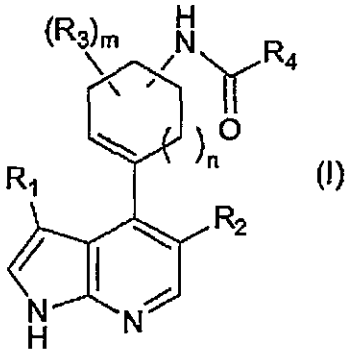
Claims

[Claim 1]

A compound of the following formula (I), or a salt thereof:



(I)

wherein

R_1 represents an optionally substituted C_4-C_{10} cycloalkyl group, an optionally substituted C_4-C_{10} cycloalkenyl group, an optionally substituted C_4-C_{10} cycloalkynyl group, an optionally substituted C_6-C_{14} aromatic hydrocarbon group, or an optionally substituted 4- to 10-membered saturated or unsaturated heterocyclic group;

R_2 represents a hydrogen atom, a halogen atom, a hydroxy group, a cyano group, a nitro group, $-C(=O)R_x$, $-C(=O)OR_x$, $-C(=O)N(R_x)(R_y)$, $-N(R_x)(R_y)$, $-NR_xC(=O)R_y$, $-NR_xS(=O)_2R_y$, $-NR_xC(=O)OR_y$, $-NR_xC(=O)N(R_y)(R_z)$, $-NR_xS(=O)_2N(R_y)(R_z)$, $-OC(=O)R_x$, $-OC(=O)OR_x$, $-OC(=O)N(R_x)(R_y)$, $-SR_x$, $-S(=O)_2R_x$, $-S(=O)_2OR_x$, an optionally R_b-substituted C_1-C_6 alkyl group, an optionally R_b-substituted C_2-C_6 alkenyl

group, an optionally R_b-substituted C_2-C_6 alkynyl group, an optionally R_b-substituted C_1-C_6 alkoxy group, an optionally R_c-substituted C_3-C_{10} cycloalkyl group, an optionally R_c-substituted C_6-C_{14} aromatic hydrocarbon group, or an optionally R_c-substituted 4- to 10-membered saturated or unsaturated heterocyclic group;

R_3 represents a halogen atom, an amino group, a hydroxy group, a cyano group, a nitro group, a C_1-C_6 alkyl group, a C_2-C_6 alkenyl group, a C_2-C_6 alkynyl group, or a C_1-C_6 alkoxy group;

R_4 represents an optionally R_b-substituted C_2-C_6 alkenyl group or an optionally R_b-substituted C_2-C_6 alkynyl group;

R_4 represents an optionally R_b-substituted C_2-C_6 alkenyl group or an optionally R_b-substituted C_2-C_6 alkynyl group;

R_b represents a halogen atom, an amino group, a hydroxy group, a cyano group, a nitro group, a C_1-C_6 alkoxy group, a di- or mono-(C_1-C_6 alkyl)amino group, or a 4- to 10-membered saturated or unsaturated heterocyclic group;

R_c represents a halogen atom, an amino group, a hydroxy group, a cyano group, a nitro group, an oxo group, an imino group, an N-oxide group, a C_1-C_6 alkyl group, a C_2-C_6 alkenyl group, a C_2-C_6 alkynyl group, a C_1-C_6 alkoxy group, or a di- or mono-(C_1-C_6 alkyl)amino group;

R_x, R_y and R_z, which are the same or different, each represent a hydrogen atom, a C_1-C_6 alkyl group, a C_1-C_6

haloalkyl group, a C_2-C_6 alkenyl group, a C_2-C_6 alkynyl group, a C_3-C_{10} cycloalkyl group, a C_6-C_{14} aromatic hydrocarbon group, or a 4- to 10-membered saturated or unsaturated heterocyclic group;

m represents an integer of 0 to 3; and

n represents an integer of 0 to 2.

[Claim 2]

The compound or a salt thereof according to claim 1, wherein a group with which the C_4-C_{10} cycloalkyl group, C_4-C_{10} cycloalkenyl group, C_4-C_{10} cycloalkynyl group, C_6-C_{14} aromatic hydrocarbon group or 4- to 10-membered saturated or unsaturated heterocyclic group, which is represented by R_1, is optionally substituted is R_a, and the R_a represents a halogen atom, a hydroxy group, a cyano group, a nitro group, an oxo group, an N-oxide group, $-C(=O)R_x$, $-C(=O)OR_x$, $-C(=O)N(R_x)(R_y)$, $-C(=O)SR_x$, $-C(=S)OR_x$, $-C(=O)ON(R_x)(R_y)$, $-N(R_x)(R_y)$, $-NR_xC(=O)R_y$, $-NR_xS(=O)_2R_y$, $-NR_xC(=O)OR_y$, $-NR_xC(=O)N(R_y)(R_z)$, $-NR_xS(=O)_2N(R_y)(R_z)$, $-N(R_x)$-OR_y, $=NR_x$, $=N$-OR_x, $-OC(=O)R_x$, $-OC(=S)R_x$, $-OC(=O)OR_x$, $-OC(=O)N(R_x)(R_y)$, $-OC(=S)OR_x$, $-SR_x$, $-S(=O)_2R_x$, $-S(=O)_2OR_x$, $-S(=O)_2N(R_x)(R_y)$, an optionally R_b-substituted C_1-C_6 alkyl group, an optionally R_b-substituted C_2-C_6 alkenyl group, an optionally R_b-substituted C_2-C_6 alkynyl group, an optionally R_b-substituted C_1-C_6 alkoxy group, an optionally R_c-substituted C_3-C_{10} cycloalkyl group, an optionally R_c-substituted C_6-C_{14} aromatic hydrocarbon group, or an

optionally R_c-substituted 4- to 10-membered saturated or unsaturated heterocyclic group.

[Claim 3]

The compound or a salt thereof according to claim 1 or 2, wherein R_1 represents an optionally R_a-substituted C_5-C_7 cycloalkenyl group, an optionally R_a-substituted C_6-C_{10} aromatic hydrocarbon group, or an optionally R_a-substituted monocyclic 4- to 7-membered unsaturated heterocyclic group having 1 to 3 heteroatoms selected from the group consisting of N, S and O.

[Claim 4]

The compound or a salt thereof according to any one of claims 1 to 3, wherein R_1 represents an optionally R_a-substituted cyclopentenyl group, cyclohexenyl group, phenyl group, furanyl group, 1H-pyrazolyl group, thiazolyl group, oxazolyl group, isoxazolyl group, 1,3,4-thiadiazolyl group, 1,2,4-oxadiazolyl group, 1,3,4-oxadiazolyl group, pyridyl group, dihydropyranyl group, dihydrofuranyl group, or 4,5-dihydro-1,3,4-oxadiazolyl group.

[Claim 5]

The compound or a salt thereof according to any one of claims 1 to 4, wherein R_1 represents a cyclopentenyl group, a cyclohexenyl group, a phenyl group, a furanyl group, a 1H-pyrazolyl group, a thiazolyl group, an oxazolyl group, an isoxazolyl group, a 1,3,4-thiadiazolyl group, a 1,2,4-oxadiazolyl group, a 1,3,4-oxadiazolyl

group, a pyridyl group, a dihydropyranyl group, a dihydrofuranyl group, or a 4,5-dihydro-1,3,4-oxadiazolyl group, which is optionally substituted with a group selected from the group consisting of a halogen atom, an amino group, a hydroxy group, an oxo group, an N-oxide group, a formyl group, a C_1-C_6 alkyl group (which is optionally substituted with a group selected from the group consisting of a hydroxy group and a di- or mono-(C_1-C_6 alkyl)amino group), a C_1-C_6 alkoxy group (which is optionally substituted with a halogen atom), and a 4- to 10-membered saturated heterocyclic group.

[Claim 6]

The compound or a salt thereof according to any one of claims 1 to 5, wherein R_1 represents a cyclopentenyl group; a cyclohexenyl group; a phenyl group; a furanyl group, which is optionally substituted with a group selected from the group consisting of a formyl group and a C_1-C_6 alkyl group (which is optionally substituted with a group selected from the group consisting of a hydroxy group and a di- or mono-(C_1-C_6 alkyl)amino group); a 1H-pyrazolyl group, which is optionally substituted with a group selected from the group consisting of a C_1-C_6 alkyl group and a 4- to 10-membered saturated heterocyclic group; a thiazolyl group; an oxazolyl group; an isoxazolyl group; a 1,3,4-thiadiazolyl group; a 1,2,4-oxadiazolyl group; a 1,3,4-oxadiazolyl group, which is optionally substituted with a C_1-C_6 alkyl group; a pyridyl group,

which is optionally substituted with a group selected from the group consisting of a halogen atom, an amino group, a hydroxy group, an N-oxide group, a C_1-C_6 alkyl group (which is optionally substituted with a hydroxy group), and a C_1-C_6 alkoxy group (which is optionally substituted with a halogen atom); a dihydropyranyl group; a dihydrofuranyl group; or a 4,5-dihydro-1,3,4-oxadiazolyl group, which is optionally substituted with a group selected from the group consisting of an oxo group and a C_1-C_6 alkyl group.

[Claim 7]

The compound or a salt thereof according to any one of claims 1 to 6, wherein R_2 represents a hydrogen atom, a cyano group, $-C(=O)OR_x$, $-C(=O)N(R_x)(R_y)$, an optionally R_b-substituted C_1-C_6 alkyl group, an optionally R_b-substituted C_1-C_6 alkoxy group, or an optionally R_c-substituted monocyclic 4- to 7-membered unsaturated heterocyclic group having 1 to 3 heteroatoms selected from the group consisting of N, S and O.

[Claim 8]

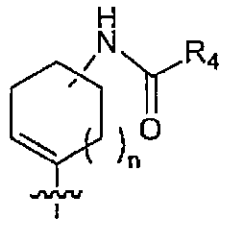
The compound or a salt thereof according to any one of claims 1 to 7, wherein R_2 represents a hydrogen atom; a cyano group; a (C_1-C_6 alkoxy)carbonyl group; a carbamoyl group; a di- or mono-(C_1-C_6 alkyl)carbamoyl group; a C_1-C_6 alkyl group, which is optionally substituted with a group selected from the group consisting of a hydroxy group, a C_1-C_6 alkoxy group, a di- or mono-(C_1-C_6 alkyl)amino group, and a 4- to 10-membered saturated heterocyclic group; a C_1-

C_6 alkoxy group; or a monocyclic 5- or 6-membered completely unsaturated heterocyclic group having 1 to 3 N atoms, which is optionally substituted with a C_1-C_6 alkyl group.

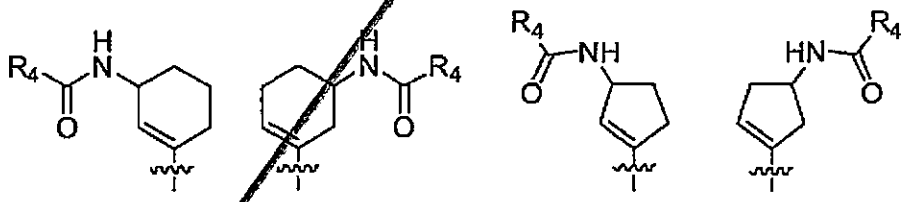
[Claim 9]

The compound or a salt thereof according to any one of claims 1 to 8, wherein m represents 0, n represents 0 or 1, R_4 represents a C_2-C_6 alkenyl group, and

in the formula (I), the following structure:



is any one of the following structures:



[Claim 10]

The compound according to any one of claims 1 to 9, or a salt thereof, wherein

R_1 represents a cyclopentenyl group; a cyclohexenyl group; a phenyl group; a furanyl group, which is optionally substituted with a group selected from the group consisting of a formyl group and a C_1-C_6 alkyl group (which is optionally substituted with a group selected

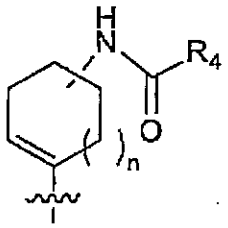
from the group consisting of a hydroxy group and a di- or mono-(C_1-C_6 alkyl)amino group); a 1H-pyrazolyl group, which is optionally substituted with a group selected from the group consisting of a C_1-C_6 alkyl group and a 4- to 10-membered saturated heterocyclic group; a thiazolyl group; an oxazolyl group; an isoxazolyl group; a 1,3,4-thiadiazolyl group; a 1,2,4-oxadiazolyl group; a 1,3,4-oxadiazolyl group, which is optionally substituted with a C_1-C_6 alkyl group; a pyridyl group, which is optionally substituted with a group selected from the group consisting of a halogen atom, an amino group, a hydroxy group, an N-oxide group, a C_1-C_6 alkyl group (which is optionally substituted with a hydroxy group), and a C_1-C_6 alkoxy group (which is optionally substituted with a halogen atom); a dihydropyranyl group; a dihydrofuranyl group; or a 4,5-dihydro-1,3,4-oxadiazolyl group, which is optionally substituted with a group selected from the group consisting of an oxo group and a C_1-C_6 alkyl group,

R_2 represents a hydrogen atom; a cyano group; a (C_1-C_6 alkoxy)carbonyl group; a carbamoyl group; a di- or mono-(C_1-C_6 alkyl)carbamoyl group; a C_1-C_6 alkyl group, which is optionally substituted with a group selected from the group consisting of a hydroxy group, a C_1-C_6 alkoxy group, a di- or mono-(C_1-C_6 alkyl)amino group, and a 4- to 10-membered saturated heterocyclic group; a C_1-C_6 alkoxy group; or a monocyclic 5- or 6-membered completely

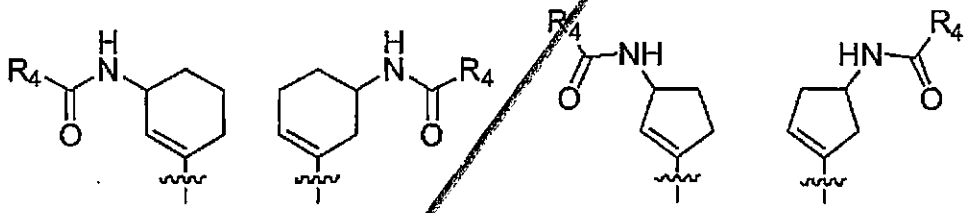
unsaturated heterocyclic group having 1 to 3 N atoms, which is optionally substituted with a C_1-C_6 alkyl group,

m represents 0, n represents 0 or 1, R_4 represents a C_2-C_6 alkenyl group, and

in the formula (I), the following structure:



is any one of the following structures:



[Claim 11]

The compound or a salt thereof according to any one of claims 1 to 10, wherein the compound is any of compounds represented by the following (1) to (11):

(1) N-(3-(3-phenyl-1H-pyrrolo[2,3-b]pyridin-4-yl)cyclohex-3-en-1-yl)acrylamide,

(2) N-(3-(3-(1H-pyrazol-4-yl)-1H-pyrrolo[2,3-b]pyridin-4-yl)cyclohex-3-en-1-yl)acrylamide,

(3) N-(3-(3-(2-methoxypyridin-3-yl)-1H-pyrrolo[2,3-b]pyridin-4-yl)cyclohex-3-en-1-yl)acrylamide,

(4) N-(3-(3-(furan-2-yl)-1H-pyrrolo[2,3-b]pyridin-4-yl)cyclohex-3-en-1-yl)acrylamide,

(5) N-(3-(3-(4-(hydroxymethyl)furan-2-yl)-1H-pyrrolo[2,3-b]pyridin-4-yl)cyclohex-3-en-1-yl)acrylamide,

(6) N-(3-(3-(2,5-dihydrofuran-3-yl)-1H-pyrrolo[2,3-b]pyridin-4-yl)cyclohex-3-en-1-yl)acrylamide,

(7) N-(3-(3-(oxazol-5-yl)-1H-pyrrolo[2,3-b]pyridin-4-yl)cyclohex-3-en-1-yl)acrylamide,

(8) N-(3-(3-(1,3,4-oxadiazol-2-yl)-1H-pyrrolo[2,3-b]pyridin-4-yl)cyclohex-3-en-1-yl)acrylamide,

(9) (S)-N-(3-(3-(1,3,4-oxadiazol-2-yl)-1H-pyrrolo[2,3-b]pyridin-4-yl)cyclohex-3-en-1-yl)acrylamide,

(10) N-(3-(3-(1,3,4-oxadiazol-2-yl)-1H-pyrrolo[2,3-b]pyridin-4-yl)cyclopent-3-en-1-yl)acrylamide, and

(11) (S)-N-(3-(3-(isoxazol-5-yl)-1H-pyrrolo[2,3-b]pyridin-4-yl)cyclohex-3-en-1-yl)acrylamide.

[Claim 12]

A JAK3 inhibitor comprising, as an active ingredient, the compound or a salt thereof according to any one of claims 1 to 11.

[Claim 13]

A pharmaceutical composition comprising the compound or a salt thereof according to any one of claims 1 to 11.

[Claim 14]

The pharmaceutical composition according to claim 13, wherein the pharmaceutical composition is a pharmaceutical composition for treating a disease involving JAK3.

[Claim 15]

An agent for preventing and/or treating rheumatoid arthritis or multiple sclerosis, comprising, as an active ingredient, the compound or a salt thereof according to any one of claims 1 to 11.

[Claim 16]

The compound or a salt thereof according to any one of claims 1 to 11, for treating a disease involving JAK3.

[Claim 17]

The compound or a salt thereof according to any one of claims 1 to 11, for preventing and/or treating rheumatoid arthritis or multiple sclerosis.

[Claim 18]

Use of the compound or a salt thereof according to any one of claims 1 to 11 for producing a medicament for treating a disease involving JAK3.

[Claim 19]

Use of the compound or a salt thereof according to any one of claims 1 to 11 for the producing a medicament for preventing and/or treating rheumatoid arthritis or multiple sclerosis.

[Claim 20]

A method for preventing and/or treating a disease involving JAK3, comprising administering the compound or a salt thereof according to any one of claims 1 to 11.

[Claim 21]

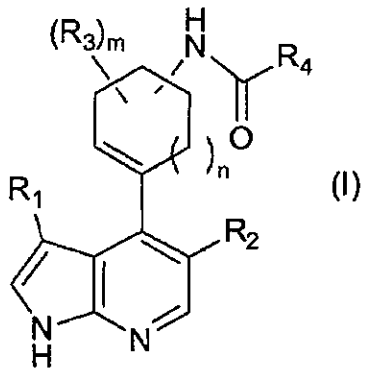
A method for preventing and/or treating rheumatoid arthritis or multiple sclerosis, comprising administering

the compound or a salt thereof according to any one of claims 1 to 11.

Claims

[Claim 1]

A compound of the following formula (I), or a salt thereof:



(I)

wherein

R_1 represents an optionally substituted C_4-C_{10} cycloalkyl group, an optionally substituted C_4-C_{10} cycloalkenyl group, an optionally substituted C_4-C_{10} cycloalkynyl group, an optionally substituted C_6-C_{14} aromatic hydrocarbon group, or an optionally substituted 4- to 10-membered saturated or unsaturated heterocyclic group;

R_2 represents a hydrogen atom, a halogen atom, a hydroxy group, a cyano group, a nitro group, $-C(=O)R_x$, $-C(=O)OR_x$, $-C(=O)N(R_x)(R_y)$, $-N(R_x)(R_y)$, $-NR_xC(=O)R_y$, $-NR_xS(=O)_2R_y$, $-NR_xC(=O)OR_y$, $-NR_xC(=O)N(R_y)(R_z)$, $-NR_xS(=O)_2N(R_y)(R_z)$, $-OC(=O)R_x$, $-OC(=O)OR_x$, $-OC(=O)N(R_x)(R_y)$, $-SR_x$, $-S(=O)_2R_x$, $-S(=O)_2OR_x$, an optionally R_b-substituted C_1-C_6 alkyl group, an optionally R_b-substituted C_2-C_6 alkenyl group, an optionally R_b-substituted C_2-C_6 alkynyl group, an optionally R_b-substituted C_1-C_6 alkoxy group, an optionally R_c-substituted C_3-C_{10} cycloalkyl group, an optionally R_c-substituted C_6-C_{14} aromatic hydrocarbon group, or an optionally R_c-substituted 4- to 10-membered saturated or unsaturated heterocyclic group;

R_3 represents a halogen atom, an amino group, a hydroxy group, a cyano group, a nitro group, a C_1-C_6 alkyl group, a C_2-C_6 alkenyl group, a C_2-C_6 alkynyl group, or a C_1-C_6 alkoxy group;

R_4 represents an optionally R_b-substituted C_2-C_6 alkenyl group or an optionally R_b-substituted C_2-C_6 alkynyl group;

R_b represents a halogen atom, an amino group, a hydroxy group, a cyano group, a nitro group, a C_1-C_6 alkoxy group, a di- or mono-(C_1-C_6 alkyl)amino group, or a 4- to 10-membered saturated or unsaturated heterocyclic group;

R_c represents a halogen atom, an amino group, a hydroxy group, a cyano group, a nitro group, an oxo group, an imino group, an N-oxide group, a C_1-C_6 alkyl group, a C_2-C_6 alkenyl group, a C_2-C_6 alkynyl group, a C_1-C_6 alkoxy group, or a di- or mono-(C_1-C_6 alkyl)amino group;

R_x, R_y and R_z, which are the same or different, each represent a hydrogen atom, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_2-C_6 alkenyl group, a C_2-C_6 alkynyl group, a C_3-C_{10} cycloalkyl group, a C_6-C_{14} aromatic hydrocarbon group, or a 4- to 10-membered saturated or unsaturated heterocyclic group;

m represents an integer of 0 to 3; and

n represents an integer of 0 to 2.

[Claim 2]

The compound or a salt thereof according to claim 1, wherein a group with which the C_4-C_{10} cycloalkyl group, C_4-C_{10} cycloalkenyl group, C_4-C_{10} cycloalkynyl group, C_6-C_{14} aromatic hydrocarbon group or 4- to 10-membered saturated or unsaturated heterocyclic group, which is represented by R_1, is optionally substituted is R_a, and the R_a represents a halogen atom, a hydroxy group, a cyano group, a nitro group, an oxo group, an N-oxide group, $-C(=O)R_x$, $-C(=O)OR_x$, $-C(=O)N(R_x)(R_y)$, $-C(=O)SR_x$, $-C(=S)OR_x$, $-C(=O)ON(R_x)(R_y)$, $-N(R_x)(R_y)$, $-NR_xC(=O)R_y$, $-NR_xS(=O)_2R_y$, $-NR_xC(=O)OR_y$, $-NR_xC(=O)N(R_y)(R_z)$, $-NR_xS(=O)_2N(R_y)(R_z)$, $-N(R_x)-OR_y$, $=NR_x$, $=N-OR_x$, $-OC(=O)R_x$, $-OC(=S)R_x$, $-OC(=O)OR_x$, $-OC(=O)N(R_x)(R_y)$, $-OC(=S)OR_x$, $-SR_x$, $-S(=O)_2R_x$, $-S(=O)_2OR_x$, $-S(=O)_2N(R_x)(R_y)$, an optionally R_b-substituted C_1-C_6 alkyl group, an optionally R_b-substituted C_2-C_6 alkenyl group, an optionally R_b-substituted C_2-C_6 alkynyl group, an optionally R_b-substituted C_1-C_6 alkoxy group, an optionally R_c-substituted C_3-C_{10} cycloalkyl group, an

optionally R_c-substituted C_6-C_{14} aromatic hydrocarbon group, or an optionally R_c-substituted 4- to 10-membered saturated or unsaturated heterocyclic group.

[Claim 3]

The compound or a salt thereof according to claim 1 or 2, wherein R_1 represents an optionally R_a-substituted C_5-C_7 cycloalkenyl group, an optionally R_a-substituted C_6-C_{10} aromatic hydrocarbon group, or an optionally R_a-substituted monocyclic 4- to 7-membered unsaturated heterocyclic group having 1 to 3 heteroatoms selected from the group consisting of N, S and O.

[Claim 4]

The compound or a salt thereof according to any one of claims 1 to 3, wherein R_1 represents an optionally R_a-substituted cyclopentenyl group, cyclohexenyl group, phenyl group, furanyl group, 1H-pyrazolyl group, thiazolyl group, oxazolyl group, isoxazolyl group, 1,3,4-thiadiazolyl group, 1,2,4-oxadiazolyl group, 1,3,4-oxadiazolyl group, pyridyl group, dihydropyranyl group, dihydrofuranyl group, or 4,5-dihydro-1,3,4-oxadiazolyl group.

[Claim 5]

The compound or a salt thereof according to any one of claims 1 to 4, wherein R_1 represents a cyclopentenyl group, a cyclohexenyl group, a phenyl group, a furanyl group, a 1H-pyrazolyl group, a thiazolyl group, an oxazolyl group, an isoxazolyl group, a 1,3,4-thiadiazolyl group, a 1,2,4-oxadiazolyl group, a 1,3,4-oxadiazolyl group, a pyridyl group, a dihydropyranyl group, a dihydrofuranyl group, or a 4,5-dihydro-1,3,4-oxadiazolyl group, which is optionally substituted with a group selected from the group consisting of a halogen atom, an amino group, a hydroxy group, an oxo group, an N-oxide group, a formyl group, a C_1-C_6 alkyl group (which is optionally substituted with a group selected from the group consisting of a hydroxy group and a di- or mono-(C_1-C_6 alkyl)amino group), a C_1-C_6 alkoxy group (which is optionally

substituted with a halogen atom), and a 4- to 10-membered saturated heterocyclic group.

[Claim 6]

The compound or a salt thereof according to any one of claims 1 to 5, wherein R_1 represents a cyclopentenyl group; a cyclohexenyl group; a phenyl group; a furanyl group, which is optionally substituted with a group selected from the group consisting of a formyl group and a C_1-C_6 alkyl group (which is optionally substituted with a group selected from the group consisting of a hydroxy group and a di- or mono-(C_1-C_6 alkyl)amino group); a 1H-pyrazolyl group, which is optionally substituted with a group selected from the group consisting of a C_1-C_6 alkyl group and a 4- to 10-membered saturated heterocyclic group; a thiazolyl group; an oxazolyl group; an isoxazolyl group; a 1,3,4-thiadiazolyl group; a 1,2,4-oxadiazolyl group; a 1,3,4-oxadiazolyl group, which is optionally substituted with a C_1-C_6 alkyl group; a pyridyl group, which is optionally substituted with a group selected from the group consisting of a halogen atom, an amino group, a hydroxy group, an N-oxide group, a C_1-C_6 alkyl group (which is optionally substituted with a hydroxy group), and a C_1-C_6 alkoxy group (which is optionally substituted with a halogen atom); a dihydropyranyl group; a dihydrofuranyl group; or a 4,5-dihydro-1,3,4-oxadiazolyl group, which is optionally substituted with a group selected from the group consisting of an oxo group and a C_1-C_6 alkyl group.

[Claim 7]

The compound or a salt thereof according to any one of claims 1 to 6, wherein R_2 represents a hydrogen atom, a cyano group, $-C(=O)OR_x$, $-C(=O)N(R_x)(R_y)$, an optionally R_b-substituted C_1-C_6 alkyl group, an optionally R_b-substituted C_1-C_6 alkoxy group, or an optionally R_c-substituted monocyclic 4- to 7-membered unsaturated heterocyclic group having 1 to 3 heteroatoms selected from the group consisting of N, S and O.

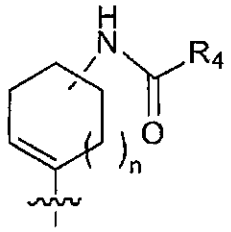
[Claim 8]

The compound or a salt thereof according to any one of claims 1 to 7, wherein R_2 represents a hydrogen atom; a cyano group; a (C_1-C_6 alkoxy)carbonyl group; a carbamoyl group; a di- or mono-(C_1-C_6 alkyl)carbamoyl group; a C_1-C_6 alkyl group, which is optionally substituted with a group selected from the group consisting of a hydroxy group, a C_1-C_6 alkoxy group, a di- or mono-(C_1-C_6 alkyl)amino group, and a 4- to 10-membered saturated heterocyclic group; a C_1-C_6 alkoxy group; or a monocyclic 5- or 6-membered completely unsaturated heterocyclic group having 1 to 3 N atoms, which is optionally substituted with a C_1-C_6 alkyl group.

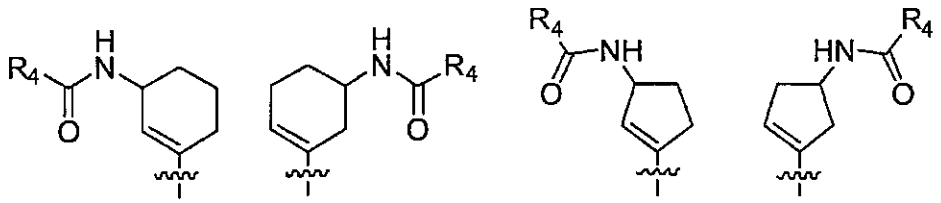
[Claim 9]

The compound or a salt thereof according to any one of claims 1 to 8, wherein m represents 0, n represents 0 or 1, R_4 represents a C_2-C_6 alkenyl group, and

in the formula (I), the following structure:



is any one of the following structures:



[Claim 10]

The compound according to any one of claims 1 to 9, or a salt thereof, wherein

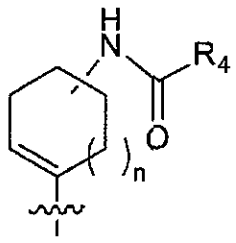
R_1 represents a cyclopentenyl group; a cyclohexenyl group; a phenyl group; a furanyl group, which is optionally substituted with a group selected from the group consisting of a formyl group and a C_1-C_6 alkyl group (which is optionally substituted with

a group selected from the group consisting of a hydroxy group and a di- or mono-(C_1-C_6 alkyl)amino group); a 1H-pyrazolyl group, which is optionally substituted with a group selected from the group consisting of a C_1-C_6 alkyl group and a 4- to 10-membered saturated heterocyclic group; a thiazolyl group; an oxazolyl group; an isoxazolyl group; a 1,3,4-thiadiazolyl group; a 1,2,4-oxadiazolyl group; a 1,3,4-oxadiazolyl group, which is optionally substituted with a C_1-C_6 alkyl group; a pyridyl group, which is optionally substituted with a group selected from the group consisting of a halogen atom, an amino group, a hydroxy group, an N-oxide group, a C_1-C_6 alkyl group (which is optionally substituted with a hydroxy group), and a C_1-C_6 alkoxy group (which is optionally substituted with a halogen atom); a dihydropyranyl group; a dihydrofuranyl group; or a 4,5-dihydro-1,3,4-oxadiazolyl group, which is optionally substituted with a group selected from the group consisting of an oxo group and a C_1-C_6 alkyl group,

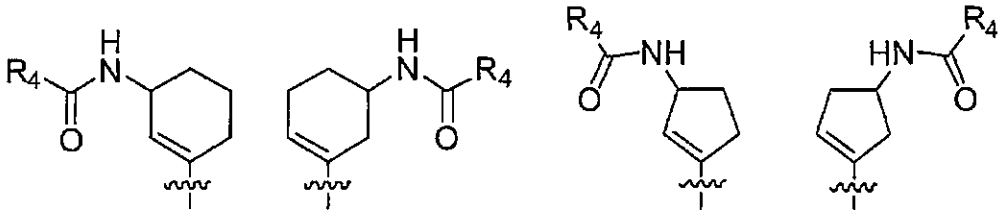
R_2 represents a hydrogen atom; a cyano group; a (C_1-C_6 alkoxy)carbonyl group; a carbamoyl group; a di- or mono-(C_1-C_6 alkyl)carbamoyl group; a C_1-C_6 alkyl group, which is optionally substituted with a group selected from the group consisting of a hydroxy group, a C_1-C_6 alkoxy group, a di- or mono-(C_1-C_6 alkyl)amino group, and a 4- to 10-membered saturated heterocyclic group; a C_1-C_6 alkoxy group; or a monocyclic 5- or 6-membered completely unsaturated heterocyclic group having 1 to 3 N atoms, which is optionally substituted with a C_1-C_6 alkyl group,

m represents 0, n represents 0 or 1, R_4 represents a C_2-C_6 alkenyl group, and

in the formula (I), the following structure:



is any one of the following structures:



[Claim 11]

The compound or a salt thereof according to any one of claims 1 to 10, wherein the compound is any of compounds represented by the following (1) to (11):

(1)

N-(3-(3-phenyl-1H-pyrrolo[2,3-b]pyridin-4-yl)cyclohex-3-en-1-yl)acrylamide,

(2)

N-(3-(3-(1H-pyrazol-4-yl)-1H-pyrrolo[2,3-b]pyridin-4-yl)cyclohex-3-en-1-yl)acrylamide,

(3)

N-(3-(3-(2-methoxypyridin-3-yl)-1H-pyrrolo[2,3-b]pyridin-4-yl)cyclohex-3-en-1-yl)acrylamide,

(4)

N-(3-(3-(furan-2-yl)-1H-pyrrolo[2,3-b]pyridin-4-yl)cyclohex-3-en-1-yl)acrylamide,

(5)

N-(3-(3-(4-(hydroxymethyl)furan-2-yl)-1H-pyrrolo[2,3-b]pyridin-4-yl)cyclohex-3-en-1-yl)acrylamide,

(6)

N-(3-(3-(2,5-dihydrofuran-3-yl)-1H-pyrrolo[2,3-b]pyridin-4-yl)cyclohex-3-en-1-yl)acrylamide,

(7)

N-(3-(3-(oxazol-5-yl)-1H-pyrrolo[2,3-b]pyridin-4-yl)cyclohex-3-en-1-yl)acrylamide,

(8)

N-(3-(3-(1,3,4-oxadiazol-2-yl)-1H-pyrrolo[2,3-b]pyridin-4-yl)cyclohex-3-en-1-yl)acrylamide,

(9)
(S)-N-(3-(3-(1,3,4-oxadiazol-2-yl)-1H-pyrrolo[2,3-b]pyridin-4-yl)cyclohex-3-en-1-yl)acrylamide,
(10)
N-(3-(3-(1,3,4-oxadiazol-2-yl)-1H-pyrrolo[2,3-b]pyridin-4-yl)cyclopent-3-en-1-yl)acrylamide, and
(11)
(S)-N-(3-(3-(isoxazol-5-yl)-1H-pyrrolo[2,3-b]pyridin-4-yl)cyclohex-3-en-1-yl)acrylamide.

[Claim 12]

A JAK3 inhibitor comprising, as an active ingredient, the compound or a salt thereof according to any one of claims 1 to 11.

[Claim 13]

A pharmaceutical composition comprising the compound or a salt thereof according to any one of claims 1 to 11.

[Claim 14]

The pharmaceutical composition according to claim 13, wherein the pharmaceutical composition is a pharmaceutical composition for treating a disease involving JAK3.

[Claim 15]

An agent for preventing and/or treating rheumatoid arthritis or multiple sclerosis, comprising, as an active ingredient, the compound or a salt thereof according to any one of claims 1 to 11.

[Claim 16]

The compound or a salt thereof according to any one of claims 1 to 11, for treating a disease involving JAK3.

[Claim 17]

The compound or a salt thereof according to any one of claims 1 to 11, for preventing and/or treating rheumatoid arthritis or multiple sclerosis.

[Claim 18]

The use of the compound or a salt thereof according to any one of claims 1 to 11 in the manufacture of a medicament for the treatment of a disease involving JAK3.

[Claim 19]

The use of the compound or a salt thereof according to any one of claims 1 to 11 in the manufacture of a medicament for the prevention and/or treatment of rheumatoid arthritis or multiple sclerosis.