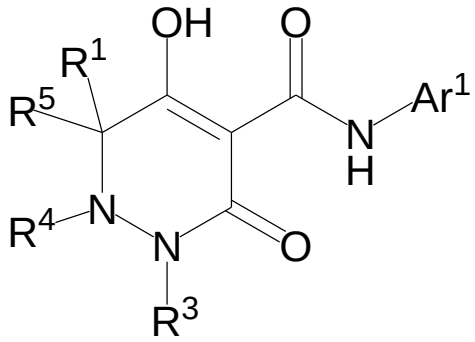
CLAIMS

1. A pharmaceutical composition for use in the prevention or treatment of a disease selected from chronic kidney disease, and arteriosclerosis associated with vascular calcification, or in the prevention or suppression pf ectopic calcification, wherein the chronic kidney disease is at stage 2 to 4 classified by GFR, wherein the composition comprises a compound represented by the formula (I) or a salt thereof, or a solvate of the compound or the salt:



(I)

wherein R^1, R^4, and R^5 are as defined in any one of the following (1) to (3):

(1) R^1 is a hydrogen atom or C_{1-10} alkyl;

R^4 is a hydrogen atom, C_{1-4} alkyl optionally substituted with one or more substituents Rf, C_{6-10} aryl optionally substituted with one or more substituents Rg, (C_{1-6} alkyl)carbonyl, (C_{6-10} aryl)carbonyl, a group $-C(O)NR^{37}R^{38}$, C_{3-7} cycloalkyl, or 5- to 8-membered heterocycloalkyl; and

R^5 is a hydrogen atom or C_{1-4} alkyl;

(2) R^1 and R^5 together with the carbon atom to which they are attached form a C_{3-6} saturated carbocyclic ring; and

R^4 is as defined above; and

(3) R^1 is a hydrogen atom or linear C_{1-10} alkyl;

R^4 and R^5 together with the carbon atom and the nitrogen atom to which they are attached form a 5- to 8-membered saturated heterocyclic ring, wherein the saturated heterocyclic ring is optionally substituted with one or more substituents R^2;

R^3 is C_{1-10} alkyl optionally substituted with one or more substituents Rh, or R^3 is C_{1-4} alkyl substituted with Re;

R^{37} and R^{38} are each independently selected from a hydrogen atom and C_{1-3} alkyl;

each R^2 is independently selected from C_{1-5} alkyl and a halogen atom; and/or

two or more substituents R^2 on the 5- to 8-membered saturated heterocyclic ring may together form C_{1-5} alkylene that links the ring atoms to which they are attached;

each Rh is independently selected from a halogen atom, (C_{1-4} alkoxy)carbonyl, and a group $-(O(CH_2)_a)_b-C_{1-4}$ alkoxy, wherein a is an integer selected from 2 to 4, and b is an integer selected from 1 to 4;

Re is C_{6-10} aryl optionally substituted with one or more substituents Ra, or 5- to 10-membered heteroaryl optionally substituted with one or more substituents Ra;

each Rf is independently selected from a halogen atom, hydroxy, cyano, carboxy, (C_{1-6} alkoxy)carbonyl, C_{1-6} alkoxy, and C_{6-10} aryl optionally substituted with one or more substituents Rg;

each Rg is independently selected from a halogen atom, C_{1-6} alkyl, C_{2-6} alkynyl, and C_{1-6} alkoxy, wherein the alkyl, alkynyl, and alkoxy groups are each optionally substituted with one or more substituents selected from hydroxy and cyano;

each Ra is independently selected from a halogen atom, hydroxy, nitro, cyano, (C_{1-4} alkoxy)carbonyl, 3- to 10-membered heterocycloalkyloxy (the heterocycloalkyloxy group is optionally substituted with optionally C_{1-4} alkoxy-substituted C_{1-4} alkyl), C_{1-10} alkyl optionally substituted with one or more substituents R^{10}, C_{2-10} alkenyl optionally substituted with one or more substituents R^{15}, C_{2-10} alkynyl optionally substituted with one or more substituents R^{11}, C_{1-8} alkoxy optionally substituted with one or more substituents R^{12}, C_{1-4} alkylthio optionally substituted with one or more substituents R^{13}, a group $-(O(CH_2)_{q1})_{q2}-NR^{41}R^{42}$ (wherein q1 is an integer selected from 1 to 4, and q2 is an integer selected from 2 to 6), a group $-(O(CH_2)_{r1})_{r2}-C(O)NR^{43}R^{44}$ (wherein r1 is an integer selected from 1 to 4, and r2 is an integer selected from 1 to 4), a group $-(O(CH_2)_{s1})_{s2}-NR^{45}-C(O)R^{46}$ (wherein s1 and s2 are each independently an integer selected from 2 to 4), a group $-C(O)NR^{47}R^{48}$, pyridinyl,

pyrrolyl, a group -$NR^{49}R^{50}$, and a group -$(O(CH_2)_{y1})_{y2}$-O-CH_2-C(O)$NR^{51}R^{52}$ (wherein y1 is an integer selected from 1 to 4, and y2 is an integer selected from 1 to 4);

R^{10}, R^{11}, R^{12}, R^{13}, and R^{15} are each independently selected from a halogen atom, hydroxy, carboxy, C_{1-6} alkoxy optionally substituted with one or more hydroxy groups, (C_{1-4} alkoxy)C_{1-6} alkoxy, (C_{1-4} alkoxy)carbonyl, a group -$(O(CH_2)_o)_p$-OH (wherein o and p are each independently an integer selected from 2 to 4), C_{3-6} cycloalkyl optionally substituted with one or more hydroxy groups, 3- to 10-membered heterocycloalkyl, 5- to 10-membered heteroaryl, and a group -$NR^{39}R^{40}$, wherein the 3- to 10-membered heterocycloalkyl group is optionally substituted with one or more substituents selected from oxo, a halogen atom, C_{1-4} alkyl (wherein the alkyl group is optionally substituted with one or more hydroxy groups), (C_{1-4} alkoxy)C_{1-4} alkyl (wherein the alkoxy moiety is optionally substituted with one or more hydroxy groups), C_{1-4} alkoxy, (C_{1-4} alkoxy)carbonyl, C_{1-4} alkylthio, morpholino, (C_{1-3} alkyl)sulfonyl, and -C(O)$NR^{53}R^{54}$;

Ar^1 is C_{6-10} aryl or 5- to 10-membered heteroaryl, wherein the aryl and heteroaryl groups are each optionally substituted with one to three substituents selected from Rb, Rc, and Rd;

Rb, Rc, and Rd are each independently selected from optionally C_{1-4} alkoxy-substituted C_{1-5} alkoxy, a halogen atom, C_{1-10} alkyl optionally substituted with one or more halogen atoms, a group -SF_5, cyano, hydroxy, 5- to 10-membered heterocycloalkyl optionally substituted with one or more substituents R^{14}, C_{6-10} aryl optionally substituted with one or more substituents R^{14}, and 5- to 10-membered heteroaryl optionally substituted with one or more substituents R^{14};

each R^{14} is independently selected from a halogen atom, oxo, cyano, nitro, C_{1-4} alkyl optionally substituted with one or more halogen atoms, C_{1-4} alkoxy optionally substituted with one or more halogen atoms, (C_{1-6} alkoxy)carbonyl, a group -$NR^{27}R^{28}$, a group -$SO_2NR^{35}R^{36}$, C_{1-4} alkylthio, and 5- to 10-membered heterocycloalkyl;

R^{27} and R^{28} are each independently selected from a hydrogen atom and C_{1-4} alkyl optionally substituted with (C_{1-4} alkoxy)carbonyl;

R^{35} and R^{36} are each independently selected from a hydrogen atom and C_{1-4} alkyl;

R^{39} is a hydrogen atom, or C_{1-6} alkyl, wherein the alkyl is optionally substituted with hydroxy or C_{1-6} alkoxy;

R^{40} is a hydrogen atom, optionally C_{1-6} alkoxy-substituted C_{1-6} alkyl, ((C_{1-4} alkoxy)carbonyl)C_{1-6} alkyl, hydroxy-substituted C_{1-6} alkyl, C_{1-4} alkyl substituted with a group-$NR^{55}R^{56}$, a group -$CH((CH_2)_{v1}COOR^{57})$-$(CH_2)_{v2}$-$COOR^{57}$ (wherein v1 is an integer selected from 0 to 2, and v2 is an integer selected from 1 to 3), a group -$(CH_2)_w$-SO_3H (wherein w is an integer selected from 1 to 4), a group -$(CH_2)_{x1}$-CH(COOH)-$(CH_2)_{x2}$-SO_3H (wherein x1 is an integer selected from 0 to 2, and x2 is an integer selected from 1 to 3), 3- to 6-membered oxacycloalkyl, or a group -$(CH_2)_{t1}$-O-$(CH_2)_{t2}$-$C(O)NR^{58}R^{59}$ (wherein t1 and t2 are each independently an integer selected from 1 to 3);

R^{41} is a hydrogen atom or C_{1-3} alkyl;

R^{42} is C_{1-8} alkyl substituted with one or more hydroxy groups, or (C_{1-3} alkoxy)C_{1-4} alkyl;

R^{43} is a hydrogen atom or C_{1-3} alkyl;

R^{44} is C_{1-8} alkyl substituted with one or more hydroxy groups, or

R^{43} and R^{44} together with the nitrogen atom to which they are attached may form morpholino;

R^{45} is a hydrogen atom or C_{1-3} alkyl;

R^{46} is C_{1-6} alkyl substituted with one or more hydroxy groups;

R^{47} is C_{1-3} alkyl;

R^{48} is (C_{1-3} alkoxy)C_{1-4} alkyl;

R^{49} is a hydrogen atom and C_{1-4} alkyl;

R^{50} is -$(CH_2)_z$-$NR^{60}R^{61}$ (z is an integer selected from 1 to 4, R^{60} is a hydrogen atom or C_{1-4} alkyl, and R^{61} is (C_{1-3} alkoxy)C_{1-4} alkyl, or R^{60} and R^{61} together with the nitrogen atom to which they are attached may form morpholino);

R^{51} is a hydrogen atom or C_{1-4} alkyl;

R^{52} is C_{1-8} alkyl substituted with one or more hydroxy groups;

R^{53} and R^{54} are each independently selected from a hydrogen atom and C_{1-4} alkyl;

R^{55} is a hydrogen atom or C_{1-4} alkyl;

R^{56} is (C_{1-4} alkyl)carbonyl;

R^{57} is a hydrogen atom or C_{1-4} alkyl;

R^{58} is a hydrogen atom or C_{1-3} alkyl; and

R^{59} is C_{1-8} alkyl substituted with one or more hydroxy groups.

2. The pharmaceutical composition for use according to claim 1, wherein, in the compound represented by the formula (I), Rb is optionally C_{1-4} alkoxy-substituted C_{1-5} alkoxy or a halogen atom;

Rc is a halogen atom, C_{1-10} alkyl optionally substituted with one or more halogen atoms, or a group $-SF_5$; and

Rd is cyano, hydroxy, a halogen atom, C_{1-4} alkyl optionally substituted with one or more halogen atoms, 5- to 10-membered heterocycloalkyl optionally substituted with one or more substituents R^{14}, C_{6-10} aryl optionally substituted with one or more substituents R^{14}, or 5- to 10-membered heteroaryl optionally substituted with one or more substituents R^{14}.

3. The pharmaceutical composition for use according to claim 1 or 2, wherein, in the compound represented by the formula (I),

each Ra is independently selected from a halogen atom, hydroxy, nitro, cyano, (C_{1-4} alkoxy)carbonyl, 3- to 10-membered heterocycloalkyloxy, C_{1-10} alkyl optionally substituted with one or more substituents R^{10}, C_{2-10} alkenyl optionally substituted with one or more substituents R^{15}, C_{2-10} alkynyl optionally substituted with one or more substituents R^{11}, C_{1-8} alkoxy optionally substituted with one or more substituents R^{12}, and C_{1-4} alkylthio optionally substituted with one or more substituents R^{13};

R^{10}, R^{11}, R^{12}, R^{13}, and R^{15} are each independently selected from a halogen atom, hydroxy, carboxy, C_{1-6} alkoxy optionally substituted with one or more hydroxy groups, (C_{1-4} alkoxy)carbonyl, a group $-(O(CH_2)_o)_p-OH$ (wherein o and p are each independently an integer selected from 2 to 4), C_{3-6} cycloalkyl optionally substituted with one or more hydroxy groups, 3- to 10-membered heterocycloalkyl, 5- to 10-membered heteroaryl, and a

group -$NR^{39}R^{40}$, wherein the 3- to 10-membered heterocycloalkyl group is optionally substituted with one or more substituents selected from oxo, a halogen atom, and C_{1-4} alkyl (wherein the alkyl group is optionally substituted with one or more hydroxy groups); and

R^{39} and R^{40} are each independently selected from a hydrogen atom and optionally C_{1-6} alkoxy-substituted C_{1-6} alkyl.

4. The pharmaceutical composition for use according to claim 1 or 2, wherein, in the compound represented by the formula (I),

each Ra is independently selected from a halogen atom, hydroxy, nitro, cyano, (C_{1-4} alkoxy)carbonyl, 3- to 6-membered heterocycloalkyloxy (the heterocycloalkyloxy group is optionally substituted with optionally C_{1-4} alkoxy-substituted C_{1-4} alkyl), C_{1-10} alkyl optionally substituted with one or more substituents R^{10}, C_{2-10} alkynyl optionally substituted with one or more substituents R^{11}, C_{1-8} alkoxy optionally substituted with one or more substituents R^{12}, C_{1-4} alkylthio optionally substituted with one or more substituents R^{13}, a group -$(O(CH_2)_{q1})_{q2}$-$NR^{41}R^{42}$, a group -$(O(CH_2)_{r1})_{r2}$-$C(O)NR^{43}R^{44}$, a group -$(O(CH_2)_{s1})_{s2}$-NR^{45}-$C(O)R^{46}$, a group -$C(O)NR^{47}R^{48}$, pyridinyl, pyrrolyl, a group -$NR^{49}R^{50}$, and a group -$(O(CH_2)_{y1})_{y2}$-O-CH_2-$C(O)NR^{51}R^{52}$;

R^{10} is carboxy, 3- to 6-membered heterocycloalkyl, C_{1-6} alkoxy optionally substituted with one or more hydroxy groups, or a group -$(O(CH_2)_o)_p$-OH;

R^{11} is hydroxy, carboxy, 5- or 6-membered heterocycloalkyl optionally substituted with one or more oxo groups, C_{1-6} alkoxy optionally substituted with one or more hydroxy groups, a group -$(O(CH_2)_o)_p$-OH, C_{3-6} cycloalkyl optionally substituted with one or more hydroxy groups, or a group –$NR^{39}R^{40}$;

R^{12} is a halogen atom, hydroxy, carboxy, C_{1-6} alkoxy optionally substituted with one or more hydroxy groups, (C_{1-4} alkoxy)C_{1-6} alkoxy, (C_{1-3} alkoxy)carbonyl, 3- to 6-membered heterocycloalkyl, 5- or 6-membered heteroaryl, or a group -$NR^{39}R^{40}$, wherein the 3- to 6-membered heterocycloalkyl group is optionally substituted with one or more substituents selected from oxo, a halogen atom, C_{1-4} alkyl (wherein the alkyl group is optionally substituted with one or more hydroxy groups), (C_{1-4} alkoxy)C_{1-4} alkyl (wherein the alkoxy

moiety is optionally substituted with one or more hydroxy groups), C_{1-4} alkoxy, (C_{1-4} alkoxy)carbonyl, C_{1-4} alkylthio, morpholinyl, (C_{1-3} alkyl)sulfonyl, and -C(O)$NR^{53}R^{54}$;

R^{13} is 5- or 6-membered heterocycloalkyl; and

o and p are each independently an integer selected from 2 to 4.

5. The pharmaceutical composition for use according to any one of claims 1 to 4, wherein, in the compound represented by the formula (I),

each Ra is independently selected from a halogen atom, hydroxy, nitro, cyano, (C_{1-4} alkoxy)carbonyl, 3- to 6-membered heterocycloalkyloxy, C_{1-10} alkyl optionally substituted with one or more substituents R^{10}, C_{2-10} alkynyl optionally substituted with one or more substituents R^{11}, C_{1-8} alkoxy optionally substituted with one or more substituents R^{12}, and C_{1-4} alkylthio optionally substituted with one or more substituents R^{13};

each R^{10} is independently selected from carboxy, 3- to 6-membered heterocycloalkyl, C_{1-6} alkoxy optionally substituted with one or more hydroxy groups, and a group -$(O(CH_2)_o)_p$-OH;

each R^{11} is independently selected from hydroxy, carboxy, 5- or 6-membered heterocycloalkyl optionally substituted with one or more oxo groups, C_{1-6} alkoxy optionally substituted with one or more hydroxy groups, a group -$(O(CH_2)_o)_p$-OH, and C_{3-6} cycloalkyl optionally substituted with one or more hydroxy groups;

each R^{12} is independently selected from a halogen atom, hydroxy, C_{1-6} alkoxy optionally substituted with one or more hydroxy groups, (C_{1-3} alkoxy)carbonyl, 3- to 6-membered heterocycloalkyl, 5- or 6-membered heteroaryl, and a group -$NR^{39}R^{40}$;

R^{13} is 5- or 6-membered heterocycloalkyl; and

o and p are each independently an integer selected from 2 to 4.

6. The pharmaceutical composition for use according to claim 1, 2, or 4, wherein, in the compound represented by the formula (I),

each Ra is independently selected from a halogen atom, hydroxy, nitro, cyano, C_{1-6} alkyl, (carboxy)C_{1-8} alkyl, (morpholino)C_{1-4} alkyl, [HO-$((CH_2)_oO)_p$]C_{1-6} alkyl, (C_{1-6} alkoxy)C_{1-8} alkyl (the alkoxy is optionally substituted with one or more hydroxy groups), C_{1-6}

alkoxy optionally substituted with one or more halogen atoms, [N-((C_{1-3} alkoxy)C_{1-4} alkyl)-N-(C_{1-3} alkyl)amino]C_{1-4} alkoxy, C_{1-6} alkoxy substituted with one or more hydroxy groups, ((C_{1-3} alkoxy)carbonyl)C_{1-3} alkoxy, (C_{1-6} alkoxy)C_{1-8} alkoxy (the C_{1-6} alkoxy is optionally substituted with one or more hydroxy groups), (C_{1-3} alkoxy(C_{1-4} alkoxy))C_{1-4} alkoxy, (carboxy)C_{1-8} alkoxy, (3- to 6-membered heterocycloalkyl)C_{1-6} alkoxy (the heterocycloalkyl moiety is optionally substituted with one or more substituents selected from oxo, a halogen atom, C_{1-4}alkyl (the alkyl is optionally substituted with one or more hydroxy groups), (C_{1-4} alkoxy)C_{1-4} alkyl (the alkoxy moiety is optionally substituted with one or more hydroxyl groups), C_{1-4} alkoxy, (C_{1-4} alkoxy)carbonyl, C_{1-4} alkylthio, morpholino, (C_{1-3} alkyl)sulfonyl, and (di(C_{1-3} alkyl)amino)carbonyl), C_{1-4} alkoxy substituted with a group –NH-CH((CH_2)$_{v1}$COOR^{57})-(CH_2)$_{v2}$-COOR^{57}, [N-(3- to 6-membered oxacycloalkyl)-N-(C_{1-3} alkyl)amino]C_{1-4} alkoxy, [N,N-di((hydroxy)C_{1-4} alkyl)-amino]C_{1-4} alkoxy, [N-((C_{1-3} alkoxy)carbonyl)C_{1-3} alkyl-N-(C_{1-3} alkyl)amino]C_{1-4} alkoxy, (pyridinyl)C_{1-4} alkoxy, (pyrimidinyl)C_{1-4} alkoxy, (1,2,4-triazolyl)C_{1-4} alkoxy, [N-(hydroxy)C_{1-4} alkyl-N-(C_{1-3} alkyl)amino]C_{1-4} alkoxy, [N,N-di((C_{1-3} alkoxy)C_{1-4} alkyl)amino]C_{1-6} alkoxy, [N,N-di(C_{1-3} alkyl)amino]C_{1-6} alkoxy, [N-[N-(C_{1-4}alkyl)carbonyl-N-(C_{1-3}alkyl)amino]C_{1-4} alkyl-N-(C_{1-3} alkyl) amino]C_{1-4} alkoxy, [N-[N-(C_{1-4}alkyl)carbonyl-amino]C_{1-4} alkyl-N-(C_{1-3} alkyl) amino]C_{1-4} alkoxy, a group -(O(CH_2)$_{r1}$)$_{r2}$-C(O)NR^{43}R^{44}, a group -(O(CH_2)$_{q1}$)$_{q2}$-NR^{41}R^{42}, C_{1-4} alkoxy substituted with a group -NH-(CH_2)$_w$-SO_3H, C_{1-4} alkoxy substituted with a group -NH-(CH_2)$_{x1}$-CH(COOH)-(CH_2)$_{x2}$-SO_3H, a group -(O(CH_2)$_{s1}$)$_{s2}$-NR^{45}-C(O)R^{46}, a group -C(O)NR^{47}R^{48}, pyridinyl, a group -NR^{49}R^{50}, a group -(O(CH_2)$_{y1}$)$_{y2}$-O-CH_2-C(O)NR^{51}R^{52}, (carboxy)C_{2-6} alkynyl, (5- to 6-membered heterocycloalkyl)C_{2-6} alkynyl (the heterocycloalkyl is optionally substituted with one or more oxo groups), C_{2-8} alkynyl optionally substituted with one or more hydroxy groups, [HO-((CH_2)$_o$O)$_p$]C_{2-8} alkynyl, (C_{1-6} alkoxy)C_{2-8} alkynyl (the alkoxy is optionally substituted with one or more hydroxy groups), (C_{3-6} cycloalkyl)C_{2-6} alkynyl (the cycloalkyl is optionally substituted with one or more hydroxy groups), [N-((C_{1-3} alkoxy)C_{1-4} alkyl)-N-(C_{1-3} alkyl)amino]C_{2-6} alkynyl, (C_{1-3} alkoxy)carbonyl, (morpholino)C_{1-4} alkylthio (the morpholino is optionally substituted with

one or more oxo groups), 3- to 6-membered oxacycloalkyloxy, and 4- to 6-membered nitrogen containing heterocycloalkyloxy (the nitrogen containing heterocycloalkyl moiety is optionally substituted with one substituent selected from (C_{1-3} alkoxy)C_{1-4} alkyl and C_{1-3} alkyl).

7. The pharmaceutical composition for use according to claim 1, 2, 4, or 6, wherein, in the compound represented by the formula (I),

each Ra is independently selected from a halogen atom, hydroxy, cyano, C_{1-6} alkyl, (carboxy)C_{1-8} alkyl, (morpholino)C_{1-4} alkyl, (C_{1-6} alkoxy)C_{1-8} alkyl (the alkoxy is substituted with one or more hydroxy groups), C_{1-6} alkoxy optionally substituted with one or more halogen atoms, [N-((C_{1-3} alkoxy)C_{1-4} alkyl)-N-(C_{1-3} alkyl)amino]C_{1-4} alkoxy, (morpholino)C_{1-6} alkoxy (the morpholino moiety may be substituted with one or two substituents selected from oxo and C_{1-3} alkyl), (C_{1-6} alkoxy)C_{1-8} alkoxy (the C_{1-6} alkoxy is optionally substituted with one or more hydroxy groups), (C_{1-3} alkoxy(C_{1-4} alkoxy))C_{1-4} alkoxy, (carboxy)C_{1-8} alkoxy, (pyrrolidinyl)C_{1-4} alkoxy (the pyrrolidinyl moiety is optionally substituted with (C_{1-4} alkoxy)C_{1-3} alkyl), C_{1-4} alkoxy substituted with a group –NH-CH((CH_2)$_{v1}$COOR^{57})-(CH_2)$_{v2}$-COOR^{57}, [N-(oxetanyl)-N-(C_{1-3} alkyl)amino]C_{1-4} alkoxy, [N,N-di(C_{1-3} alkyl)amino]C_{1-6} alkoxy, a group -(O(CH_2)$_{r1}$)$_{r2}$-C(O)NR^{43}R^{44}, a group -(O(CH_2)$_{q1}$)$_{q2}$-NR^{41}R^{42}, C_{1-4} alkoxy substituted with a group -NH-(CH_2)$_w$-SO_3H, C_{1-4} alkoxy substituted with a group -NH-(CH_2)$_{x1}$-CH(COOH)-(CH_2)$_{x2}$-SO_3H, (carboxy)C_{2-6} alkynyl, (morpholino)C_{2-6} alkynyl, C_{2-8} alkynyl optionally substituted with one or more hydroxy groups, [HO-((CH_2)$_o$O)$_p$]C_{2-8} alkynyl, (C_{1-6} alkoxy)C_{2-8} alkynyl (the alkoxy is substituted with one or more hydroxy groups), and (C_{1-3} alkoxy)carbonyl.

8. The pharmaceutical composition for use according to claim 1, 2, 4, 6, or 7, wherein, in the compound represented by the formula (I),

Ra is independently selected from a halogen atom, hydroxy, cyano, C_{1-3} alkyl, (carboxy)C_{1-8} alkyl, (C_{1-6} alkoxy)C_{1-8} alkyl (the alkoxy is substituted with one or more hydroxy groups), C_{1-3} alkoxy optionally substituted with one or more halogen atoms, [N-((C_{1-3} alkoxy)C_{1-4} alkyl)-N-(C_{1-3} alkyl)amino]C_{1-4} alkoxy, (morpholino)C_{1-6} alkoxy, (C_{1-6}

alkoxy)C_{1-8} alkoxy (the C_{1-6} alkoxy is substituted with one or more hydroxy groups), (carboxy)C_{2-6} alkynyl, (morpholino)C_{2-6} alkynyl, C_{2-8} alkynyl optionally substituted with one or more hydroxy groups, [HO-$((CH_2)_oO)_p$]C_{2-8} alkynyl, (C_{1-6} alkoxy)C_{2-8} alkynyl (the alkoxy is substituted with one or more hydroxy groups), and (C_{1-3} alkoxy)carbonyl.

9. The pharmaceutical composition for use according to any one of claims 1 to 8, wherein, in the compound represented by the formula (I), R^3 is methyl substituted with Re.

10. The pharmaceutical composition for use according to any one of claims 1 to 9, wherein, in the compound represented by the formula (I), R^3 is benzyl optionally substituted with one to three substituents Ra on the benzene ring.

11. The pharmaceutical composition for use according to any one of claims 1, 2, 4, 9, and 10, wherein, in the compound represented by the formula (I),

Re is phenyl optionally substituted with one to three substituents Ra;

the one to three substituents Ra are one substituent selected from Ri, Rj, and Rk, two substituents selected from combinations of Ri and Rj, Ri and Rk, and Rj and Rk, or three substituents Ri, Rj, and Rk;

Ri is a halogen atom or C_{1-3} alkoxy;

Rj is a halogen atom, nitro, or cyano; and

Rk is hydroxy, a halogen atom, (C_{1-4} alkoxy)carbonyl, 5- to 10-membered heterocycloalkyloxy (the heterocycloalkyloxy group is optionally substituted with optionally C_{1-4} alkoxy-substituted C_{1-4} alkyl), C_{1-10} alkyl optionally substituted with one or more substituents R^{10}, C_{2-10} alkenyl optionally substituted with one or more substituents R^{15}, C_{2-10} alkynyl optionally substituted with one or more substituents R^{11}, C_{1-8} alkoxy optionally substituted with one or more substituents R^{12}, C_{1-4} alkylthio optionally substituted with one or more substituents R^{13}, a group -$(O(CH_2)_{q1})_{q2}$-$NR^{41}R^{42}$, a group -$(O(CH_2)_{r1})_{r2}$-$C(O)NR^{43}R^{44}$, a group -$(O(CH_2)_{s1})_{s2}$-NR^{45}-$C(O)R^{46}$, a group -$C(O)NR^{47}R^{48}$, pyridinyl, pyrrolyl, a group -$NR^{49}R^{50}$, or a group -$(O(CH_2)_{y1})_{y2}$-O-CH_2-$C(O)NR^{51}R^{52}$.

12. The pharmaceutical composition for use according to any one of claims 1, 2, 4, and 9 to 11, wherein, in the compound represented by the formula (I),

Re is phenyl optionally substituted with one to three substituents Ra;

the one to three substituents Ra are one substituent selected from Ri, Rj, and Rk, two substituents selected from combinations of Ri and Rj, Ri and Rk, and Rj and Rk, or three substituents Ri, Rj, and Rk;

Ri is a halogen atom or C_{1-3} alkoxy;

Rj is a halogen atom, nitro, or cyano; and

Rk is hydroxy, a halogen atom, (C_{1-4} alkoxy)carbonyl, 5- to 10-membered heterocycloalkyloxy, C_{1-10} alkyl optionally substituted with one or more substituents R^{10}, C_{2-10} alkenyl optionally substituted with one or more substituents R^{15}, C_{2-10} alkynyl optionally substituted with one or more substituents R^{11}, C_{1-8} alkoxy optionally substituted with one or more substituents R^{12}, or C_{1-4} alkylthio optionally substituted with one or more substituents R^{13}.

13. The pharmaceutical composition for use according to claim 11, wherein, in the compound represented by the formula (I),

Rk is a halogen atom, hydroxy, C_{1-6} alkyl, (carboxy)C_{1-8} alkyl, (morpholino)C_{1-4} alkyl, [HO-((CH_2)$_o$O)$_p$]C_{1-6} alkyl, (C_{1-6} alkoxy)C_{1-8} alkyl (the alkoxy is optionally substituted with one or more hydroxy groups), C_{1-6} alkoxy optionally substituted with one or more halogen atoms, [N-((C_{1-3} alkoxy)C_{1-4} alkyl)-N-(C_{1-3} alkyl)amino]C_{1-4} alkoxy, C_{1-6} alkoxy substituted with one or more hydroxy groups, ((C_{1-3} alkoxy)carbonyl)C_{1-3} alkoxy, (C_{1-6} alkoxy)C_{1-8} alkoxy (the C_{1-6} alkoxy is optionally substituted with one or more hydroxy groups), (C_{1-3} alkoxy(C_{1-4} alkoxy))C_{1-4} alkoxy, (carboxy)C_{1-8} alkoxy, (3- to 6-membered heterocycloalkyl)C_{1-6} alkoxy (the heterocycloalkyl moiety contains one to three heteroatoms selected from O and N and is optionally substituted with one or more substituents selected from oxo, a halogen atom, C_{1-4} alkyl (the alkyl is optionally substituted with one or more hydroxy groups), (C_{1-4} alkoxy)C_{1-4} alkyl (the alkoxy moiety is optionally substituted with one or more hydroxy groups), C_{1-4} alkoxy, (C_{1-4} alkoxy)carbonyl, C_{1-4} alkylthio, morpholino, (C_{1-3} alkyl)sulfonyl and (di(C_{1-3} alkyl)amino)carbonyl), C_{1-4} alkoxy substituted with a group –NH-CH((CH_2)$_{v1}$COOR^{57})-(CH_2)$_{v2}$-COOR^{57}, [N-(3- to 6-membered oxacycloalkyl)-N-(C_{1-3}

alkyl)amino]C_{1-4} alkoxy, [N,N-di((hydroxy)C_{1-4} alkyl)-amino]C_{1-4} alkoxy, [N-((C_{1-3} alkoxy)carbonyl)C_{1-3} alkyl-N-(C_{1-3} alkyl)amino]C_{1-4} alkoxy, (pyridinyl)C_{1-4} alkoxy, (pyrimidinyl)C_{1-4}alkoxy, (1,2,4-triazolyl)C_{1-4} alkoxy, [N-(hydroxy)C_{1-4} alkyl-N-(C_{1-3} alkyl)amino]C_{1-4} alkoxy, [N,N-di(C_{1-3} alkoxy(C_{1-3} alkyl))amino]C_{1-6} alkoxy, [N,N-di(C_{1-3} alkyl)amino]C_{1-6} alkoxy, [N-[N-(C_{1-4} alkyl)carbonyl-N-(C_{1-3} alkyl)amino]C_{1-4} alkyl-N-(C_{1-3} alkyl)amino]C_{1-4} alkoxy, [N-[N-(C_{1-4} alkyl)carbonyl-amino]C_{1-4} alkyl-N-(C_{1-3} alkyl)amino]C_{1-4} alkoxy, a group -$(O(CH_2)_{r1})_{r2}$-C(O)$NR^{43}R^{44}$, a group -$(O(CH_2)_{q1})_{q2}$-$NR^{41}R^{42}$, C_{1-4} alkoxy substituted with a group -NH-$(CH_2)_w$-SO_3H, C_{1-4} alkoxy substituted with a group -NH-$(CH_2)_{x1}$-CH(COOH)-$(CH_2)_{x2}$-SO_3H, a group -$(O(CH_2)_{s1})_{s2}$-NR^{45}-C(O)R^{46}, a group -C(O)$NR^{47}R^{48}$, pyridinyl, a group -$NR^{49}R^{50}$, a group -$(O(CH_2)_{y1})_{y2}$-O-CH_2-C(O)$NR^{51}R^{52}$, (carboxy)C_{2-8} alkynyl, (morpholino)C_{2-6} alkynyl (the morpholino is optionally substituted with one or more oxo groups), C_{2-8} alkynyl optionally substituted with one or more hydroxy groups, [HO-$((CH_2)_oO)_p$]C_{2-8} alkynyl, (C_{1-6} alkoxy)C_{2-8} alkynyl (the alkoxy is optionally substituted with one or more hydroxy groups), (C_{3-6} cycloalkyl)C_{2-6} alkynyl (the cycloalkyl is optionally substituted with one or more hydroxy groups), (C_{1-3} alkoxy)carbonyl, (morpholino)C_{1-4} alkylthio, 3- to 6-membered oxacycloalkyloxy, or 3- to 6-membered nitrogen containing heterocycloalkyloxy (the heterocycloalkyl moiety is optionally substituted with one substituent selected from (C_{1-3} alkoxy)C_{1-4} alkyl and C_{1-3} alkyl).

14. The pharmaceutical composition for use according to claim 11 or 13, wherein, in the compound represented by the formula (I),

Rk is hydroxy, a halogen atom, C_{1-6} alkyl, (carboxy)C_{1-8} alkyl, (morpholino)C_{1-4} alkyl, (C_{1-6} alkoxy)C_{1-8} alkyl (the alkoxy is substituted with one or more hydroxy groups), C_{1-6} alkoxy optionally substituted with one or more halogen atoms, [N-((C_{1-3} alkoxy)C_{1-4} alkyl)-N-(C_{1-3} alkyl)amino]C_{1-4} alkoxy, (morpholino)C_{1-6} alkoxy, (C_{1-6} alkoxy)C_{1-8} alkoxy (the C_{1-6} alkoxy is optionally substituted with one or more hydroxy groups), (C_{1-3} alkoxy(C_{1-4} alkoxy))C_{1-4} alkoxy, (carboxy)C_{1-8} alkoxy, (pyrrolidinyl)C_{1-4} alkoxy (the pyrrolidinyl moiety is substituted with (C_{1-4} alkoxy) C_{1-3} alkyl), C_{1-4} alkoxy substituted with a group –NH-CH($(CH_2)_{v1}COOR^{57}$)-$(CH_2)_{v2}$-$COOR^{57}$, [N-(oxetanyl)-N-(C_{1-3} alkyl)amino]C_{1-4} alkoxy,

[N,N-di(C_{1-3} alkyl)amino]C_{1-6} alkoxy, a group -$(O(CH_2)_{r1})_{r2}$-C(O)$NR^{43}R^{44}$, a group -$(O(CH_2)_{q1})_{q2}$-$NR^{41}R^{42}$, C_{1-4} alkoxy substituted with a group -NH-$(CH_2)_w$-SO_3H, C_{1-4} alkoxy substituted with a group -NH-$(CH_2)_{x1}$-CH(COOH)-$(CH_2)_{x2}$-SO_3H, (carboxy)C_{2-8} alkynyl, (morpholino)C_{2-6} alkynyl, C_{2-8} alkynyl optionally substituted with one or more hydroxy groups, [HO-$((CH_2)_oO)_p$]C_{2-8} alkynyl, (C_{1-6} alkoxy)C_{2-8} alkynyl (the alkoxy is substituted with one or more hydroxy groups), or (C_{1-3} alkoxy)carbonyl.

15. The pharmaceutical composition for use according to any one of claims 11 to 14, wherein, in the compound represented by the formula (I),

Rk is hydroxy, a halogen atom, C_{1-6} alkyl, (carboxy)C_{1-8} alkyl, (C_{1-6} alkoxy)C_{1-8} alkyl (the alkoxy is substituted with one or more hydroxy groups), C_{1-3} alkoxy optionally substituted with one or more halogen atoms, [N-((C_{1-3} alkoxy)C_{1-4} alkyl)-N-(C_{1-3} alkyl)amino]C_{1-4} alkoxy, (morpholino)C_{1-6} alkoxy, (C_{1-6} alkoxy)C_{1-8} alkoxy (the C_{1-6} alkoxy is substituted with one or more hydroxy groups), (carboxy)C_{2-8} alkynyl, (morpholino)C_{2-6} alkynyl, C_{2-8} alkynyl optionally substituted with one or more hydroxy groups, [HO-$((CH_2)_oO)_p$]C_{2-8} alkynyl, (C_{1-6} alkoxy)C_{2-8} alkynyl (the alkoxy is substituted with one or more hydroxy groups), or (C_{1-3} alkoxy)carbonyl.

16. The pharmaceutical composition for use according to any one of claims 1 to 15, wherein, in the compound represented by the formula (I), R^1, R^4, and R^5 are as defined in any one of the following (1) to (3):

(1) R^1 is a hydrogen atom or C_{1-6} alkyl;

R^4 is C_{1-4} alkyl optionally substituted with one or more halogen atom(s), or phenyl; and

R^5 is a hydrogen atom or C_{1-4} alkyl;

(2) R^1 and R^5 together with the carbon atom to which they are attached form a C_{3-6} saturated carbocyclic ring; and

R^4 is as defined above; and

(3) R^1 is a hydrogen atom or linear C_{1-6} alkyl; and

R^4 and R^5 together with the carbon atom and the nitrogen atom to which they are

attached form a 5- to 8-membered saturated heterocyclic ring, wherein the saturated heterocyclic ring is optionally substituted with one or more substituents R^2.

17. The pharmaceutical composition for use according to any one of claims 1 to 16, wherein, in the compound represented by the formula (I),

R^1 is C_{1-6} alkyl;

R^4 is C_{1-4} alkyl optionally substituted with one or more halogen atoms, or phenyl; and

R^5 is a hydrogen atom or C_{1-4} alkyl

18. The pharmaceutical composition for use according to any one of claims 1 to 16, wherein, in the compound represented by the formula (I),

R^1 is a hydrogen atom or linear C_{1-4} alkyl;

R^4 and R^5 together with the carbon atom and the nitrogen atom to which they are attached form a 5- to 8-membered saturated heterocyclic ring, wherein the saturated heterocyclic ring is optionally substituted with one or more substituents R^2.

19. The pharmaceutical composition for use according to any one of claims 1 to 16, wherein, in the compound represented by the formula (I),

R^1 and R^5 together with the carbon atom to which they are attached form a C_{3-6} saturated carbocyclic ring; and

R^4 is C_{1-4} alkyl.

20. The pharmaceutical composition for use according to any one of claims 1, 3 to 5, and 9, wherein, in the compound represented by the formula (I),

R^1 and R^5 together with the carbon atom to which they are attached form a C_{3-6} saturated carbocyclic ring;

R^4 is C_{1-4} alkyl;

R^3 is C_{1-4} alkyl substituted with Re;

Re is phenyl optionally substituted with one or more substituents Ra;

each Ra is independently selected from a halogen atom and C_{1-4} alkoxy optionally substituted with one or more substituents R^{12};

each R^{12} is independently selected from 5- or 6-membered heterocycloalkyl and $-NR^{39}R^{40}$;

R^{39} and R^{40} are each independently selected from a hydrogen atom, and optionally C_{1-4} alkoxy-substituted C_{1-4} alkyl;

Ar^1 is phenyl or 5- or 6-membered heteroaryl, wherein the phenyl and heteroaryl groups are each optionally substituted with one to three substituents selected from Rb, Rc, and Rd;

Rb, Rc, and Rd are each independently selected from a halogen atom, C_{1-4} alkyl optionally substituted with one or more halogen atoms, and 5- or 6-membered heteroaryl optionally substituted with one or more substituents R^{14}; and

each R^{14} is independently selected from a halogen atom, cyano, C_{1-4} alkyl optionally substituted with one or more halogen atoms, and C_{1-4} alkylthio.

21. The pharmaceutical composition for use according to any one of claims 1 to 20, wherein, in the compound represented by the formula (I),

Rb is a halogen atom;

Rc is a halogen atom or C_{1-4} alkyl optionally substituted with one or more halogen atoms; and

Rd is a halogen atom or 5- or 6-membered heteroaryl optionally substituted with one or more substituents R^{14}.

22. The pharmaceutical composition for use according to any one of claims 1 to 21, wherein, in the compound represented by the formula (I),

Re is phenyl optionally substituted with one to three substituents Ra;

the one to three substituents Ra are one substituent selected from Ri, Rj, and Rk, two substituents selected from combinations of Ri and Rj, Ri and Rk, and Rj and Rk, or three substituents Ri, Rj, and Rk;

Ri and Rj are each independently a halogen atom; and

Rk is C_{1-4} alkoxy optionally substituted with one or more substituents R^{12}.

23. The pharmaceutical composition for use according to any one of claims 1 to 22,

wherein, in the compound represented by the formula (I),

Ar^1 is 4-(trifluoromethyl)-2-(6-methylthiopyridin-3-yl)phenyl, 4-(trifluoromethyl)-2-(6-trifluoromethylpyridin-3-yl)phenyl, 4-(trifluoromethyl)-2-(4-trifluoromethylpyrimidin-5-yl)phenyl, 4-(trifluoromethyl)-2-(6-trifluoromethylpyrimidin-4-yl)phenyl, 4-(trifluoromethyl)-2-(6-cyano-5-methylpyrimidin-4-yl)phenyl, 4-(trifluoromethyl)-2-(2-cyanopyridin-4-yl)phenyl, 4-chloro-2-(6-methylthiopyridin-3-yl)phenyl, 4-chloro-2-(6-trifluoromethylpyridin-3-yl)phenyl, 4-chloro-2-(4-trifluoromethylpyrimidin-5-yl)phenyl, 4-chloro-2-(6-cyano-5-methylpyrimidin-4-yl)phenyl, 4-chloro-2-(6-trifluoromethylpyrimidin-4-yl)phenyl, or 4-chloro-2-(2-cyanopyridin-4-yl)phenyl.

24. The pharmaceutical composition for use according to claim 1 comprising a compound selected from:

(4aR)-1-[(2,3-difluorophenyl)methyl]-4-hydroxy-4a-methyl-2-oxo-N-[4-(trifluoromethyl)-2-[6-(trifluoromethyl)pyrimidin-4-yl]phenyl]-6,7-dihydro-5H-pyrrolo[1,2-b]pyridazine-3-carboxamide;

(4aR)-N-[2-(6-cyano-5-methylpyrimidin-4-yl)-4-(trifluoromethyl)phenyl]-1-[[2,3-difluoro-4-(2-morpholin-4-ylethoxy)phenyl]methyl]-4-hydroxy-4a-methyl-2-oxo-6,7-dihydro-5H-pyrrolo[1,2-b]pyridazine-3-carboxamide;

(4aR)-N-[2-(2-cyanopyridin-4-yl)-4-(trifluoromethyl)phenyl]-1-[[2,3-difluoro-4-(2-morpholin-4-ylethoxy)phenyl]methyl]-4-hydroxy-4a-methyl-2-oxo-6,7-dihydro-5H-pyrrolo[1,2-b]pyridazine-3-carboxamide;

6-[4-[[(4aR)-4-hydroxy-4a-methyl-2-oxo-3-[[4-(trifluoromethyl)-2-[6-(trifluoromethyl)pyrimidin-4-yl]phenyl]carbamoyl]-6,7-dihydro-5H-pyrrolo[1,2-b]pyridazin-1-yl]methyl]-2,3-difluorophenyl]hex-5-ynoic acid;

(4aR)-1-[[2,3-difluoro-4-(3-morpholin-4-ylprop-1-ynyl)phenyl]methyl]-4-hydroxy-4a-methyl-2-oxo-N-[4-(trifluoromethyl)-2-[6-(trifluoromethyl)pyridin-3-yl]phenyl]-6,7-dihydro-5H-pyrrolo[1,2-b]pyridazine-3-carboxamide;

(4aR)-1-[[4-[3-[(2R)-2,3-dihydroxypropoxy]propoxy]-2,3-difluorophenyl]methyl]-4-hydroxy-4a-methyl-2-oxo-N-[4-(trifluoromethyl)-2-[6-(trifluoromethyl)pyridin-3-

yl]phenyl]-6,7-dihydro-5H-pyrrolo[1,2-b]pyridazine-3-carboxamide;

(4aR)-1-[[4-[4-[(2R)-2,3-dihydroxypropoxy]butoxy]-2,3-difluorophenyl]methyl]-4-hydroxy-4a-methyl-2-oxo-N-[4-(trifluoromethyl)-2-[6-(trifluoromethyl)pyrimidin-4-yl]phenyl]-6,7-dihydro-5H-pyrrolo[1,2-b]pyridazine-3-carboxamide;

(4aR)-1-[[4-[6-[(2R)-2,3-dihydroxypropoxy]hexoxy]-2,3-difluorophenyl]methyl]-4-hydroxy-4a-methyl-2-oxo-N-[2-(trifluoromethyl)-4-[6-(trifluoromethyl)pyridin-3-yl]pyrimidin-5-yl]-6,7-dihydro-5H-pyrrolo[1,2-b]pyridazine-3-carboxamide;

(4aR)-1-[[2,3-difluoro-4-(2-morpholin-4-ylethoxy)phenyl]methyl]-4-hydroxy-4a-methyl-2-oxo-N-[4-(trifluoromethyl)-2-[6-(trifluoromethyl)pyrimidin-4-yl]phenyl]-6,7-dihydro-5H-pyrrolo[1,2-b]pyridazine-3-carboxamide;

(4aR)-1-[[2,3-difluoro-4-(morpholin-4-ylmethyl)phenyl]methyl]-4-hydroxy-4a-methyl-2-oxo-N-[4-(trifluoromethyl)-2-[6-(trifluoromethyl)pyridin-3-yl]phenyl]-6,7-dihydro-5H-pyrrolo[1,2-b]pyridazine-3-carboxamide;

(4aR)-N-(4-bromo-3,5-difluorophenyl)-1-[(3-chloro-2-fluorophenyl)methyl]-4-hydroxy-4a-methyl-2-oxo-6,7-dihydro-5H-pyrrolo[1,2-b]pyridazine-3-carboxamide;

(3S)-3-tert-butyl-1-[[2,3-difluoro-4-(2-morpholin-4-ylethoxy)phenyl]methyl]-4-hydroxy-2-methyl-6-oxo-N-[4-(trifluoromethyl)-2-[6-(trifluoromethyl)pyrimidin-4-yl]phenyl]-3H-pyridazine-5-carboxamide;

(3S)-3-tert-butyl-N-[4-chloro-2-[6-(trifluoromethyl)pyrimidin-4-yl]phenyl]-1-[[2,3-difluoro-4-(2-morpholin-4-ylethoxy)phenyl]methyl]-4-hydroxy-2-methyl-6-oxo-3H-pyridazine-5-carboxamide;

(3S)-3-tert-butyl-N-[4-chloro-2-[6-(trifluoromethyl)pyridin-3-yl]phenyl]-1-[[2,3-difluoro-4-(2-morpholin-4-ylethoxy)phenyl]methyl]-4-hydroxy-2-methyl-6-oxo-3H-pyridazine-5-carboxamide;

(3S)-3-tert-butyl-N-[4-chloro-2-(6-methylsulfanylpyridin-3-yl)phenyl]-1-[[2,3-difluoro-4-(2-morpholin-4-ylethoxy)phenyl]methyl]-4-hydroxy-2-methyl-6-oxo-3H-pyridazine-5-carboxamide;

(3S)-3-tert-butyl-N-[2-(6-cyano-5-methylpyrimidin-4-yl)-4-

(trifluoromethyl)phenyl]-1-[[2,3-difluoro-4-(2-morpholin-4-ylethoxy)phenyl]methyl]-4-hydroxy-2-methyl-6-oxo-3H-pyridazine-5-carboxamide;

6-[[2,3-difluoro-4-(2-morpholin-4-ylethoxy)phenyl]methyl]-9-hydroxy-5-methyl-7-oxo-N-[4-(trifluoromethyl)-2-[6-(trifluoromethyl)pyrimidin-4-yl]phenyl]-5,6-diazaspiro[3.5]non-8-ene-8-carboxamide;

7-[[2,3-difluoro-4-(2-morpholin-4-ylethoxy)phenyl]methyl]-10-hydroxy-6-methyl-8-oxo-N-[4-(trifluoromethyl)-2-[6-(trifluoromethyl)pyrimidin-4-yl]phenyl]-6,7-diazaspiro[4.5]dec-9-ene-9-carboxamide;

6-[[2,3-difluoro-4-[2-[2-methoxyethyl(methyl)amino]ethoxy]phenyl]methyl]-9-hydroxy-5-methyl-7-oxo-N-[4-(trifluoromethyl)-2-[6-(trifluoromethyl)pyrimidin-4-yl]phenyl]-5,6-diazaspiro[3.5]non-8-ene-8-carboxamide;

7-[[2,3-difluoro-4-[2-[2-methoxyethyl(methyl)amino]ethoxy]phenyl]methyl]-10-hydroxy-6-methyl-8-oxo-N-[4-(trifluoromethyl)-2-[6-(trifluoromethyl)pyrimidin-4-yl]phenyl]-6,7-diazaspiro[4.5]dec-9-ene-9-carboxamide;

4-[2,3-difluoro-4-[[10-hydroxy-6-methyl-8-oxo-9-[[4-(trifluoromethyl)-2-[6-(trifluoromethyl)pyrimidin-4-yl]phenyl]carbamoyl]-6,7-diazaspiro[4.5]dec-9-en-7-yl]methyl]phenoxy]butanoic acid;

5-[2,3-[difluoro-4-[[10-hydroxy-6-methyl-8-oxo-9-[[4-(trifluoromethyl)-2-[6-(trifluoromethyl)pyrimidin-4-yl]phenyl]carbamoyl]-6,7-diazaspiro[4.5]dec-9-en-7-yl]methyl]phenoxy]pentanoic acid;

6-[2,3-difluoro-4-[[10-hydroxy-6-methyl-8-oxo-9-[[4-(trifluoromethyl)-2-[6-(trifluoromethyl)pyrimidin-4-yl]phenyl]carbamoyl]-6,7-diazaspiro[4.5]dec-9-en-7-yl]methyl]phenoxy]hexanoic acid;

7-[2,3-difluoro-4-[[10-hydroxy-6-methyl-8-oxo-9-[[4-(trifluoromethyl)-2-[6-(trifluoromethyl)pyrimidin-4-yl]phenyl]carbamoyl]-6,7-diazaspiro[4.5]dec-9-en-7-yl]methyl]phenoxy]heptanoic acid;

7-[[2,3-difluoro-4-[2-[(2S)-2-(methoxymethyl)pyrrolidin-1-yl]ethoxy]phenyl]methyl]-10-hydroxy-6-methyl-8-oxo-N-[4-(trifluoromethyl)-2-[6-

(trifluoromethyl)pyrimidin-4-yl]phenyl]-6,7-diazaspiro[4.5]dec-9-ene-9-carboxamide;

(2S)-2-[2-[2,3-difluoro-4-[[10-hydroxy-6-methyl-8-oxo-9-[[4-(trifluoromethyl)-2-[6-(trifluoromethyl)pyrimidin-4-yl]phenyl]carbamoyl]-6,7-diazaspiro[4.5]dec-9-en-7-yl]methyl]phenoxy]ethylamino]butanedioic acid;

3-[2-[2,3-difluoro-4-[[10-hydroxy-6-methyl-8-oxo-9-[[4-(trifluoromethyl)-2-[6-(trifluoromethyl)pyrimidin-4-yl]phenyl]carbamoyl]-6,7-diazaspiro[4.5]dec-9-en-7-yl]methyl]phenoxy]ethylamino]pentanedioic acid;

6-(2,3-difluoro-4-(2-(methyl(oxetan-3-yl)amino)ethoxy)benzyl)-9-hydroxy-5-methyl-7-oxo-N-(4-(trifluoromethyl)-2-(6-(trifluoromethyl)pyrimidin-4-yl)phenyl)-5,6-diazaspiro[3.5]non-8-ene-8-carboxamide;

7-(2,3-difluoro-4-(2-(methyl(oxetan-3-yl)amino)ethoxy)benzyl)-10-hydroxy-6-methyl-8-oxo-N-(4-(trifluoromethyl)-2-(6-(trifluoromethyl)pyrimidin-4-yl)phenyl)-6,7-diazaspiro[4.5]dec-9-ene-9-carboxamide;

7-(4-(3-(dimethylamino)-2,2-dimethylpropoxy)-2,3-difluorobenzyl)-10-hydroxy-6-methyl-8-oxo-N-(4-(trifluoromethyl)-2-(6-(trifluoromethyl)pyrimidin-4-yl)phenyl)-6,7-diazaspiro[4.5]dec-9-ene-9-carboxamide;

6-[[2,3-difluoro-4-[1-(2-methoxyethyl)azetidin-3-yl]oxyphenyl]methyl]-9-hydroxy-5-methyl-7-oxo-N-[4-(trifluoromethyl)-2-[6-(trifluoromethyl)pyrimidin-4-yl]phenyl]-5,6-diazaspiro[3.5]non-8-ene-8-carboxamide;

7-[[2,3-difluoro-4-[4-[methyl-[(2S,3R,4R,5R)-2,3,4,5,6-pentahydroxyhexyl]amino]-4-oxobutoxy]phenyl]methyl]-10-hydroxy-6-methyl-8-oxo-N-[4-(trifluoromethyl)-2-[6-(trifluoromethyl)pyrimidin-4-yl]phenyl]-6,7-diazaspiro[4.5]dec-9-ene-9-carboxamide;

7-[[2,3-difluoro-4-[2-[2-[methyl-[(2S,3R,4R,5R)-2,3,4,5,6-pentahydroxyhexyl]amino]ethoxy]ethoxy]phenyl]methyl]-10-hydroxy-6-methyl-8-oxo-N-[4-(trifluoromethyl)-2-[6-(trifluoromethyl)pyrimidin-4-yl]phenyl]-6,7-diazaspiro[4.5]dec-9-ene-9-carboxamide;

7-[[2,3-difluoro-4-[2-[2-[2-[2-[2-methoxyethyl(methyl)amino]ethoxy]ethoxy]ethoxy]ethoxy]phenyl]methyl]-10-hydroxy-6-

methyl-8-oxo-N-[4-(trifluoromethyl)-2-[6-(trifluoromethyl)pyrimidin-4-yl]phenyl]-6,7-diazaspiro[4.5]dec-9-ene-9-carboxamide; and

2-[2-[2,3-difluoro-4-[[10-hydroxy-6-methyl-8-oxo-9-[[4-(trifluoromethyl)-2-[6-(trifluoromethyl)pyrimidin-4-yl]phenyl]carbamoyl]-6,7-diazaspiro[4.5]dec-9-en-7-yl]methyl]phenoxy]ethylamino]ethanesulfonic acid

or a salt thereof, or a solvate of the compound or the salt.

25. The pharmaceutical composition for use according to any one of claims 1 to 24, wherein the disease is chronic kidney disease.

26 The pharmaceutical composition for use according to claim 25, wherein the chronic kidney disease is at stage 2 to 4 classified by GFR.

27. A pharmaceutical composition comprising a substance that inhibits one or more transporters selected from NaPi-IIb, PiT-1, and PiT-2 and is selected from the compound represented by the formula (I) of any one of claims 1 to 24, or a salt thereof or a solvate of the compound or the salt, wherein the compositioin is for use in the prevention or treatment of a disease selected from hyperphosphatemia, secondary hyperparathyroidism, and chronic kidney disease, wherein the chronic kidney disease is at stage 2 to 4 classified by GFR, and wherein the composition is administered in combination with a phosphorus adsorbent.

28. The pharmaceutical composition for use according to of claim 27, which is a combined drug comprising the substance that inhibits one or more transporters selected from NaPi-IIb, PiT-1, and PiT-2, and the phosphorus adsorbent.

29. The pharmaceutical composition for use according to of claim 27, wherein the phosphorus adsorbent is administered as a separate pharmaceutical composition.

30. The pharmaceutical composition for use according to claim 27, wherein the substance that inhibits the one or more transporters and the phosphorus adsorbent are administered simultaneously.

31. The pharmaceutical composition for use according to claim 27, wherein the substance that inhibits the one or more transporters and the phosphorus adsorbent are administered sequentially.

32. The pharmaceutical composition for use according to claim 27, wherein the substance that inhibits the one or more transporters is administered before or after administration of the phosphorus adsorbent.

33. A pharmaceutical composition comprising a phosphorus adsorbent, for use in the prevention or treatment of a disease selected from hyperphosphatemia, secondary hyperparathyroidism, and chronic kidney disease, wherein the chronic kidney disease is at stage 2 to 4 classified by GFR, and wherein the composition is administered in combination with a substance that inhibits one or more transporters selected from NaPi-IIb, PiT-1, and PiT-2 and is selected from the compound represented by the formula (I) of any one of claims 1 to 24, or a salt thereof or a solvate of the compound or the salt.

34. The pharmaceutical composition for use according to claim 33, wherein the substance that inhibits the one or more transporters is administered simultaneously with the phosphorus adsorbent.

35. The pharmaceutical composition for use according to claim 33, wherein the substance is administered before or after administration of the phosphorus adsorbent.

36. The pharmaceutical composition for use according to any one of claims 27 to 35, wherein the phosphorus adsorbent is a nonmetallic polymer adsorbent, a calcium salt preparation, or a metallic salt preparation.

37.. The pharmaceutical composition for use according to any one of claims 27 to 36, , wherein the phosphorus adsorbent is any one of medicaments selected from sevelamer carbonate, sevelamer hydrochloride, precipitated calcium carbonate, calcium acetate, calcium citrate, calcium alginate, calcium salt of keto-acid, lanthanum carbonate, aluminum hydroxide, iron preparations (ferric citrate hydrate, polynuclear iron(III)-oxyhydroxide).