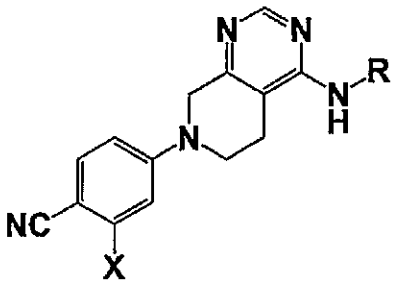
CLAIMS

1. A tetrahydropyridopyrimidine compound represented by the following formula (I):



(I)

wherein, in the formula,

X represents a halogen atom or a halogeno-C_{1-3} alkyl group;

R represents a C_{6-14} aryl group which is substituted with R^1 and may be substituted simultaneously with R^2, or a 5- or 6-membered heteroaryl group which is substituted with R^1 and may be substituted simultaneously with R^2;

R^1 represents a hydrogen atom, a phenyl group, a hydroxy-C_{1-6} alkyl group, a hydroxy-C_{3-7} cycloalkyl group, a C_{1-6} alkoxy group which may be substituted with Ra, a C_{3-7} cycloalkylaminosulfonyl group, a 3- to 7-membered monocyclic heterocycloalkylsulfonyl group, a halogeno-C_{1-3} alkoxycarbonylamino group, a halogeno-C_{1-3} alkylcarbonylamino group, a 3- to 7-membered monocyclic heterocycloalkanecarbonyl group substituted with a hydroxy-C_{1-6} alkyl group, or $-(CH_2)_n-C(=O)-NHRf$;

R^2 represents a hydrogen atom, a halogen atom, or a halogeno-C_{1-3} alkyl group;

Ra represents a C_{1-6} alkylpyrazolyl group, a triazolyl group, a tetrazolyl group, or a C_{1-6} alkylsulfonylpiperazinyl group;

Rf represents a halogeno-C_{1-3} alkyl group, a hydroxy-C_{1-6} alkyl group, a hydroxy-C_{3-7} cycloalkyl group, a hydroxy-C_{3-7} cycloalkyl-C_{1-6} alkyl group, or a C_{1-6} alkyl group substituted with Rfa;

Rfa represents a C_{1-6} alkylpyrazolyl group, a halogeno-C_{1-3} alkylthiazolyl group, an oxadiazolyl group, or a halogeno-C_{1-3} alkyloxadiazolyl group; and

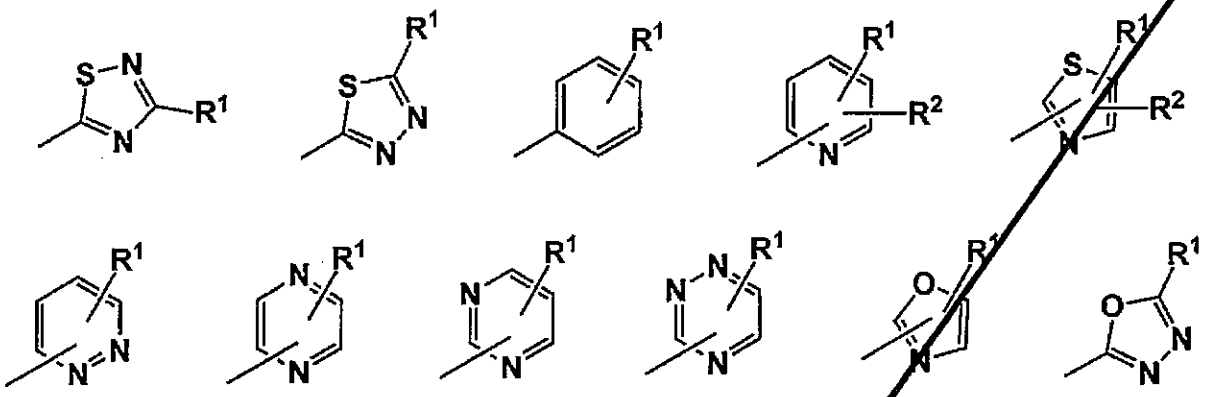
n represents an integer of from 0 to 3;

or a pharmaceutically acceptable salt thereof.

2. The compound according to claim 1 or a pharmaceutically acceptable salt thereof, wherein X is a chlorine atom, a bromine atom, or a trifluoromethyl group.

3. The compound according to claim 1 or 2 or a pharmaceutically acceptable salt thereof, wherein n is 0 or 1.

4. The compound according to any one of claims 1 to 3 or a pharmaceutically acceptable salt thereof, wherein R is selected from the group consisting of the following groups:



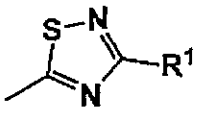
5. The compound according to any one of claims 1 to 4 or a pharmaceutically acceptable salt thereof, wherein

R^1 is a hydrogen atom, a phenyl group, a hydroxy-ethyl group, a hydroxy-isopropyl group, a hydroxy-cyclopropyl group, a hydroxy-cyclobutyl group, a methoxy group, an isopropoxy group, an ethoxy group substituted with a methylpyrazolyl group, an ethoxy group substituted with a triazolyl group, a 2-methylpropoxy group substituted with a triazolyl group, a 2-methylpropoxy group substituted with a tetrazolyl group, an n-propoxy group substituted with a methylsulfonylpiperazinyl group, a cyclopropylaminosulfonyl group, a 1,4-oxazepanylsulfonyl group, a 2,2,2-trifluoroethoxycarbonylamino group, a 2,2,2-trifluoroethylcarbonylamino group, a piperidinecarbonyl group substituted with a hydroxy-isopropyl group, or -$(CH_2)_n$-C(=O)-NHRf;

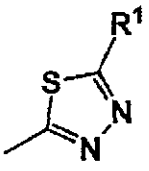
Rf is a 2,2-difluoroethyl group, a 2,2,2-trifluoroethyl group, a hydroxy-2-methylpropyl group, a hydroxycyclohexyl

group, a hydroxycyclopropylmethyl group, a methyl group substituted with a trifluoromethylthiazolyl group, an ethyl group substituted with a methylthiazolyl group, an ethyl group substituted with an oxadiazolyl group, or an ethyl group substituted with a trifluoromethyloxazolyl group; and n is 0 or 1.

6. The compound according to any one of claims 1 to 5 or a pharmaceutically acceptable salt thereof, wherein R is selected from the group consisting of the following groups:



wherein, in the formula, R^1 is a hydrogen atom;



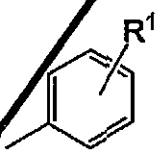
wherein, in the formula,

R^1 is $-(CH_2)_n-C(=O)-NHRf$,

Rf is a methyl group substituted with Rfa or an ethyl group substituted with Rfa,

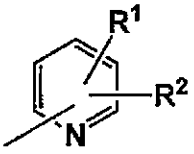
Rfa is a methylpyrazolyl group or an oxadiazolyl group, and

n is 0,



wherein, in the formula,

R^1 is a phenyl group, a hydroxy-ethyl group, a hydroxy-isopropyl group, a methoxy group, an isopropoxy group, an ethoxy group substituted with a methylpyrazolyl group, or an n-propoxy group substituted with a methylsulfonylpiperazinyl group;



wherein, in the formula,

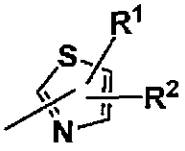
R^1 is a hydroxy-isopropyl group, a hydroxy-cyclopropyl group, a hydroxy-cyclobutyl group, an isopropoxy group, an ethoxy group substituted with a triazolyl group, a 2-methylpropoxy group substituted with a triazolyl group, a 2-methylpropoxy group substituted with a tetrazolyl group, a cyclopropylaminosulfonyl group, a 2,2,2-trifluoroethoxycarbonylamino group, a 2,2,2-trifluoroethylcarbonylamino group, or $-(CH_2)_n-C(=O)-NHRf$,

R^2 is a hydrogen atom, a fluorine atom, or a chlorine atom,

Rf is a 2,2-difluoroethyl group, a 2,2,2-trifluoroethyl group, a methyl group substituted with Rfa, or an ethyl group substituted with Rfa;

Rfa is a trifluoromethylthiazolyl group, an oxadiazolyl group, or a trifluoromethyloxadiazolyl group, and

n is 0 or 1;



wherein, in the formula,

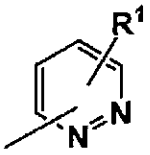
R^1 is a hydroxy-isopropyl group, a 1,4-oxazepanylsulfonyl group, or $-(CH_2)_n-C(=O)-NHRf$,

R^2 is a hydrogen atom or a trifluoromethyl group,

Rf is a 2,2,2-trifluoroethyl group or an ethyl group substituted with Rfa,

Rfa is an oxadiazolyl group, and

n is 0;

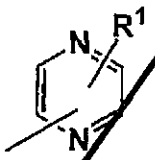


wherein, in the formula,

R^1 is a hydroxy-isopropyl group or $-(CH_2)_n-C(=O)-NHRf$,

Rf is a 2,2-difluoroethyl group, a 2,2,2-trifluoroethyl group, a hydroxy-2-methylpropyl group, a hydroxycyclohexyl group, a hydroxycyclopropylmethyl group, and

n is 0;

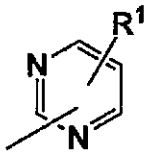


wherein, in the formula,

R^1 is $-(CH_2)_n-C(=O)-NHRf$,

Rf is a hydroxy-2-methylpropyl group, and

n is 0;

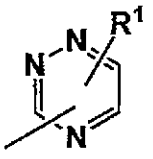


wherein, in the formula,

R^1 is $-(CH_2)_n-C(=O)-NHRf$,

Rf is a hydroxy-2-methylpropyl group, and

n is 0;

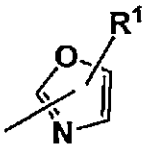


wherein, in the formula,

R^1 is $-(CH_2)_n-C(=O)-NHRf$,

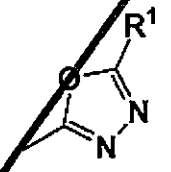
Rf is a 2,2,2-trifluoroethyl group, and

n is 0;



wherein, in the formula,

R^1 is a piperidinecarbonyl group substituted with a hydroxy-isopropyl group; or



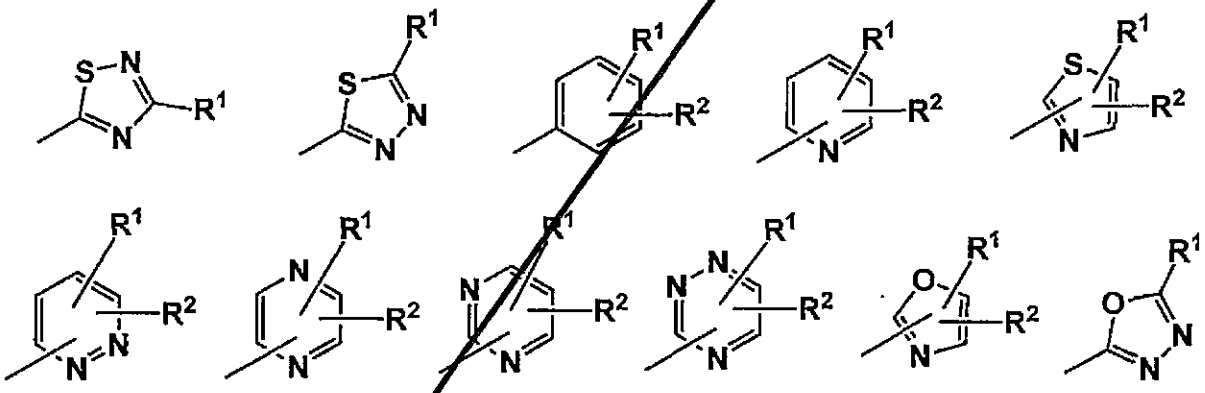
wherein, in the formula,

R^1 is a piperidinecarbonyl group substituted with a hydroxy-isopropyl group.

7. The compound according to any one of claims 1 to 5 or a pharmaceutically acceptable salt thereof, wherein

X is a chlorine atom, a bromine atom, or a trifluoromethyl group; and

R is selected from the group consisting of the following groups:



R^1 is a hydrogen atom, a phenyl group, a hydroxy-C_{1-4} alkyl group, a hydroxy-C_{3-5} cycloalkyl group, a C_{1-4} alkoxy group which may be substituted with Ra, a C_{3-5} cycloalkylaminosulfonyl group, a 7-membered monocyclic heterocycloalkylsulfonyl group, a fluoro-C_{1-3} alkoxycarbonylamino group, a fluoro-C_{1-3} alkylcarbonylamino group, a 6-membered monocyclic heterocycloalkanecarbonyl group substituted with a hydroxy-C_{1-4} alkyl group, or -$(CH_2)_n$-C(=O)-NHRf;

R^2 is a hydrogen atom, a fluorine atom, a chlorine atom, or

a trifluoromethyl group;

Ra is a C_{1-4} alkylpyrazolyl group, a triazolyl group, a tetrazolyl group, or a C_{1-4} alkylsulfonylpiperazinyl group;

Rf is a fluoro-C_{1-3} alkyl group, a hydroxy-C_{1-4} alkyl group, a hydroxy-C_{3-5} cycloalkyl group, a hydroxy-C_{3-5} cycloalkyl-C_{1-4} alkyl group, or a C_{1-4} alkyl group substituted with Rfa;

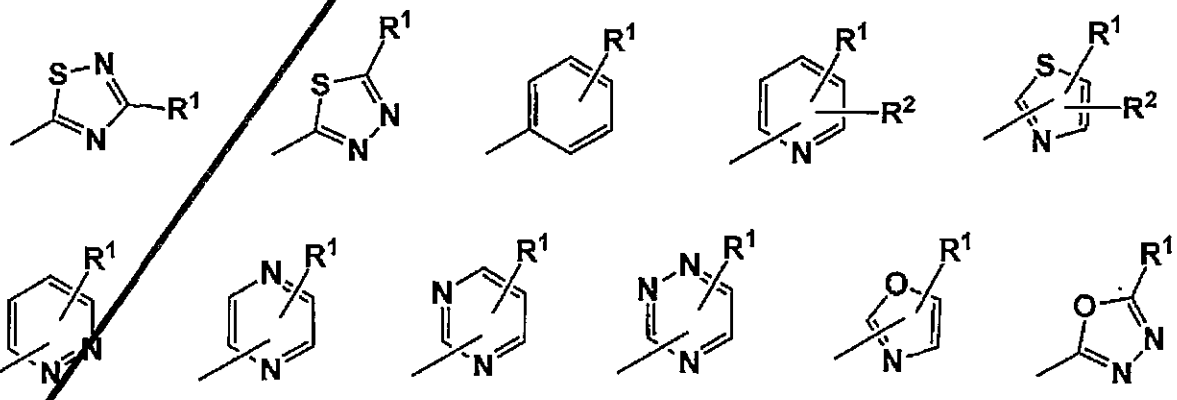
Rfa is a C_{1-4} alkylpyrazolyl group, a fluoro-C_{1-3} alkylthiazolyl group, an oxadiazolyl group, or a fluoro-C_{1-3} alkyloxadiazolyl group; and

n is 0 or 1.

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

X is a chlorine atom, a bromine atom, or a trifluoromethyl group; and

R is selected from the group consisting of the following groups:



R^1 is a hydrogen atom, a phenyl group, a hydroxy-ethyl group, a hydroxy-isopropyl group, a hydroxy-cyclopropyl

group, a hydroxy-cyclobutyl group, a methoxy group, an isopropoxy group, an ethoxy group substituted with a methylpyrazolyl group, an ethoxy group substituted with a triazolyl group, a 2-methylpropoxy group substituted with a triazolyl group, a 2-methylpropoxy group substituted with a tetrazolyl group, an n-propoxy group substituted with a methylsulfonylpiperazinyl group, a cyclopropylaminosulfonyl group, a 1,4-oxazepanylsulfonyl group, a 2,2,2-trifluoroethoxycarbonylamino group, a 2,2,2-trifluoroethylcarbonylamino group, a piperidinecarbonyl group substituted with a hydroxy-isopropyl group, or -$(CH_2)_n$-C(=O)-NHRf;

R^2 is a hydrogen atom, a fluorine atom, a chlorine atom, or a trifluoromethyl group;

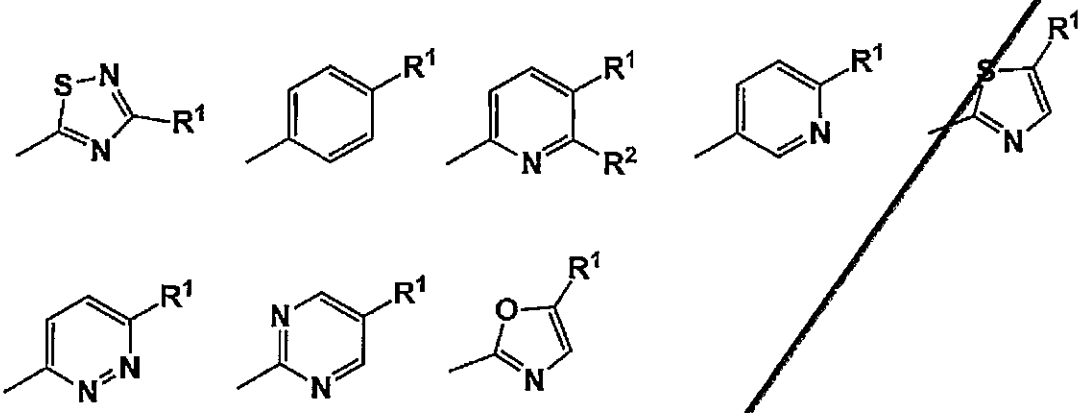
Rf is a 2,2-difluoroethyl group, a 2,2,2-trifluoroethyl group, a hydroxy-2-methylpropyl group, a hydroxycyclohexyl group, a hydroxycyclopropylmethyl group, a methyl group substituted with a trifluoromethylthiazolyl group, an ethyl group substituted with a methylthiazolyl group, an ethyl group substituted with an oxadiazolyl group, or an ethyl group substituted with a trifluoromethyl group; and

n is 0 or 1.

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

X is a chlorine atom or a trifluoromethyl group; and

R is selected from the group consisting of the following groups:



R^1 is a hydrogen atom, a hydroxy-isopropyl group, an isopropoxy group, a 2-methylpropoxy group substituted with a tetrazolyl group, an n-propoxy group substituted with a methylsulfonylpiperazinyl group, a 1,4-oxazepanylsulfonyl group, a piperidinecarbonyl group substituted with a hydroxy-isopropyl group, or $-(CH_2)_n-C(=O)-NHRf$;

R^2 is a hydrogen atom or a fluorine atom;

Rf is a 2,2,2-trifluoroethyl group, a hydroxy-2-methylpropyl group, a methyl group substituted with a trifluoromethylthiazolyl group, an ethyl group substituted with an oxadiazolyl group, or an ethyl group substituted with a trifluoromethyloxadiazolyl group; and

n is 0.

10. The compound according to claim 1 or a pharmaceutically acceptable salt thereof, which is selected

from the group consisting of the following compounds (1) to (19):

(1) 4-(4-((1,2,4-thiadiazol-5-yl)amino)-5,6-dihydropyrido[3,4-d]pyrimidin-7(8H)-yl)-2-(trifluoromethyl)benzonitrile;

(2) 4-(4-((4-isopropoxyphenyl)amino)-5,6-dihydropyrido[3,4-d]pyrimidin-7(8H)-yl)-2-(trifluoromethyl)benzonitrile;

(3) 4-(4-((6-fluoro-5-(2-hydroxypropan-2-yl)pyridin-2-yl)amino)-5,6-dihydropyrido[3,4-d]pyrimidin-7(8H)-yl)-2-(trifluoromethyl)benzonitrile;

(4) 2-chloro-4-(4-((6-(2-hydroxypropan-2-yl)pyridazin-3-yl)amino)-5,6-dihydropyrido[3,4-d]pyrimidin-7(8H)-yl)benzonitrile;

(5) 4-(4-((5-(2-hydroxypropan-2-yl)pyridin-2-yl)amino)-5,6-dihydropyrido[3,4-d]pyrimidin-7(8H)-yl)-2-(trifluoromethyl)benzonitrile;

(6) 2-chloro-4-(4-((5-(2-hydroxypropan-2-yl)pyridin-2-yl)amino)-5,6-dihydropyrido[3,4-d]pyrimidin-7(8H)-yl)benzonitrile;

(7) 4-(4-((6-(2-hydroxypropan-2-yl)pyridazin-3-yl)amino)-5,6-dihydropyrido[3,4-d]pyrimidin-7(8H)-yl)-2-(trifluoromethyl)benzonitrile;

(8) 6-((7-(4-cyano-3-(trifluoromethyl)phenyl)-5,6,7,8,-tetrahydropyrido[3,4-d]pyrimidin-4-yl)amino)-N-(2,2,2-trifluoroethyl)nicotinamide;

(9) 4-(4-((6-isopropoxypyridin-3-yl)amino)-5,6-dihydropyrido[3,4-d]pyrimidin-7(8H)-yl)-2-(trifluoromethyl)benzonitrile;

(10) 4-(4-((6-(2-methyl-2-(1H-tetrazol-1-yl)propoxy)pyridin-3-yl)amino)-5,6-dihydropyrido[3,4-d]pyrimidin-7(8H)-yl)-2-(trifluoromethyl)benzonitrile;

(11) 4-(4-((5-(2-methyl-2-(1H-tetrazol-1-yl)propoxy)pyridin-2-yl)amino)-5,6-dihydropyrido[3,4-d]pyrimidin-7(8H)-yl)-2-(trifluoromethyl)benzonitrile;

(12) 4-(4-((4-(3-(4-(methylsulfonyl)piperazin-1-yl)propoxy)phenyl)amino)-5,6-dihydropyrido[3,4-d]pyrimidin-7(8H)-yl)-2-(trifluoromethyl)benzonitrile;

(13) 4-(4-((5-((1,4-oxazepan-4-yl)sulfonyl)thiazol-2-yl)amino)-5,6-dihydropyrido[3,4-d]pyrimidin-7(8H)-yl)-2-(trifluoromethyl)benzonitrile;

(14) 6-((7-(4-cyano-3-(trifluoromethyl)phenyl)-5,6,7,8-tetrahydropyrido[3,4-d]pyrimidin-4-yl)amino)-N-(2-hydroxy-2-methylpropyl)pyridazine-3-carboxamide;

(15) 2-((7-(4-cyano-3-(trifluoromethyl)phenyl)-5,6,7,8-tetrahydropyrido[3,4-d]pyrimidin-4-yl)amino)-N-(2-hydroxy-2-methylpropyl)pyrimidine-5-carboxamide;

(16) 6-((7-(4-cyano-3-(trifluoromethyl)phenyl)-5,6,7,8-tetrahydropyrido[3,4-d]pyrimidin-4-yl)amino)-N-((4-(trifluoromethyl)thiazol-2-yl)methyl)nicotinamide;

(17) (R)-N-(1-(1,3,4-oxadiazol-2-yl)ethyl)-6-((7-(4-cyano-

3-(trifluoromethyl)phenyl)-5,6,7,8-tetrahydropyrido[3,4-d]pyrimidin-4-yl)amino)nicotinamide;

(18) (R)-6-((7-(4-cyano-3-(trifluoromethyl)phenyl)-5,6,7,8-tetrahydropyrido[3,4-d]pyrimidin-4-yl)amino)-N-(1-(5-(trifluoromethyl)-1,3,4-oxadiazol-2-yl)ethyl)nicotinamide; and

(19) 4-(4-((5-(4-(2-hydroxypropan-2-yl)piperidin-1-carbonyl)oxazol-2-yl)amino)-5,6-dihydropyrido[3,4-d]pyrimidin-7(8H)-yl)-2-(trifluoromethyl)benzonitrile.

11. An anti-androgen agent comprising, as an active ingredient, the tetrahydropyridopyrimidine compound according to any one of claims 1 to 10 or a pharmaceutically acceptable salt thereof.

12. An anti-tumor agent comprising, as an active ingredient, the tetrahydropyridopyrimidine compound according to any one of claims 1 to 10 or a pharmaceutically acceptable salt thereof.

13. A pharmaceutical agent comprising, as an active ingredient, the tetrahydropyridopyrimidine compound according to any one of claims 1 to 10 or a pharmaceutically acceptable salt thereof.

14. A pharmaceutical composition comprising the tetrahydropyridopyrimidine compound according to any one of claims 1 to 10 or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable carrier.

15. Use of the tetrahydropyridopyrimidine compound according to any one of claims 1 to 10 or a pharmaceutically acceptable salt thereof for producing an anti-androgen agent.

16. Use of the tetrahydropyridopyrimidine compound according to any one of claims 1 to 10 or a pharmaceutically acceptable salt thereof for producing an anti-tumor agent.

17. Use of the tetrahydropyridopyrimidine compound according to any one of claims 1 to 10 or a pharmaceutically acceptable salt thereof for producing a pharmaceutical agent.

18. The tetrahydropyridopyrimidine compound according to any one of claims 1 to 10 or a pharmaceutically acceptable salt thereof for use in inhibiting androgen activity.

19. The tetrahydropyridopyrimidine compound according to

any one of claims 1 to 10 or a pharmaceutically acceptable salt thereof for use in treating tumor.

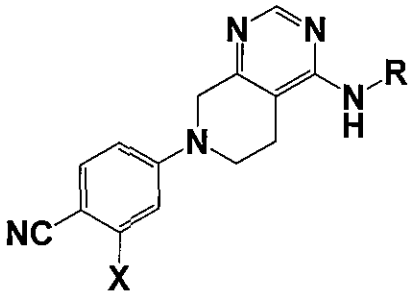
20. The tetrahydropyridopyrimidine compound according to any one of claims 1 to 10 or a pharmaceutically acceptable salt thereof for use as a pharmaceutical agent.

21. A method for inhibiting androgen activity, comprising administering an effective amount of the tetrahydropyridopyrimidine compound according to any one of claims 1 to 10 or a pharmaceutically acceptable salt thereof to a subject in need thereof.

22. A method for treating tumor, comprising administering an effective amount of the tetrahydropyridopyrimidine compound according to any one of claims 1 to 10 or a pharmaceutically acceptable salt thereof to a subject in need thereof.

CLAIMS

1. A tetrahydropyridopyrimidine compound represented by the following formula (I):



(I)

wherein, in the formula,

X represents a halogen atom or a halogeno-C_{1-3} alkyl group;

R represents a C_{6-14} aryl group which is substituted with R^1 and may be substituted simultaneously with R^2, or a 5- or 6-membered heteroaryl group which is substituted with R^1 and may be substituted simultaneously with R^2;

R^1 represents a hydrogen atom, a phenyl group, a hydroxy-C_{1-6} alkyl group, a hydroxy-C_{3-7} cycloalkyl group, a C_{1-6} alkoxy group which may be substituted with Ra, a C_{3-7} cycloalkylaminosulfonyl group, a 3- to 7-membered monocyclic heterocycloalkylsulfonyl group, a halogeno-C_{1-3} alkoxycarbonylamino group, a halogeno-C_{1-3} alkylcarbonylamino group, a 3- to 7-membered monocyclic heterocycloalkanecarbonyl group substituted with a hydroxy-C_{1-6} alkyl group, or $-(CH_2)_n-C(=O)-NHRf$;

R^2 represents a hydrogen atom, a halogen atom, or a halogeno-C_{1-3} alkyl group;

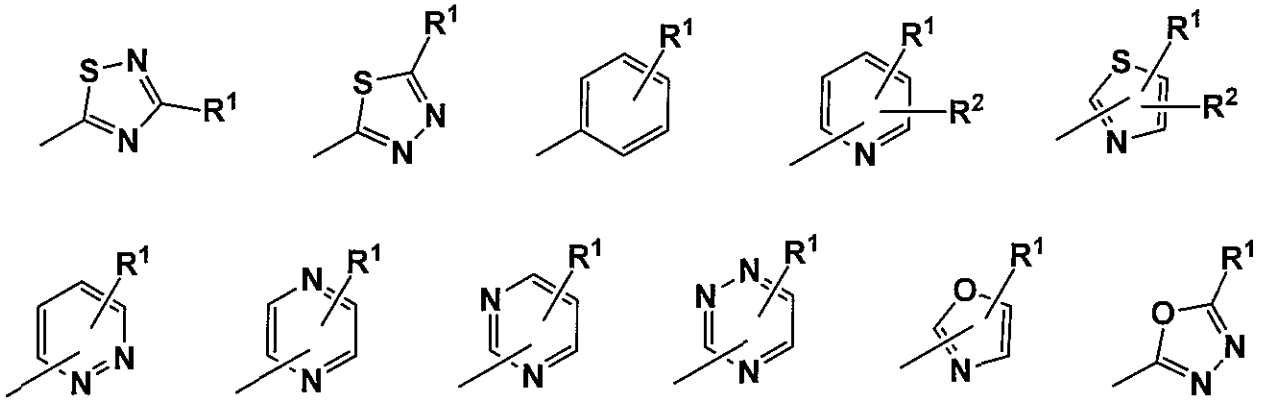
Ra represents a C_{1-6} alkylpyrazolyl group, a triazolyl group,

a tetrazolyl group, or a C_{1-6} alkylsulfonylpiperazinyl group;
Rf represents a halogeno-C_{1-3} alkyl group, a hydroxy-C_{1-6} alkyl group, a hydroxy-C_{3-7} cycloalkyl group, a hydroxy-C_{3-7} cycloalkyl-C_{1-6} alkyl group, or a C_{1-6} alkyl group substituted with Rfa;
Rfa represents a C_{1-6} alkylpyrazolyl group, a halogeno-C_{1-3} alkylthiazolyl group, an oxadiazolyl group, or a halogeno-C_{1-3} alkyloxadiazolyl group; and
n represents an integer of from 0 to 3;
or a pharmaceutically acceptable salt thereof.

2. The compound according to claim 1 or a pharmaceutically acceptable salt thereof, wherein X is a chlorine atom, a bromine atom, or a trifluoromethyl group.

3. The compound according to claim 1 or 2 or a pharmaceutically acceptable salt thereof, wherein n is 0 or 1.

4. The compound according to any one of claims 1 to 3 or a pharmaceutically acceptable salt thereof, wherein R is selected from the group consisting of the following groups:



5. The compound according to any one of claims 1 to 4 or a pharmaceutically acceptable salt thereof, wherein

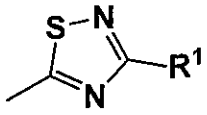
R^1 is a hydrogen atom, a phenyl group, a hydroxy-ethyl group, a hydroxy-isopropyl group, a hydroxy-cyclopropyl group, a hydroxy-cyclobutyl group, a methoxy group, an isopropoxy group, an ethoxy group substituted with a methylpyrazolyl group, an ethoxy group substituted with a triazolyl group, a 2-methylpropoxy group substituted with a triazolyl group, a 2-methylpropoxy group substituted with a tetrazolyl group, an n-propoxy group substituted with a methylsulfonylpiperazinyl group, a cyclopropylaminosulfonyl group, a 1,4-oxazepanylsulfonyl group, a 2,2,2-trifluoroethoxycarbonylamino group, a 2,2,2-trifluoroethylcarbonylamino group, a piperidinecarbonyl group substituted with a hydroxy-isopropyl group, or $-(CH_2)_n-C(=O)-NHRf$;

Rf is a 2,2-difluoroethyl group, a 2,2,2-trifluoroethyl group, a hydroxy-2-methylpropyl group, a hydroxycyclohexyl group, a

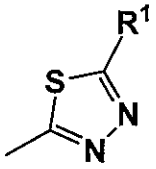
hydroxycyclopropylmethyl group, a methyl group substituted with a trifluoromethylthiazolyl group, an ethyl group substituted with a methylthiazolyl group, an ethyl group substituted with an oxadiazolyl group, or an ethyl group substituted with a trifluoromethyloxazolyl group; and

n is 0 or 1.

6. The compound according to any one of claims 1 to 5 or a pharmaceutically acceptable salt thereof, wherein R is selected from the group consisting of the following groups:



wherein, in the formula, R^1 is a hydrogen atom;



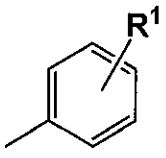
wherein, in the formula,

R^1 is $-(CH_2)_n-C(=O)-NHRf$,

Rf is a methyl group substituted with Rfa or an ethyl group substituted with Rfa,

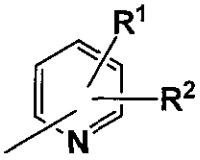
Rfa is a methylpyrazolyl group or an oxadiazolyl group, and

n is 0;



wherein, in the formula,

R^1 is a phenyl group, a hydroxy-ethyl group, a hydroxy-isopropyl group, a methoxy group, an isopropoxy group, an ethoxy group substituted with a methylpyrazolyl group, or an n-propoxy group substituted with a methylsulfonylpiperazinyl group;



wherein, in the formula,

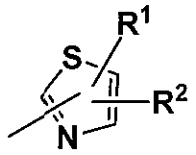
R^1 is a hydroxy-isopropyl group, a hydroxy-cyclopropyl group, a hydroxy-cyclobutyl group, an isopropoxy group, an ethoxy group substituted with a triazolyl group, a 2-methylpropoxy group substituted with a triazolyl group, a 2-methylpropoxy group substituted with a tetrazolyl group, a cyclopropylaminosulfonyl group, a 2,2,2-trifluoroethoxycarbonylamino group, a 2,2,2-trifluoroethylcarbonylamino group, or $-(CH_2)_n-C(=O)-NHRf$,

R^2 is a hydrogen atom, a fluorine atom, or a chlorine atom,

Rf is a 2,2-difluoroethyl group, a 2,2,2-trifluoroethyl group, a methyl group substituted with Rfa, or an ethyl group substituted with Rfa;

Rfa is a trifluoromethylthiazolyl group, an oxadiazolyl group, or a trifluoromethyloxadiazolyl group, and

n is 0 or 1;



wherein, in the formula,

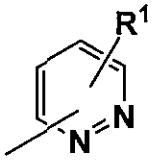
R^1 is a hydroxy-isopropyl group, a 1,4-oxazepanylsulfonyl group, or $-(CH_2)_n-C(=O)-NHRf$,

R^2 is a hydrogen atom or a trifluoromethyl group,

Rf is a 2,2,2-trifluoroethyl group or an ethyl group substituted with Rfa,

Rfa is an oxadiazolyl group, and

n is 0;

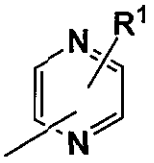


wherein, in the formula,

R^1 is a hydroxy-isopropyl group or $-(CH_2)_n-C(=O)-NHRf$,

Rf is a 2,2-difluoroethyl group, a 2,2,2-trifluoroethyl group, a hydroxy-2-methylpropyl group, a hydroxycyclohexyl group, a hydroxycyclopropylmethyl group, and

n is 0;

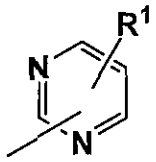


wherein, in the formula,

R^1 is $-(CH_2)_n-C(=O)-NHRf$,

Rf is a hydroxy-2-methylpropyl group, and

n is 0;

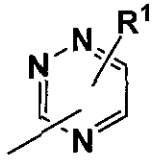


wherein, in the formula,

R^1 is $-(CH_2)_n-C(=O)-NHRf$,

Rf is a hydroxy-2-methylpropyl group, and

n is 0;

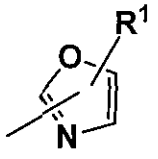


wherein, in the formula,

R^1 is $-(CH_2)_n-C(=O)-NHRf$,

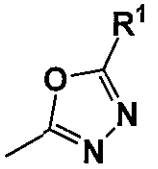
Rf is a 2,2,2-trifluoroethyl group, and

n is 0;



wherein, in the formula,

R^1 is a piperidinecarbonyl group substituted with a hydroxy-isopropyl group; or



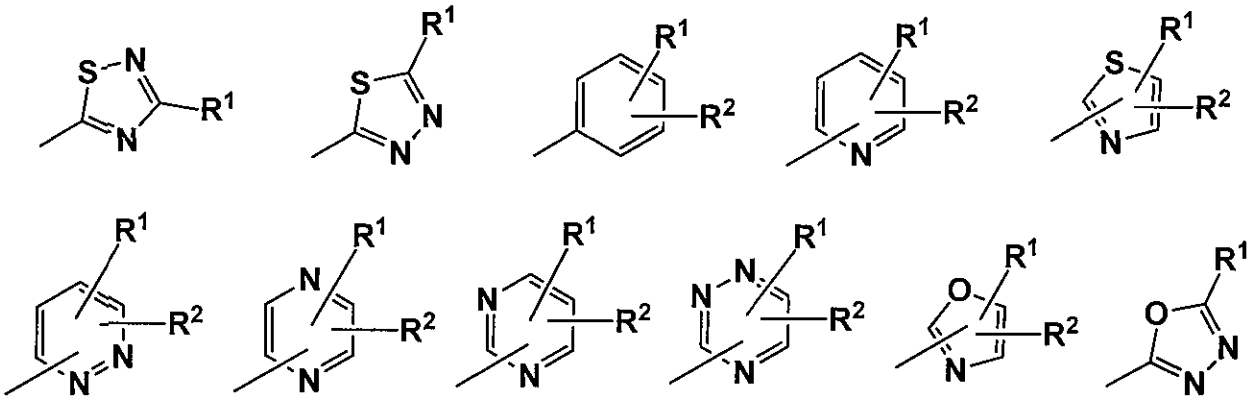
wherein, in the formula,

R^1 is a piperidinecarbonyl group substituted with a hydroxy-isopropyl group.

7. The compound according to any one of claims 1 to 5 or a pharmaceutically acceptable salt thereof, wherein

X is a chlorine atom, a bromine atom, or a trifluoromethyl group; and

R is selected from the group consisting of the following groups:



R^1 is a hydrogen atom, a phenyl group, a hydroxy-C_{1-4} alkyl group, a hydroxy-C_{3-5} cycloalkyl group, a C_{1-4} alkoxy group which may be substituted with Ra, a C_{3-5} cycloalkylaminosulfonyl group, a 7-membered monocyclic heterocycloalkylsulfonyl group, a fluoro-C_{1-3} alkoxycarbonylamino group, a fluoro-C_{1-3} alkylcarbonylamino group, a 6-membered monocyclic heterocycloalkanecarbonyl group substituted with a hydroxy-C_{1-4} alkyl group, or $-(CH_2)_n-C(=O)-NHRf$;

R^2 is a hydrogen atom, a fluorine atom, a chlorine atom, or a trifluoromethyl group;

Ra is a C_{1-4} alkylpyrazolyl group, a triazolyl group, a

tetrazolyl group, or a C_{1-4} alkylsulfonylpiperazinyl group;

Rf is a fluoro-C_{1-3} alkyl group, a hydroxy-C_{1-4} alkyl group, a hydroxy-C_{3-5} cycloalkyl group, a hydroxy-C_{3-5} cycloalkyl-C_{1-4} alkyl group, or a C_{1-4} alkyl group substituted with Rfa;

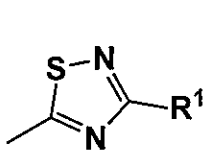
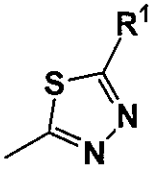
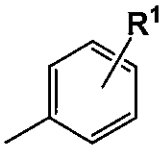
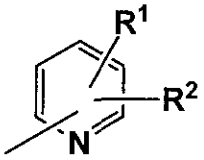
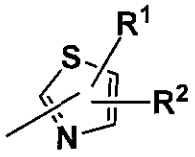
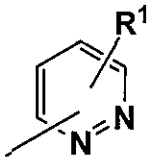
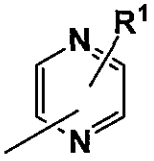
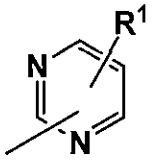
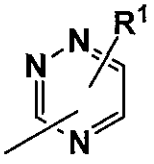
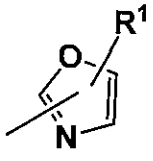
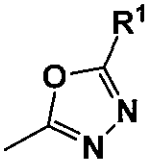
Rfa is a C_{1-4} alkylpyrazolyl group, a fluoro-C_{1-3} alkylthiazolyl group, an oxadiazolyl group, or a fluoro-C_{1-3} alkyloxadiazolyl group; and

n is 0 or 1.

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

X is a chlorine atom, a bromine atom, or a trifluoromethyl group; and

R is selected from the group consisting of the following groups:

R^1 is a hydrogen atom, a phenyl group, a hydroxy-ethyl group, a hydroxy-isopropyl group, a hydroxy-cyclopropyl group, a hydroxy-cyclobutyl group, a methoxy group, an isopropoxy group, an ethoxy group substituted with a methylpyrazolyl group, an ethoxy group substituted with a triazolyl group, a

2-methylpropoxy group substituted with a triazolyl group, a 2-methylpropoxy group substituted with a tetrazolyl group, an n-propoxy group substituted with a methylsulfonylpiperazinyl group, a cyclopropylaminosulfonyl group, a 1,4-oxazepanylsulfonyl group, a 2,2,2-trifluoroethoxycarbonylamino group, a 2,2,2-trifluoroethylcarbonylamino group, a piperidinecarbonyl group substituted with a hydroxy-isopropyl group, or $-(CH_2)_n-C(=O)-NHRf$;

R^2 is a hydrogen atom, a fluorine atom, a chlorine atom, or a trifluoromethyl group;

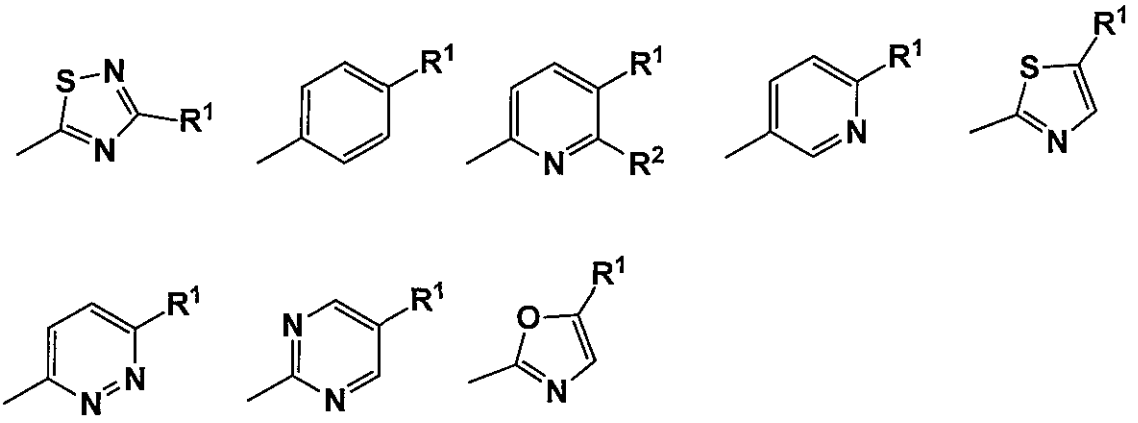
Rf is a 2,2-difluoroethyl group, a 2,2,2-trifluoroethyl group, a hydroxy-2-methylpropyl group, a hydroxycyclohexyl group, a hydroxycyclopropylmethyl group, a methyl group substituted with a trifluoromethylthiazolyl group, an ethyl group substituted with a methylthiazolyl group, an ethyl group substituted with an oxadiazolyl group, or an ethyl group substituted with a trifluoromethyl group; and

n is 0 or 1.

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

X is a chlorine atom or a trifluoromethyl group; and

R is selected from the group consisting of the following groups:



R^1 is a hydrogen atom, a hydroxy-isopropyl group, an isopropoxy group, a 2-methylpropoxy group substituted with a tetrazolyl group, an n-propoxy group substituted with a methylsulfonylpiperazinyl group, a 1,4-oxazepanylsulfonyl group, a piperidinecarbonyl group substituted with a hydroxy-isopropyl group, or $-(CH_2)_n-C(=O)-NHRf$;

R^2 is a hydrogen atom or a fluorine atom;

Rf is a 2,2,2-trifluoroethyl group, a hydroxy-2-methylpropyl group, a methyl group substituted with a trifluoromethylthiazolyl group, an ethyl group substituted with an oxadiazolyl group, or an ethyl group substituted with a trifluoromethyloxadiazolyl group; and

n is 0.

10. The compound according to claim 1 or a pharmaceutically acceptable salt thereof, which is selected from the group consisting of the following compounds (1) to (19):

(1)

4-(4-((1,2,4-thiadiazol-5-yl)amino)-5,6-dihydropyrido[3,4-d

]pyrimidin-7(8H)-yl)-2-(trifluoromethyl)benzonitrile;

(2)

4-(4-((4-isopropoxyphenyl)amino)-5,6-dihydropyrido[3,4-d]py
rimidin-7(8H)-yl)-2-(trifluoromethyl)benzonitrile;

(3)

4-(4-((6-fluoro-5-(2-hydroxypropan-2-yl)pyridin-2-yl)amino)
-5,6-dihydropyrido[3,4-d]pyrimidin-7(8H)-yl)-2-(trifluorome
thyl)benzonitrile;

(4)

2-chloro-4-(4-((6-(2-hydroxypropan-2-yl)pyridazin-3-yl)amin
o)-5,6-dihydropyrido[3,4-d]pyrimidin-7(8H)-yl)benzonitrile;

(5)

4-(4-((5-(2-hydroxypropan-2-yl)pyridin-2-yl)amino)-5,6-dihy
dropyrido[3,4-d]pyrimidin-7(8H)-yl)-2-(trifluoromethyl)benz
onitrile;

(6)

2-chloro-4-(4-((5-(2-hydroxypropan-2-yl)pyridin-2-yl)amino)
-5,6-dihydropyrido[3,4-d]pyrimidin-7(8H)-yl)benzonitrile;

(7)

4-(4-((6-(2-hydroxypropan-2-yl)pyridazin-3-yl)amino)-5,6-di
hydropyrido[3,4-d]pyrimidin-7(8H)-yl)-2-(trifluoromethyl)be
nzonitrile;

(8)

6-((7-(4-cyano-3-(trifluoromethyl)phenyl)-5,6,7,8,-tetrahyd
ropyrido[3,4-d]pyrimidin-4-yl)amino)-N-(2,2,2-trifluoroethy

l)nicotinamide;

(9)

4-(4-((6-isopropoxypyridin-3-yl)amino)-5,6-dihydropyrido[3,4-d]pyrimidin-7(8H)-yl)-2-(trifluoromethyl)benzonitrile;

(10)

4-(4-((6-(2-methyl-2-(1H-tetrazol-1-yl)propoxy)pyridin-3-yl)amino)-5,6-dihydropyrido[3,4-d]pyrimidin-7(8H)-yl)-2-(trifluoromethyl)benzonitrile;

(11)

4-(4-((5-(2-methyl-2-(1H-tetrazol-1-yl)propoxy)pyridin-2-yl)amino)-5,6-dihydropyrido[3,4-d]pyrimidin-7(8H)-yl)-2-(trifluoromethyl)benzonitrile;

(12)

4-(4-((4-(3-(4-(methylsulfonyl)piperazin-1-yl)propoxy)phenyl)amino)-5,6-dihydropyrido[3,4-d]pyrimidin-7(8H)-yl)-2-(trifluoromethyl)benzonitrile;

(13)

4-(4-((5-((1,4-oxazepan-4-yl)sulfonyl)thiazol-2-yl)amino)-5,6-dihydropyrido[3,4-d]pyrimidin-7(8H)-yl)-2-(trifluoromethyl)benzonitrile;

(14)

6-((7-(4-cyano-3-(trifluoromethyl)phenyl)-5,6,7,8-tetrahydropyrido[3,4-d]pyrimidin-4-yl)amino)-N-(2-hydroxy-2-methylpropyl)pyridazine-3-carboxamide;

(15)

2-((7-(4-cyano-3-(trifluoromethyl)phenyl)-5,6,7,8-tetrahydropyrido[3,4-d]pyrimidin-4-yl)amino)-N-(2-hydroxy-2-methylpropyl)pyrimidine-5-carboxamide;

(16)

6-((7-(4-cyano-3-(trifluoromethyl)phenyl)-5,6,7,8-tetrahydropyrido[3,4-d]pyrimidin-4-yl)amino)-N-((4-(trifluoromethyl)thiazol-2-yl)methyl)nicotinamide;

(17)

(R)-N-(1-(1,3,4-oxadiazol-2-yl)ethyl)-6-((7-(4-cyano-3-(trifluoromethyl)phenyl)-5,6,7,8-tetrahydropyrido[3,4-d]pyrimidin-4-yl)amino)nicotinamide;

(18)

(R)-6-((7-(4-cyano-3-(trifluoromethyl)phenyl)-5,6,7,8-tetrahydropyrido[3,4-d]pyrimidin-4-yl)amino)-N-(1-(5-(trifluoromethyl)-1,3,4-oxadiazol-2-yl)ethyl)nicotinamide; and

(19)

4-(4-((5-(4-(2-hydroxypropan-2-yl)piperidin-1-carbonyl)oxazol-2-yl)amino)-5,6-dihydropyrido[3,4-d]pyrimidin-7(8H)-yl)-2-(trifluoromethyl)benzonitrile.

11. A pharmaceutical agent comprising, as an active ingredient, the tetrahydropyridopyrimidine compound according to any one of claims 1 to 10 or a pharmaceutically acceptable salt thereof.

12. A pharmaceutical composition comprising the

tetrahydropyridopyrimidine compound according to any one of claims 1 to 10 or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable carrier.

13. Use of the tetrahydropyridopyrimidine compound according to any one of claims 1 to 10 or a pharmaceutically acceptable salt thereof for producing an anti-androgen agent.

14. Use of the tetrahydropyridopyrimidine compound according to any one of claims 1 to 10 or a pharmaceutically acceptable salt thereof for producing an anti-tumor agent.

15. Use of the tetrahydropyridopyrimidine compound according to any one of claims 1 to 10 or a pharmaceutically acceptable salt thereof for producing a pharmaceutical agent.

16. The tetrahydropyridopyrimidine compound according to any one of claims 1 to 10 or a pharmaceutically acceptable salt thereof for use in inhibiting androgen activity.

17. The tetrahydropyridopyrimidine compound according to any one of claims 1 to 10 or a pharmaceutically acceptable salt thereof for use in treating tumor.

18. The tetrahydropyridopyrimidine compound according to any

one of claims 1 to 10 or a pharmaceutically acceptable salt thereof for use as a pharmaceutical agent.