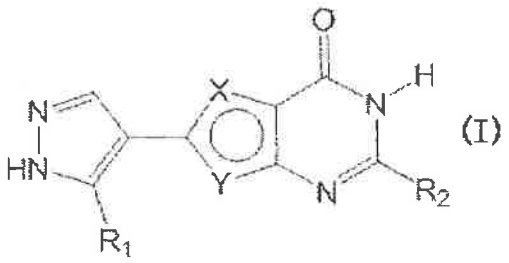
Claims

1. A compound represented by formula:



(I)

wherein

one of X and Y is a sulfur atom, and the other is CH,

R_1 is a C_{1-6} alkyl group optionally substituted by halogen atom(s),

R_2 is

(1) a C_{1-6} alkyl group optionally substituted by 1 to 3 substituents selected from

(a) a non-aromatic heterocyclic group optionally substituted by 1 to 3 substituents selected from

(i) a halogen atom,

(ii) a hydroxy group,

(iii) a C_{1-6} alkyl group optionally substituted by 1 to 3 substituents selected from

(aa) a halogen atom,

(bb) a hydroxy group,

(cc) a C_{1-6} alkoxy group, and

(dd) a C_{6-14} aryl group optionally substituted by 1 to 3 C_{1-6} alkyl groups,

(iv) a C_{1-6} alkoxy group,

(v) a C_{6-14} aryl group optionally substituted by 1 to 3 halogen atoms,

(vi) a C_{6-14} aryloxy group,

(vii) a C_{1-6} alkoxy-carbonyl group,

(viii) a C_{1-6} alkyl-carbonyl group,

(ix) a cyano group,

(x) a C_{6-14} arylsulfonyl group,

(xi) a carboxy group,

(xii) an amino group optionally mono- or di-substituted by a C_{1-6} alkyl group,

(xiii) a non-aromatic heterocyclic group optionally substituted by an oxo group, and

(xiv) an oxo group,

(b) a C_{1-6} alkoxy group,

(c) an amino group optionally mono- or di-substituted by substituent(s) selected from

(i) a C_{1-6} alkyl group optionally substituted by 1 to 3 substituents selected from

(aa) a C_{6-14} aryl group optionally substituted by 1 to 3 C_{1-6} alkoxy groups,

(bb) a C_{1-6} alkoxy-carbonyl group,

(cc) an aromatic heterocyclic group,

(dd) a C_{3-8} cycloalkyl group optionally substituted by an aromatic heterocyclic group, and

(ee) a hydroxy group,

(ii) a non-aromatic heterocyclic group optionally substituted by 1 to 3 C_{7-13} aralkyl groups,

(iii) a C_{6-14} aryl group optionally substituted by 1 to 3 C_{1-6} alkoxy groups, and

(iv) a C_{3-8} cycloalkyl group,

(d) a 5- or 6-membered aromatic heterocyclic group,

(e) a C_{6-14} aryl group, and

(f) a C_{3-8} cycloalkyl group optionally substituted by an amino group;

(2) a C_{6-14} aryl group optionally substituted by 1 to 3 halogen atoms;

(3) a non-aromatic heterocyclic group optionally substituted by 1 to 3 substituents selected from

(a) a halogen atom,

(b) a C_{1-6} alkyl group optionally substituted by 1 to 3 substituents selected from

(i) a hydroxy group,

(ii) a C_{1-6} alkoxy-carbonyl group, and

(iii) a carbamoyl group,

(c) a C_{6-14} aryloxy group,

(d) a C_{1-6} alkoxy-carbonyl group,

(e) a C_{1-6} alkyl-carbonyl group,

(f) a C_{6-14} aryl group optionally substituted by a C_{1-6} alkylsulfonyl group,

(g) a C_{7-13} aralkyl group optionally substituted by 1 to 3 halogen atoms,

(h) a hydroxy group,

(i) a carbamoyl group, and

(j) a non-aromatic heterocyclic group;

(4) a C_{2-6} alkenyl group optionally substituted by 1 to 3 C_{6-14} aryl groups;

(5) a 5- or 6-membered aromatic heterocyclic group;

(6) a non-aromatic heterocyclyl-carbonyl group; or

(7) a C_{3-8} cycloalkyl group optionally substituted by an amino group~~a substituent~~,

or a salt thereof.

2. The compound according to claim 1, wherein X is a sulfur atom; and

Y is CH, or a salt thereof.

~~3. The compound according to claim 1, wherein R_2 is a hydrocarbon group optionally having substituent(s), a heterocyclic group optionally having substituent(s), or a non-aromatic heterocyclyl-carbonyl group optionally having substituent(s), or a salt thereof.~~

~~4. The compound according to claim 1, wherein R_2 is~~

~~(1) a C_{1-6} alkyl group optionally substituted by 1 to 3 substituents selected from~~

~~(a) a non-aromatic heterocyclic group optionally substituted by 1 to 3 substituents selected from~~

(i) a halogen atom,

(ii) a hydroxy group,

(iii) a C_{1-6} alkyl group optionally substituted by 1 to 3 substituents selected from

(aa) a halogen atom,

(bb) a hydroxy group,

(cc) a C_{1-6} alkoxy group, and

(dd) a C_{6-14} aryl group optionally substituted by 1 to 3 C_{1-6} alkyl groups,

(iv) a C_{1-6} alkoxy group,

(v) a C_{6-14} aryl group optionally substituted by 1 to 3 halogen atoms,

(vi) a C_{6-14} aryloxy group,

(vii) a C_{1-6} alkoxy-carbonyl group,

(viii) a C_{1-6} alkyl-carbonyl group,

(ix) a cyano group,

(x) a C_{6-14} arylsulfonyl group,

(xi) a carboxy group,

(xii) an amino group optionally mono- or di-substituted by a C_{1-6} alkyl group,

(xiii) a non-aromatic heterocyclic group optionally substituted by an oxo group, and

(xiv) an oxo group,

(b) a C_{1-6} alkoxy group,

(c) an amino group optionally mono- or di-substituted by substituent(s) selected from

(i) a C_{1-6} alkyl group optionally substituted by 1 to 3 substituents selected from

(aa) a C_{6-14} aryl group optionally substituted by 1 to 3 C_{1-6} alkoxy groups,

(bb) a C_{1-6} alkoxy-carbonyl group,

(cc) an aromatic heterocyclic group,

(dd) a C_{3-8} cycloalkyl group optionally substituted by an aromatic heterocyclic group, and

(ee) a hydroxy group,

~~(ii) a non-aromatic heterocyclic group optionally substituted by 1 to 3 C_{7-13} aralkyl groups,~~

~~(iii) a C_{6-14} aryl group optionally substituted by 1 to 3 C_{1-6} alkoxy groups, and~~

~~(iv) a C_{3-8} cycloalkyl group,~~

~~(d) a 5- or 6-membered aromatic heterocyclic group,~~

~~(e) a C_{6-14} aryl group, and~~

~~(f) a C_{3-8} cycloalkyl group optionally substituted by an amino group;~~

~~(2) a C_{6-14} aryl group optionally substituted by 1 to 3 halogen atoms;~~

~~(3) a non-aromatic heterocyclic group optionally substituted by 1 to 3 substituents selected from~~

~~(a) a halogen atom,~~

~~(b) a C_{1-6} alkyl group optionally substituted by 1 to 3 substituents selected from~~

~~(i) a hydroxy group,~~

~~(ii) a C_{1-6} alkoxy-carbonyl group, and~~

~~(iii) a carbamoyl group,~~

~~(c) a C_{6-14} aryloxy group,~~

~~(d) a C_{1-6} alkoxy-carbonyl group,~~

~~(e) a C_{1-6} alkyl-carbonyl group,~~

~~(f) a C_{6-14} aryl group optionally substituted by a C_{1-6} alkylsulfonyl group,~~

~~(g) a C_{7-13} aralkyl group optionally substituted by 1 to 3 halogen atoms,~~

~~(h) a hydroxy group,~~

~~(i) a carbamoyl group, and~~

~~(j) a non-aromatic heterocyclic group;~~

~~(4) a C_{2-6} alkenyl group optionally substituted by 1 to 3 C_{6-14} aryl groups;~~

~~(5) a 5- or 6-membered aromatic heterocyclic group;~~

~~(6) a non-aromatic heterocyclyl-carbonyl group; or~~

~~(7) a C_{3-8} cycloalkyl group optionally substituted by an amino group, or a salt thereof.~~

~~53~~. The compound according to claim 1, wherein R_2 is
(1) a 4- to 6-membered non-aromatic heterocyclyl-C_{1-6} alkyl group optionally substituted by 1 to 3 halogen atoms;
(2) a C_{6-14} aryl group optionally substituted by 1 to 3 halogen atoms; or
(3) a non-aromatic heterocyclic group optionally substituted by 1 to 3 substituents selected from
(a) a halogen atom, and
(b) a C_{1-6} alkyl group,
or a salt thereof.

~~64~~. The compound according to claim ~~41~~, wherein X is a sulfur atom;
Y is CH; and
R_1 is a C_{1-6} alkyl group,
or a salt thereof.

~~75~~. The compound according to claim 1, wherein R_1 is a C_{1-6} alkyl group, or a salt thereof.

~~86~~. 6-(5-Methyl-1H-pyrazol-4-yl)-2-[(2S)-pyrrolidin-2-yl]thieno[3,2-d]pyrimidin-4(3H)-one, or a salt thereof.

~~97~~. 6-(5-Methyl-1H-pyrazol-4-yl)-2-[(2S)-piperidin-2-yl]thieno[3,2-d]pyrimidin-4(3H)-one, or a salt thereof.

~~108~~. 2-(7-Azabicyclo[2.2.1]hept-1-yl)-6-(5-methyl-1H-pyrazol-4-yl)thieno[3,2-d]pyrimidin-4(3H)-one, or a salt thereof.

~~119~~. 6-(5-Methyl-1H-pyrazol-4-yl)-2-[(2S)-1,2,3,6-tetrahydropyridin-2-yl]thieno[3,2-d]pyrimidin-4(3H)-one, or a salt thereof.

~~1210~~. 2-[(2S)-Piperidin-2-yl]-6-[5-(trifluoromethyl)-1H-

pyrazol-4-yl]thieno[3,2-d]pyrimidin-4(3H)-one, or a salt thereof.

~~13~~11. 2-[(2S)-1-Azabicyclo[2.2.2]oct-2-yl]-6-(5-methyl-1H-pyrazol-4-yl)thieno[3,2-d]pyrimidin-4(3H)-one, or a salt thereof.

~~14~~12. A medicament comprising the compound according to claim 1, or a salt thereof.

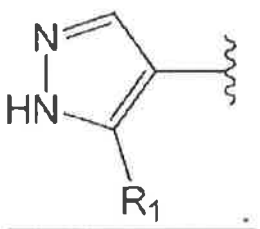
~~15~~13. The medicament according to claim ~~14~~12, which is a cell division cycle 7 inhibitor.

~~16~~14. The medicament according to claim ~~14~~12, which is an agent for the prophylaxis or treatment of cancer.

~~17~~15. Use of the compound according to claim 1, or a salt thereof for the production of a cell division cycle 7 inhibitor.

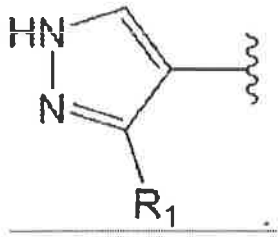
~~18~~16. Use of the compound according to claim 1, or a salt thereof for the manufacture~~production~~ of ~~an~~ medicament~~agent~~ for the ~~prophylaxis or~~ treatment of cancer.

17. The compound according to claim 1, wherein compound (I) is a tautomer isomer represented by the partial structure of the formula



18. The compound according to claim 1, wherein compound (I) is a tautomer isomer represented by the partial structure of the

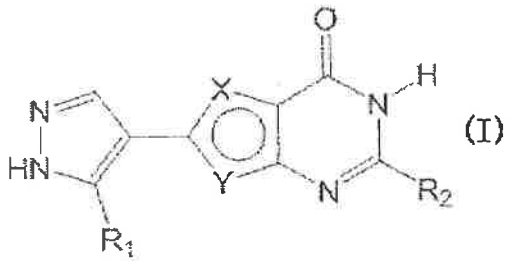
formula



19. The compound according to claim 1, wherein the compound or a salt thereof is a hydrate.

Claims

1. A compound represented by formula:



wherein

one of X and Y is a sulfur atom, and the other is CH,

R_1 is a C_{1-6} alkyl group optionally substituted by halogen atom(s),

R_2 is

(1) a C_{1-6} alkyl group optionally substituted by 1 to 3 substituents selected from

(a) a non-aromatic heterocyclic group optionally substituted by 1 to 3 substituents selected from

(i) a halogen atom,

(ii) a hydroxy group,

(iii) a C_{1-6} alkyl group optionally substituted by 1 to 3 substituents selected from

(aa) a halogen atom,

(bb) a hydroxy group,

(cc) a C_{1-6} alkoxy group, and

(dd) a C_{6-14} aryl group optionally substituted by 1 to 3 C_{1-6} alkyl groups,

(iv) a C_{1-6} alkoxy group,

(v) a C_{6-14} aryl group optionally substituted by 1 to 3 halogen atoms,

(vi) a C_{6-14} aryloxy group,

(vii) a C_{1-6} alkoxy-carbonyl group,

(viii) a C_{1-6} alkyl-carbonyl group,

(ix) a cyano group,

(x) a C_{6-14} arylsulfonyl group,

(xi) a carboxy group,

(xii) an amino group optionally mono- or di-substituted by a C_{1-6} alkyl group,

(xiii) a non-aromatic heterocyclic group optionally substituted by an oxo group, and

(xiv) an oxo group,

(b) a C_{1-6} alkoxy group,

(c) an amino group optionally mono- or di-substituted by substituent(s) selected from

(i) a C_{1-6} alkyl group optionally substituted by 1 to 3 substituents selected from

(aa) a C_{6-14} aryl group optionally substituted by 1 to 3 C_{1-6} alkoxy groups,

(bb) a C_{1-6} alkoxy-carbonyl group,

(cc) an aromatic heterocyclic group,

(dd) a C_{3-8} cycloalkyl group optionally substituted by an aromatic heterocyclic group, and

(ee) a hydroxy group,

(ii) a non-aromatic heterocyclic group optionally substituted by 1 to 3 C_{7-13} aralkyl groups,

(iii) a C_{6-14} aryl group optionally substituted by 1 to 3 C_{1-6} alkoxy groups, and

(iv) a C_{3-8} cycloalkyl group,

(d) a 5- or 6-membered aromatic heterocyclic group,

(e) a C_{6-14} aryl group, and

(f) a C_{3-8} cycloalkyl group optionally substituted by an amino group;

(2) a C_{6-14} aryl group optionally substituted by 1 to 3 halogen atoms;

(3) a non-aromatic heterocyclic group optionally substituted by 1 to 3 substituents selected from

(a) a halogen atom,

(b) a C_{1-6} alkyl group optionally substituted by 1 to 3 substituents selected from

(i) a hydroxy group,

(ii) a C_{1-6} alkoxy-carbonyl group, and

(iii) a carbamoyl group,

(c) a C_{6-14} aryloxy group,

(d) a C_{1-6} alkoxy-carbonyl group,

(e) a C_{1-6} alkyl-carbonyl group,

(f) a C_{6-14} aryl group optionally substituted by a C_{1-6} alkylsulfonyl group,

(g) a C_{7-13} aralkyl group optionally substituted by 1 to 3 halogen atoms,

(h) a hydroxy group,

(i) a carbamoyl group, and

(j) a non-aromatic heterocyclic group;

(4) a C_{2-6} alkenyl group optionally substituted by 1 to 3 C_{6-14} aryl groups;

(5) a 5- or 6-membered aromatic heterocyclic group;

(6) a non-aromatic heterocyclyl-carbonyl group; or

(7) a C_{3-8} cycloalkyl group optionally substituted by an amino group,

or a salt thereof.

2. The compound according to claim 1, wherein X is a sulfur atom; and

Y is CH, or a salt thereof.

3. The compound according to claim 1, wherein R_2 is

(1) a 4- to 6-membered non-aromatic heterocyclyl-C_{1-6} alkyl group optionally substituted by 1 to 3 halogen atoms;

(2) a C_{6-14} aryl group optionally substituted by 1 to 3 halogen atoms; or

(3) a non-aromatic heterocyclic group optionally substituted by 1 to 3 substituents selected from

(a) a halogen atom, and

(b) a C_{1-6} alkyl group,

or a salt thereof.

4. The compound according to claim 1, wherein X is a sulfur atom;
Y is CH; and
R_1 is a C_{1-6} alkyl group,
or a salt thereof.

5. The compound according to claim 1, wherein R_1 is a C_{1-6} alkyl group, or a salt thereof.

6. 6-(5-Methyl-1H-pyrazol-4-yl)-2-[(2S)-pyrrolidin-2-yl]thieno[3,2-d]pyrimidin-4(3H)-one, or a salt thereof.

7. 6-(5-Methyl-1H-pyrazol-4-yl)-2-[(2S)-piperidin-2-yl]thieno[3,2-d]pyrimidin-4(3H)-one, or a salt thereof.

8. 2-(7-Azabicyclo[2.2.1]hept-1-yl)-6-(5-methyl-1H-pyrazol-4-yl)thieno[3,2-d]pyrimidin-4(3H)-one, or a salt thereof.

9. 6-(5-Methyl-1H-pyrazol-4-yl)-2-[(2S)-1,2,3,6-tetrahydropyridin-2-yl]thieno[3,2-d]pyrimidin-4(3H)-one, or a salt thereof.

10. 2-[(2S)-Piperidin-2-yl]-6-[5-(trifluoromethyl)-1H-pyrazol-4-yl]thieno[3,2-d]pyrimidin-4(3H)-one, or a salt thereof.

11. 2-[(2S)-1-Azabicyclo[2.2.2]oct-2-yl]-6-(5-methyl-1H-pyrazol-4-yl)thieno[3,2-d]pyrimidin-4(3H)-one, or a salt thereof.

12. A medicament comprising the compound according to claim 1, or a salt thereof.

13. The medicament according to claim 12, which is a cell

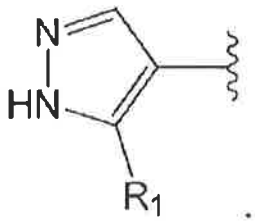
division cycle 7 inhibitor.

14. The medicament according to claim 12, which is an agent for the prophylaxis or treatment of cancer.

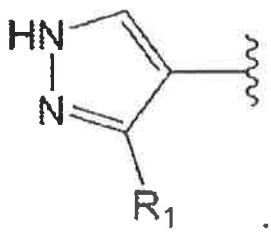
15. Use of the compound according to claim 1, or a salt thereof for the production of a cell division cycle 7 inhibitor.

16. Use of the compound according to claim 1, or a salt thereof for the manufacture of a medicament for the treatment of cancer.

17. The compound according to claim 1, wherein compound (I) is a tautomer isomer represented by the partial structure of the formula



18. The compound according to claim 1, wherein compound (I) is a tautomer isomer represented by the partial structure of the formula



19. The compound according to claim 1, wherein the compound or a salt thereof is a hydrate.