.

13. A compound or a pharmaceutically acceptable salt thereof, wherein

the compound is any one selected from the group consisting of the following:

1) 1-(3-((6-((5-methylthiazol-2-yl)amino)-4-(morpholinomethyl)pyridin-2-yl)amino)piperidin-1-yl)prop-2-en-1-one,

2) 1-(3-((6-((5-methylthiazol-2-yl)amino)-4-(morpholinomethyl)pyridin-2-

yl)amino)pyrrolidin-1-yl)prop-2-en-1-one,

3) 1-(4-((6-((5-methylthiazol-2-yl)amino)-4-(morpholinomethyl)pyridin-2-yl)amino)piperidin-1-yl)prop-2-en-1-one,

4) (R)-1-(3-((6-((5-methylthiazol-2-yl)amino)-4-(morpholinomethyl)pyridin-2-yl)amino)piperidin-1-yl)prop-2-en-1-one,

5) (S)-1-(3-((6-((5-methylthiazol-2-yl)amino)-4-(morpholinomethyl)pyridin-2-yl)amino)piperidin-1-yl)prop-2-en-1-one,

6) (R)-1-(3-((6-((5-methylthiazol-2-yl)amino)-4-(morpholinomethyl)pyridin-2-yl)amino)pyrrolidin-1-yl)prop-2-en-1-one,

7) (S)-1-(3-((6-((5-methylthiazol-2-yl)amino)-4-(morpholinomethyl)pyridin-2-yl)amino)pyrrolidin-1-yl)prop-2-en-1-one,

~~8) 1-(3-((2-((5-methylthiazol-2-yl)amino)-6-(morpholinomethyl)pyrimidin-4-yl)amino)pyrrolidin-1-yl)prop-2-en-1-one,~~

~~9) (E)-1-(3-((2-((5-methylthiazol-2-yl)amino)-6-(morpholinomethyl)pyrimidin-4-yl)amino)pyrrolidin-1-yl)but-2-en-1-one,~~

10) 1-(3-((6-((5-methylthiazol-2-yl)amino)-4-(morpholinomethyl)pyridin-2-yl)oxy)pyrrolidin-1-yl)prop-2-en-1-one,

11) 1-(4-((6-((5-methylthiazol-2-yl)amino)-4-(morpholinomethyl)pyridin-2-yl)oxy)piperidin-1-yl)prop-2-en-1-one,

12) 1-(3-((6-((5-methylthiazol-2-yl)amino)-4-(morpholinomethyl)pyridin-2-yl)oxy)piperidin-1-yl)prop-2-en-1-one,

13) (R)-1-(3-((6-((5-methylthiazol-2-yl)amino)-4-(morpholinomethyl)pyridin-2-yl)amino)piperidin-1-yl)but-2-yn-1-one,

14) 1-(3-((6-((5-methylthiazol-2-yl)amino)-4-(morpholinomethyl)pyridin-2-yl)amino)pyrrolidin-1-yl)but-2-yn-1-one,

15) (S)-1-(3-((6-((5-methylthiazol-2-yl)amino)-4-(morpholinomethyl)pyridin-2-yl)oxy)piperidin-1-yl)prop-2-en-1-one,

16) (R)-1-(3-((6-((5-methylthiazol-2-yl)amino)-4-(morpholinomethyl)pyridin-2-yl)oxy)piperidin-1-yl)prop-2-en-1-one,

~~17) 1-(3-((4-((5-methylthiazol-2-yl)amino)-6-(morpholinomethyl)pyrimidin-~~

2-yl)amino)piperidin-1-yl)prop-2-en-1-one,

18) (S)-1-(3-((6-((5-methylthiazol-2-yl)amino)-4-(morpholinomethyl)pyridin-2-yl)amino)piperidin-1-yl)but-2-yn-1-one,

19) 1-(4-((6-((5-methylthiazol-2-yl)amino)-4-(morpholinomethyl)pyridin-2-yl)amino)piperidin-1-yl)but-2-yn-1-one,

20) (S)-1-(3-((4-((4-acetylpiperazin-1-yl)methyl)-6-(5-methylthiazol-2-yl)amino)pyridin-2-yl)amino)piperidin-1-yl)prop-2-en-1-one,

21) (S)-1-(3-((4-((5-methylthiazol-2-yl)amino)-6-(morpholinomethyl)pyrimidin-2-yl)amino)piperidin-1-yl)prop-2-en-1-one,

22) (S)-1-(3-((4-((4-(2-methoxyethyl)piperazin-1-yl)methyl)-6-(5-methylthiazol-2-yl)amino)pyridin-2-yl)amino)piperidin-1-yl)prop-2-en-1-one,

23) (S)-1-(3-((4-((5-methylthiazol-2-yl)amino)-6-(morpholinomethyl)pyrimidin-2-yl)amino)piperidin-1-yl)but-2-yn-1-one,

24) (S)-1-(3-((4-((5-methylthiazol-2-yl)amino)-6-(morpholinomethyl)pyrimidin-2-yl)amino)pyrrolidin-1-yl)prop-2-en-1-one,

25) (R)-1-(3-((4-((5-methylthiazol-2-yl)amino)-6-(morpholinomethyl)pyrimidin-2-yl)amino)piperidin-1-yl)prop-2-en-1-one,

26) (S)-1-(3-(methyl(6-((5-methylthiazol-2-yl)amino)-4-(morpholinomethyl)pyridin-2-yl)amino)piperidin-1-yl)prop-2-en-1-one,

27) N-(1-(6-((5-methylthiazol-2-yl)amino)-4-(morpholinomethyl)pyridin-2-yl)piperidin-4-yl)acrylamide,

28) 1-(6-(6-((5-methylthiazol-2-yl)amino)-4-(morpholinomethyl)pyridin-2-yl)octahydro-1H-pyrrolo[2,3-c]pyridin-1-yl)prop-2-en-1-one,

29) 1-(6-(6-((5-methylthiazol-2-yl)amino)-4-(morpholinomethyl)pyridin-2-yl)octahydro-1H-pyrrolo[2,3-c]pyridin-1-yl)but-2-yn-1-one,

30) 1-(6-((6-((5-methylthiazol-2-yl)amino)-4-(morpholinomethyl)pyridin-2-yl)amino)-2-azaspiro[3.3]heptan-2-yl)prop-2-en-1-one,

31) (S)-1-(3-((4-((5-methylthiazol-2-yl)amino)-6-(piperidin-1-ylmethyl)pyrimidin-2-yl)amino)piperidin-1-yl)prop-2-en-1-one,

32) (S)-1-(3-((4-((4-ethylpiperazin-1-yl)methyl)-6-(5-methylthiazol-2-

~~yl)amino)pyrimidin-2-yl)amino)piperidin-1-yl)prop-2-en-1-one,~~

33) (S)-1-(3-((4-((1-methylpiperidin-4-yl)oxy)-6-((5-methylthiazol-2-yl)amino)pyridin-2-yl)amino)piperidin-1-yl)prop-2-en-1-one,

34) (S)-3-(4-((2-((1-acryloylpiperidin-3-yl)amino)-6-((5-methylthiazol-2-yl)amino)pyridin-4-yl)methyl)piperazin-1-yl)propanenitrile,

~~35) (S)-1-(3-((4-methyl-6-((5-methylthiazol-2-yl)amino)pyridin-2-yl)amino)piperidin-1-yl)prop-2-en-1-one,~~

36) (S)-1-(3-((6-((5-methylthiazol-2-yl)amino)-4-(pyridin-3-ylmethyl)pyridin-2-yl)amino)piperidin-1-yl)prop-2-en-1-one,

37) (S)-1-(3-((6-((5-methylthiazol-2-yl)amino)-4-(pyridin-2-ylmethyl)pyridin-2-yl)amino)piperidin-1-yl)prop-2-en-1-one,

~~38) (S)-2-((1-acryloylpiperidin-3-yl)amino)-6-(5-methylthiazol-2-yl)amino)isonicotinonitrile,~~

~~39) (S)-1-(3-((6-((5-methylthiazol-2-yl)amino)-4-phenylpyridin-2-yl)amino)piperidin-1-yl)prop-2-en-1-one,~~

40) (S)-1-(3-((4-((1-methylpiperidin-4-yl)oxy)-6-((5-methylthiazol-2-yl)amino)pyridin-2-yl)amino)piperidin-1-yl)prop-2-yn-1-one,

41) (S)-1-(3-((4-((1-methylpiperidin-4-yl)oxy)-6-((5-methylthiazol-2-yl)amino)pyridin-2-yl)amino)piperidin-1-yl)but-2-yn-1-one,

42) (S)-1-(3-((4-((4-ethylpiperazin-1-yl)methyl)-6-((5-methylthiazol-2-yl)amino)pyridin-2-yl)amino)piperidin-1-yl)prop-2-en-1-one,

43) (S)-1-(3-((4-((4-methylpiperazin-1-yl)methyl)-6-(5-methylthiazol-2-yl)amino)pyridin-2-yl)amino)piperidin-1-yl)prop-2-en-1-one,

~~44) 5-methyl-N-(6-methyl-4-(morpholinomethyl)pyridin-2-yl)thiazol-2-amine,~~

45) (S)-3-chloro-1-(3-((6-((5-methylthiazol-2-yl)amino)-4-(morpholinomethyl)pyridin-2-yl)amino)piperidin-1-yl)propan-1-one,

46) (S,E)-3-chloro-1-(3-(6-(5-methylthiazol-2-ylamino)-4-(morpholinomethyl)pyridin-2-ylamino)piperidin-1-yl)prop-2-en-1-one,

47) (S)-1-(3-(4-((4-(3-aminopropyl)piperazin-1-yl)methyl)-6-(5-

methylthiazol-2-ylamino)pyridin-2-ylamino)piperidin-1-yl)prop-2-en-1-one,

~~48) (S)-1-(3-(6-(1H-pyrazol-3-ylamino)-4-(morpholinomethyl)pyridin-2-ylamino)piperidin-1-yl)prop-2-en-1-one,~~

49) (S)-1-(3-(4-(morpholinomethyl)-6-(5-(trifluoromethyl)thiazol-2-ylamino)pyridin-2-ylamino)piperidin-1-yl)prop-2-en-1-one,

~~50) (S)-1-(3-(6-(5-chloro-1H-pyrazol-3-ylamino)-4-(morpholinomethyl)pyridin-2-ylamino)piperidin-1-yl)prop-2-en-1-one,~~

~~51) (S)-1-(3-(4-(morpholinomethyl)-6-(thiazol-2-ylamino)pyridin-2-ylamino)piperidin-1-yl)prop-2-en-1-one,~~

~~52) (S)-1-(3-(3-fluoro-6-(5-methylthiazol-2-ylamino)-4-(morpholinomethyl)pyridin-2-ylamino)piperidin-1-yl)prop-2-en-1-one,~~

53) (S)-1-(3-(4-(morpholinomethyl)-6-(pyridin-2-ylamino)pyridin-2-ylamino)piperidin-1-yl)prop-2-en-1-one~~, and~~

~~54) (S)-1-(3-(4-(morpholinomethyl)-6-(pyrimidin-2-ylamino)pyridin-2-ylamino)piperidin-1-yl)prop-2-en-1-one~~.

14. A compound or a pharmaceutically acceptable salt thereof, wherein the compound is:

1)1-(3-((6-((5-methylthiazol-2-yl)amino)-4-(morpholinomethyl)pyridin-2-yl)amino)piperidin-1-yl)prop-2-en-1-one.

15~~4~~. A pharmaceutical composition for preventing or treating autoimmune diseases or cancers, comprising the compound according to any one of claims 1 to 14~~3~~ or a pharmaceutically acceptable salt thereof as an active ingredient.

16. Use of a compound, or a pharmaceutically acceptable salt thereof, according to any one of claims 1 to 14 in the manufacture of a medicament for the treatment of autoimmune diseases or cancers.