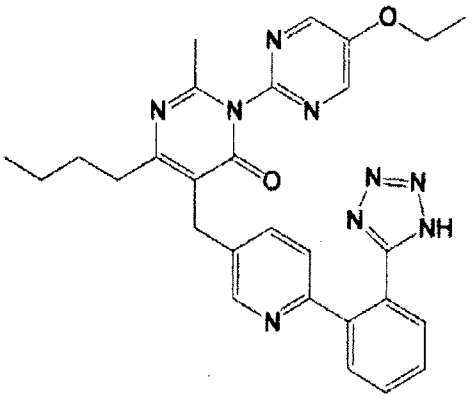


[0085]

Process 1: By using 2-amino-5-ethoxypyrimidine instead of 2-amino-5-methoxypyrimidine in the Process 3 of the Example 1, the reaction and the treatment were performed in the same manner as the Process 3 of the Example 1 to give 2-{5-{[4-butyl-1-(5-ethoxypyrimidin-2-yl)-2-methyl-6-oxo-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}benzonitrile (yield: 46%).

[0086]

^{1}H-NMR($CDCl_3$, 400 MHz)δ:

0.94(3H, t, J = 7 Hz), 1.38 - 1.46(2H, m), 1.51(3H, t, J = 7 Hz), 1.60 - 1.68(2H, m), 2.16(3H, s), 2.65 - 2.69(2H, m), 3.97(2H, s), 4.22(2H, q, J = 7 Hz), 7.47(1H, m), 7.64 - 7.81(5H, m), 8.51(2H, s), 8.70(1H, d, J = 1 Hz).

[0087]

Process 2: By using 2-{5-{[4-butyl-1-(5-ethoxypyrimidin-2-yl)-2-methyl-6-oxo-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}benzonitrile instead of 2-{5-{[4-butyl-1-(5-methoxypyrimidin-2-yl)-2-methyl-6-oxo-1

5-{{6-[2-(1H-tetrazol-5-yl)phenyl]pyridin-3-yl}methyl}-6-butyl-2-ethyl-3-(5-methoxypyrimidin-2-yl)pyrimidin-4(3H)-one (yield: 60%) as colorless viscous oil.

[0096]

^{1}H-NMR($CDCl_3$, 400 MHz)δ:

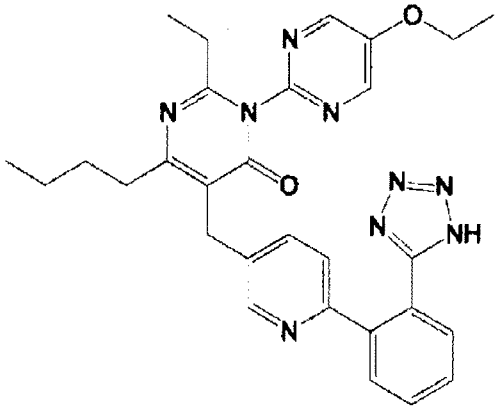
0.94(3H, t, J = 7 Hz), 1.18(3H, t, J = 7 Hz), 1.34 - 1.47(2H, m), 1.60 - 1.75 (2H, m), 2.32(2H, q, J = 7 Hz), 2.70(2H, t, J = 8 Hz), 3.96(2H, s), 4.01 (3H, s), 7.29 - 7.38(1H, m), 7.43 - 7.59(3H, m), 7.76(1H, d, J = 8 Hz), 8.18 (1H, s), 8.54(2H, s), 8.61(1H, br s).

[0097]

Example 4 Preparation of 5-{{6-[2-(1H-tetrazol-5-yl)phenyl]pyridin-3-yl}methyl}-6-butyl-3-(5-ethoxypyrimidin-2-yl)-2-ethylpyrimidin-4(3H)-one

[0098]

[Chemical Formula 11]



[0099]

Process 1: By using 2-amino-5-ethoxypyrimidine instead of 2-amino-5-methoxypyrimidine in the Process ~~2~~ 3 of the Example

~~3~~1, the reaction and the treatment were performed in the same manner as the Process ~~2~~3 of the Example ~~3~~1 to give 2-{5-{[4-butyl-1-(5-ethoxypyrimidin-2-yl)-2-ethyl-6-oxo-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}benzonitrile (yield: 80%) as a pale yellow solid.

[0100]

^{1}H-NMR($CDCl_3$, 400 MHz)δ:

0.94(3H, t, J = 7 Hz), 1.18(3H, t, J = 7 Hz), 1.37 - 1.47(2H, m), 1.51(3H, t, J = 7 Hz), 1.62 - 1.72(2H, m), 2.32(2H, q, J = 7 Hz), 2.66 - 2.72(2H, m), 3.97(2H, s), 4.22(2H, q, J = 7 Hz), 7.47(1H, t, J = 8 Hz), 7.64 - 7.69(2H, m), 7.74 - 7.83(3H, m), 8.51(2H, s), 8.70(1H, d, J = 2 Hz).

[0101]

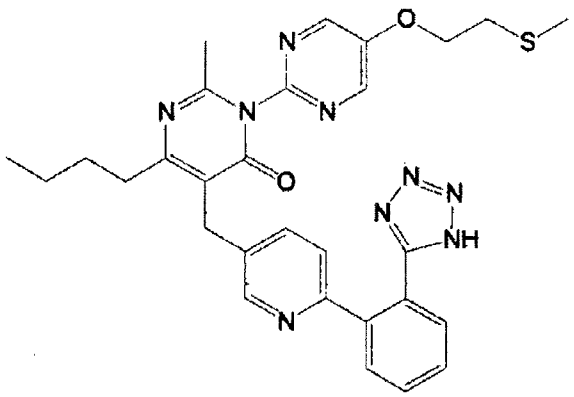
Process 2: By using 2-{5-{[4-butyl-1-(5-ethoxypyrimidin-2-yl)-2-ethyl-6-oxo-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}benzonitrile instead of 2-{5-{[4-butyl-1-(5-methoxypyrimidin-2-yl)-2-methyl-6-oxo-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}benzonitrile in the Process 4 of the Example 1, the reaction and the treatment were performed in the same manner as the Process 4 of the Example 1 to give 5-{{6-[2-(1H-tetrazol-5-yl)phenyl]pyridin-3-yl}methyl}-6-butyl-3-(5-ethoxypyrimidin-2-yl)-2-ethylpyrimidin-4(3H)-one (yield: 75%) as colorless viscous oil.

[0102]

^{1}H-NMR($CDCl_3$, 400 MHz)δ:

[0156]

[Chemical Formula 19]



[0157]

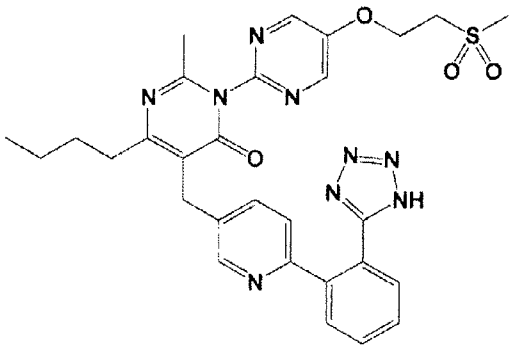
Process 1: By using 2-amino-5-[2-(methylthio)ethoxy]pyrimidine instead of 2-amino-5-methoxypyrimidine in the Process 3 of the Example 1, the reaction and the treatment were performed in the same manner as the Process 3 of the Example 1 to give 2-{5-{{4-butyl-2-methyl-1-{5-[2-(methylthio)ethoxy]pyrimidin-2-yl}-6-oxo-1,6-dihydropyrimidin-5-yl}methyl}pyridin-2-yl}benzonitrile (yield: 64%) as yellow oil.

[0158]

^{1}H-NMR($CDCl_3$, 400 MHz)δ:

0.95(3H, t, J = 7 Hz), 1.33 - 1.48(2H, m), 1.57 - 1.73(2H, m), 2.17(3H, s), 2.24(3H, s), 2.67(2H, t, J = 8 Hz), 2.96(2H, t, J = 7 Hz), 3.97(2H, s), 4.33(2H, t, J = 7 Hz), 7.47(1H, t, J = 8 Hz), 7.62 - 7.70(2H, m), 7.73 - 7.83(3H, m), 8.55(2H, s), 8.70(1H, s).

[0159]



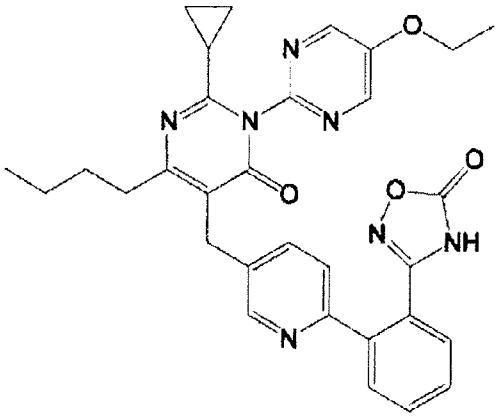
[0163]

Methanol (0.4 mL) solution of hydrogen peroxide (30% solution, 24 mg, 0.211 mmol) and methanol (0.4 mL) solution of tantalum chloride (1.5 mg, 0.0042 mmol) were added to methanol (1.0 mL) solution of 5-{{6-[2-(1H-tetrazol-5-yl)phenyl]pyridin-3-yl}methyl}-6-butyl-2-methyl-3-{5-[2-(methylthio)ethoxy]pyrimidin-2-yl}pyrimidin-4(3H)-one (24 mg, 0.042 mmol) which has been obtained in the Example 12. After stirring for 12 hours at room temperature, the solvent was removed by distillation. The obtained residues were subjected to silica gel column chromatography (chloroform : methanol : triethylamine = 4 : 1 : 0.4) to give 5-{{6-[2-(1H-tetrazol-5-yl)phenyl]pyridin-3-yl}methyl}-6-butyl-2-methyl-3-{5-[2-(methylsulfonyl)ethoxy]pyrimidin-2-yl}pyrimidin-4(3H)-one (24 mg, 93%) as pale yellow amorphous.

[0164]

^{1}H-NMR($CDCl_3$, 400 MHz)δ:

0.94(3H, t, J = 7 Hz), 1.34 - 1.47(2H, m), 1.54 - 1.71(2H, m), 2.16(3H, s), 2.66(2H, t, J = 8 Hz), 3.09(3H, s), 3.55(2H, t, J = 5 Hz), 3.93(2H, s), 4.64(2H, t, J = 5 Hz), 7.10 - 7.24(1H, m), 7.31 - 7.55(3H, m), 7.65 - 7.77(1H, m), 7.92 - 8.04(1H, m),



[0216]

Process 1: By using 2-amino-5-ethoxypyrimidine instead of 2-amino-5-methoxypyrimidine in the Process 3 of the Example 1 and also using methyl (Z)-2-{[6-(2-cyanophenyl)pyridin-3-yl]methyl}-3-(cyclopropanecarboxamide)-2-heptenoate instead of methyl (Z)-3-acetamide-2-{[6-(2-cyanophenyl)pyridin-3-yl]methyl}-2-heptenoate, the reaction and the treatment were performed in the same manner as the Process 3 of the Example 1 to give 2-{5-{[4-butyl-2-cyclopropyl-1-(5-ethoxypyrimidin-2-yl)-6-oxo-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}benzonitrile (yield: 65%) as yellow oil.

[0217]

^{1}H-NMR($CDCl_3$, 400 MHz)δ:

0.79 - 0.87(2H, m), 0.92(3H, t, J = 8 Hz), 1.09 - 1.16(1H, m), 1.18 - 1.29(2H, m), 1.30 - 1.43(2H, m), 1.51(3H, t, J = 7 Hz), 1.54 - 1.66(2H, m), 2.61(2H, t, J = 8 Hz), 3.94(2H, s), 4.22(2H, q, J = 7 Hz), 7.47(1H, t, J = 8 Hz), 7.57 - 7.69(2H, m), 7.71 - 7.83(3H, m), 8.54(2H, s), 8.68(1H, s).

7.42 - 7.56(3H, m), 7.65 - 7.91(3H, m), 8.63(1H, s), 10.9(1H, s).

[0256]

Process 3: By using 2-aminopyridine instead of 2-amino-5-methoxypyrimidine in the Process 3 of the Example 1 and also using methyl (Z)-3-acetamide-2-{[5-(2-cyanophenyl)pyridin-2-yl]methyl}-2-heptenoate instead of methyl (Z)-3-acetamide-2-{[6-(2-cyanophenyl)pyridin-3-yl]methyl}-2-heptenoate, the reaction and the treatment were performed in the same manner as the Process 3 of the Example 1 to give 2-{6-{[4-butyl-2-methyl-6-oxo-1-(pyrimidin-2-yl)-1,6-dihydropyrimidin-5-yl]methyl}pyridin-3-yl}benzonitrile (yield: 35%).

[0257]

^{1}H-NMR($CDCl_3$, 400 MHz)δ:

0.93(3H, t, J = 7 Hz), 1.42(2H, sextet, J = 8 Hz), 1.60 - 1.75(2H, m), 2.17(3H, s), 2.74 - 2.78(2H, m), 4.17(2H, s), 7.38 - 7.50(5H, m), 7.67(1H, m), 7.77 - 7.80(2H, m), 7.93(1H, m), 8.65(1H, d, J = 2 Hz), 8.68(1H, d, J = 3 Hz).

[0258]

Process 4: By using 2-{6-{[4-butyl-2-methyl-6-oxo-1-(pyrimidin-2-yl)-1,6-dihydropyrimidin-5-yl]methyl}pyridin-3-yl}benzonitrile instead of 2-{5-{[4-butyl-1-(5-methoxypyrimidin-2-yl)-2-methyl-6-oxo-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}benzonitrile in the Process 4 of the Example 1, the reaction and the treatment

Process 1: By using 2-{6-{[4-butyl-1-(4,6-dimethoxypyrimidin-2-yl)-2-methyl-6-oxo-1,6-dihydropyrimidin-5-yl]methyl}pyridin-3-yl}benzonitrile in the Process 1 of the Example 35 instead of 2-{5-{[4-butyl-2-methyl-6-oxo-1-(pyridin-2-yl)-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}benzonitrile in the Process 2 of the Example 14, the reaction and the treatment were performed in the same manner as the Process 2 of the Example 14 to give 2-{6-{[4-butyl-1-(4,6-dim~~5~~-ethoxypyrimidin-2-yl)-2-methyl-6-oxo-1,6-dihydropyrimidin-5-yl]methyl}pyridin-3-yl}-N'-hydroxybenzimidamide (yield: 47%) as pale yellow amorphous.

[0311]

^{1}H-NMR($CDCl_3$, 400 MHz)δ:

0.92(3H, t, J = 7 Hz), 1.36 - 1.45(2H, m), 1.56 - 1.64(2H, m), 2.23(3H, s), 2.73(2H, t, J = 8 Hz), 3.95(6H, s), 4.14(2H, s), 4.49(2H, s), 6.12(1H, s), 7.32 - 7.43(3H, m), 7.46 - 7.50(1H, m), 7.56 - 7.58(1H, m), 7.69 - 7.71(1H, m), 8.57 - 8.61(1H, m).

[0312]

Process 2: By using 2-{6-{[4-butyl-1-(4,6-dimethoxypyrimidin-2-yl)-2-methyl-6-oxo-1,6-dihydropyrimidin-5-yl]methyl}pyridin-3-yl}-N'-hydroxybenzimidamide instead of 2-{5-{[4-butyl-2-methyl-6-oxo-1-(pyridin-2-yl)-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}-N'-hydroxybenzimidamide in the Process 3 of the Example 14, the reaction and the treatment were performed in the same manner as the Process 3 of the Example

as the Process 1 of the Example 40 to give methyl 2-{[6-(2-cyanophenyl)pyridin-3-yl]methyl}-3-oxooctanoate (yield: 88%).

[0340]

^{1}H-NMR($CDCl_3$, 400 MHz)δ:

0.86(3H, t, J = 6.9 Hz), 1.19 - 1.32(4H, m), 1.49 - 1.55(2H, m), 2.35 - 2.67(2H, m), 3.20 - 3.26(2H, m), 3.73(3H, s), 3.84(1H, t, J = 7.4 Hz), 7.50(1H, td, J = 7.6, 1.3 Hz), 7.64 - 7.73(3H, m), 7.77 - 7.85(2H, m), 8.61(1H, br s).

[0341]

Process 2: By using methyl 2-{[6-(2-cyanophenyl)pyridin-3-yl]methyl}-3-oxooctanoate instead of methyl 2-{[6-(2-cyanophenyl)pyridin-3-yl]methyl}-3-oxohexanoate in the Process 2 of the Example 40, the reaction and the treatment were performed in the same manner as the Process 2 of the Example 40 to give methyl (Z)-3-amino-2-{[6-(2-cyanophenyl)pyridin-3-yl]methyl}-2-octenoate (yield: 82%) as brown oil crude product. It was used for the next process without purification.

[0342]

Process 3: By using methyl (Z)-3-amino-2-{[6-(2-cyanophenyl)pyridin-3-yl]methyl}-2-octenoate instead of methyl (Z)-3-amino-2-{[6-(2-cyanophenyl)pyridin-3-yl]methyl}-2-hexenoate in the Process 3 of the Example 40, the reaction was performed in the same manner as the Process 3 of the Example 40. According

[0351]

Process 1: By using ~~cyclopropylcarbonyl-~~ cyclopropanecarbonyl chloride instead of isobutyryl chloride in the Process 3 of the Example 40 and also using methyl (Z)-3-amino-2-{[6-(2-cyanophenyl)pyridin-3-yl]methyl}-2-octenoate instead of methyl (Z)-3-amino-2-{[6-(2-cyanophenyl)pyridin-3-yl]methyl}-2-hexenoate, the reaction was performed in the same manner as the Process 3 of the Example 40. According to a post-treatment carried out in the same manner as the Process 3 of the Example 40, methyl (Z)-2-{[6-(2-cyanophenyl)pyridin-3-yl]methyl}-3-cyclopropanecarboxamide-2-octenoate was obtained as a crude product. It was used for the next process without purification.

[0352]

Process 2: By using methyl (Z)-2-{[6-(2-cyanophenyl)pyridin-3-yl]methyl}-3-cyclopropanecarboxamide-2-octenoate instead of methyl (Z)-2-{[6-(2-cyanophenyl)pyridin-3-yl]methyl}-3-isobutylamide-2-hexenoate in the Process 4 of the Example 40, the reaction and the treatment were performed in the same manner as the Process 4 of the Example 40 to give 2-{5-{[2-cyclopropyl-1-(5-ethoxypyrimidin-2-yl)-6-oxo-4-pentyl-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}benzonitrile (yield: 64%).

[0353]

^{1}H-NMR($CDCl_3$, 400 MHz)δ:

0.81 - 0.91(5H, m), 1.07 - 1.14(1H, m), 1.21 - 1.26(2H, m), 1.29

2-{[6-(2-cyanophenyl)pyridin-3-yl]methyl}-3-oxopentanoate instead of methyl 2-{[6-(2-cyanophenyl)pyridin-3-yl]methyl}-3-oxohexanoate in the Process 2 of the Example 40, the reaction and the treatment were performed in the same manner as the Process 2 of the Example 40 to give methyl (Z)-3-amino-2-{[6-(2-cyanophenyl)pyridin-3-yl]methyl}-2-pentenoate as a crude product. It was used for the next process without purification.

[0363]

Process 3: By using methyl (Z)-3-amino-2-{[6-(2-cyanophenyl)pyridin-3-yl]methyl}-2-pentenoate instead of methyl (Z)-3-amino-2-{[6-(2-cyanophenyl)pyridin-3-yl]methyl}-2-hexenoate in the Process 3 of the Example 40, the reaction was performed in the same manner as the Process 3 of the Example 40. According to a post-treatment carried out in the same manner as the Process 3 of the Example 40, methyl (Z)-2-{[6-(2-cyanophenyl)pyridin-3-yl]methyl}-3-isobutylamide-2-pentenoate (two step yield: 3.3%) was obtained as a crude product.

[0364]

^{1}H-NMR($CDCl_3$, 400 MHz)δ:

1.17(3H, t, J = 7 Hz), 1.25(6H, d, J = 7 Hz), 2.57(1H, sept, J = 7 Hz), 3.0(2H, q, J = 7 Hz), 3.71(3H, s), 3.77(2H, s), 7.49(1H, dd, J = 8, 1 Hz), 7.60(1H, dd, J = 8, 2 Hz), 7.70(2H, m), 7.79(1H, d, J = 8 Hz), 7.83(1H, d, J = 8 Hz), 8.61(1H, d, J = 2 Hz), 11.9(1H,

^{1}H-NMR($CDCl_3$, 400 MHz)δ:

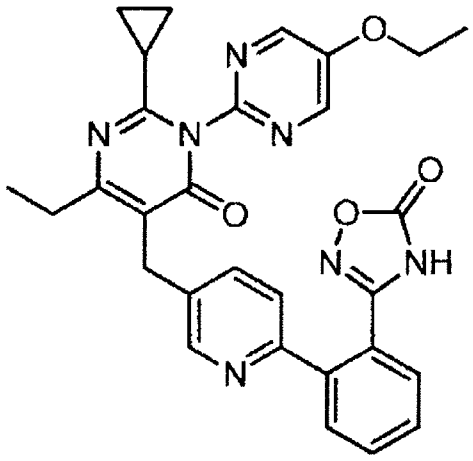
1.19(6H, d, J = 7 Hz), 1.24(3H, t, J = 8 Hz), 1.51(3H, t, J = 7 Hz), 2.28(1H, sept, J = 7 Hz), 2.69(2H, q, J = 8 Hz), 3.93(2H, s), 4.22(2H, q, J = 7 Hz), 7.30(1H, d, J = 8 Hz), 7.37 - 7.41(2H, m), 7.49(1H, dd, J = 8, 1 Hz), 7.67(1H, d, J = 8 Hz), 7.77(1H, dd, J = 8, 2 Hz), 8.39(1H, d, J = 2 Hz), 8.51(2H, s).

[0371]

Example 45 Preparation of 3-{2-{5-{[2-cyclopropyl-1-(5-ethoxypyrimidin-2-yl)-4-ethyl-6-oxo-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}phenyl}-1,2,4-oxadiazol-5(4H)-one

[0372]

[Chemical Formula 52]



[0373]

Process 1: By using ~~cyclopropylcarbonyl~~ cyclopropanecarbonyl chloride instead of isobutyryl chloride in the Process 3 of the Example 40 and also using methyl (Z)-3-amino-2-{[6-(2-cyanophenyl)pyridin-3-yl]methyl}-2-pentenoate instead of methyl

(Z)-3-amino-2-{[6-(2-cyanophenyl)pyridin-3-yl]methyl}-2-hexenoate, the reaction was performed in the same manner as the Process 3 of the Example 40. According to a post-treatment carried out in the same manner as the Process 3 of the Example 40, methyl (Z)-2-{[6-(2-cyanophenyl)pyridin-3-yl]methyl}-3-cyclopropanecarboxamide-2-pentenoate (two step yield: 3.7%) was obtained as a crude product.

[0374]

^{1}H-NMR($CDCl_3$, 400 MHz)δ:

0.85 - 0.90(2H, m), 1.05 - 1.08(3H, m), 1.16(3H, t, J = 8 Hz), 2.98(2H, q, J = 8 Hz), 3.72(3H, s), 3.77(2H, s), 7.49(1H, dd, J = 8, 1 Hz), 7.59(1H, dd, J = 8, 2 Hz), 7.66 - 7.72(2H, m), 7.79(1H, d, J = 8 Hz), 7.83(1H, d, J = 8 Hz), 8.62(1H, d, J = 2 Hz), 12.1(1H, s).

[0375]

Process 2: By using methyl (Z)-2-{[6-(2-cyanophenyl)pyridin-3-yl]methyl}-3-cyclopropanecarboxamide-2-pentenoate instead of methyl (Z)-2-{[6-(2-cyanophenyl)pyridin-3-yl]methyl}-3-isobutylamide-2-hexenoate in the Process 4 of the Example 40, the reaction and the treatment were performed in the same manner as the Process 4 of the Example 40 to give 2-{5-{[2-cyclopropyl-1-(5-ethoxypyrimidin-2-yl)-4-ethyl-6-oxo-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}benzonitrile (yield: 13%).

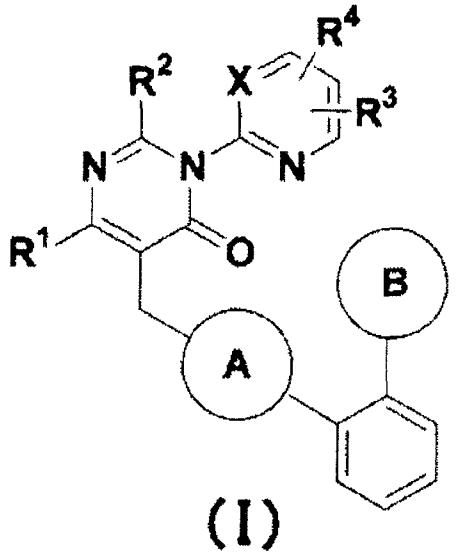
[0376]

^{1}H-NMR($CDCl_3$, 400 MHz)δ:

CLAIMS

1. A compound represented by the formula (I) below or a salt thereof, or a solvate thereof:

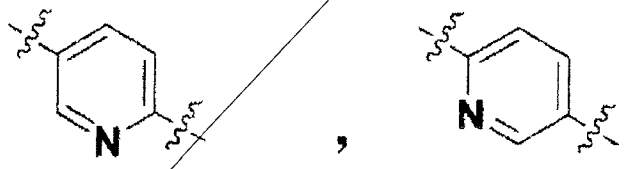
[Chemical Formula 1]



(I)

[in the formula, ring A represents the following formula (II) or formula (III):

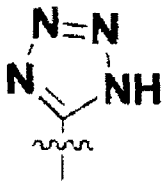
[Chemical Formula 2]



(II) (III)

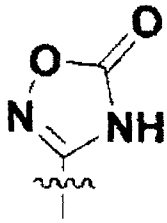
ring B represents the following formula (IV) or formula (V):

[Chemical Formula 3]



(IV)

,



(V)

X represents C-R^5 or a nitrogen atom,

R^1 represents a C_{1-3} alkyl group or a C_{5-6} alkyl group,

R^2 represents a C_{1-6} alkyl group or a C_{3-8} cycloalkyl group, and

R^3, R^4, and R^5 each independently represent a hydrogen atom, a halogen atom, a C_{1-6} alkyl group, a halo C_{1-6} alkyl group, or a C_{1-6} alkoxy group which may have a substituent group, and the broken line in the formula indicates the binding site for a neighboring group].

2. The compound according to Claim 1 or a salt thereof, or a solvate thereof, wherein the ring A in the formula (I) is the formula (II) and the ring B is the formula (V).

3. The compound according to Claim 1 or 2 or a salt thereof, or a solvate thereof, wherein X in the formula (I) is a nitrogen atom and R^3 and R^4 are each independently a hydrogen atom, a halogen atom, a C_{1-6} alkyl group, a halo C_{1-6} alkyl group, or a C_{1-6} alkoxy group.

4. The compound according to Claim 3 or a salt thereof, or a solvate thereof, wherein R^3 and R^4 in the formula (I) are each

~~independently a hydrogen atom or a C_{1-6} alkoxy group.~~

5. The compound according to any one of Claims 1 to 4 or a salt thereof, or a solvate thereof, wherein the compound represented by the formula (I) is a compound selected from a group consisting of:

3-{2-{5-{[1-(5-ethoxypyrimidin-2-yl)-2-isopropyl-6-oxo-4-propyl-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}phenyl}-1,2,4-oxadiazol-5(4H)-one,

3-{2-{5-{[2-cyclopropyl-1-(5-ethoxypyrimidin-2-yl)-6-oxo-4-propyl-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}phenyl}-1,2,4-oxadiazol-5(4H)-one,

3-{2-{5-{[1-(5-ethoxypyrimidin-2-yl)-2-isopropyl-6-oxo-4-pentyl-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}phenyl}-1,2,4-oxadiazol-5(4H)-one,

3-{2-{5-{[2-cyclopropyl-1-(5-ethoxypyrimidin-2-yl)-6-oxo-4-pentyl-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}phenyl}-1,2,4-oxadiazol-5(4H)-one,

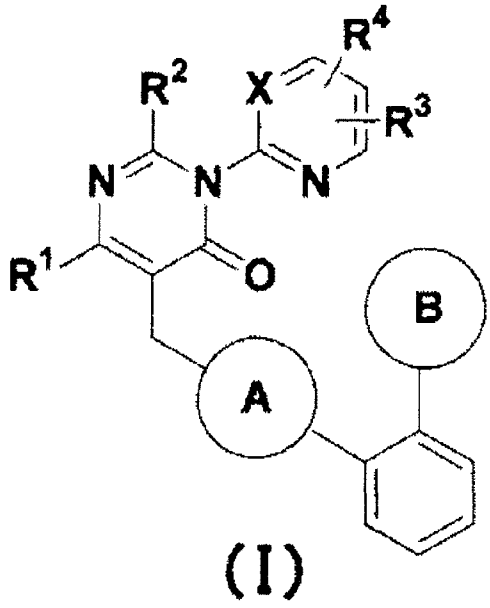
3-{2-{5-{[1-(5-ethoxypyrimidin-2-yl)-4-ethyl-2-isopropyl-6-oxo-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}phenyl}-1,2,4-oxadiazol-5(4H)-one, and

3-{2-{5-{[2-cyclopropyl-1-(5-ethoxypyrimidin-2-yl)-4-ethyl-6-oxo-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}phenyl}-1,2,4-oxadiazol-5(4H)-one.

6. A pharmaceutical composition containing a compound ~~represented by the formula (I) below or a salt thereof, or a~~

~~solvate thereof, and a pharmaceutically acceptable carrier:~~

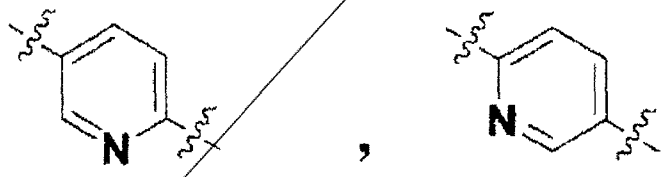
[Chemical Formula 4]



(I)

[in the formula, ring A represents the following formula (II) or formula (III):

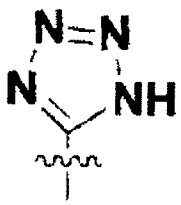
[Chemical Formula 5]



(II) , (III)

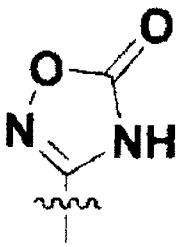
ring B represents the following formula (IV) or formula (V):

~~[Chemical Formula 6]~~



(IV)

,



(V)

X represents C-R^5 or a nitrogen atom,

R^1 represents a C_{1-6} alkyl group,

R^2 represents a C_{1-6} alkyl group or a C_{3-8} cycloalkyl group, and

R^3, R^4, and R^5 each independently represent a hydrogen atom, a halogen atom, a C_{1-6} alkyl group, a halo C_{1-6} alkyl group, or a C_{1-6} alkoxy group which may have a substituent group, and the broken line in the formula indicates the binding site for a neighboring group].

7. The pharmaceutical composition according to Claim 6, wherein R^1 in the formula (I) is a C_{1-3} alkyl group or a C_{5-6} alkyl group.

8. The pharmaceutical composition according to Claim 6 or 7, wherein the ring A in the formula (I) is the formula (II) and the ring B is the formula (V).

9. The pharmaceutical composition according to any one of Claims 6 to 8, wherein X in the formula (I) is a nitrogen atom and R^3 and R^4 are each independently a hydrogen atom, a halogen

~~atom, a C_{1-6} alkyl group, a halo C_{1-6} alkyl group, or a C_{1-6} alkoxy~~ group.

10. The pharmaceutical composition according to Claim 9, wherein R^3 and R^4 in the formula (I) are each independently a hydrogen atom or a C_{1-6} alkoxy group.

11. The pharmaceutical composition according to any one of Claims 6 to 10, wherein the compound represented by the formula (I) is a compound selected from a group consisting of:

3-{2-{5-{[1-(5-ethoxypyrimidin-2-yl)-2-isopropyl-6-oxo-4-propyl-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}phenyl}-1,2,4-oxadiazol-5(4H)-one,

3-{2-{5-{[2-cyclopropyl-1-(5-ethoxypyrimidin-2-yl)-6-oxo-4-propyl-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}phenyl}-1,2,4-oxadiazol-5(4H)-one,

3-{2-{5-{[1-(5-ethoxypyrimidin-2-yl)-2-isopropyl-6-oxo-4-pentyl-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}phenyl}-1,2,4-oxadiazol-5(4H)-one,

3-{2-{5-{[2-cyclopropyl-1-(5-ethoxypyrimidin-2-yl)-6-oxo-4-pentyl-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}phenyl}-1,2,4-oxadiazol-5(4H)-one,

3-{2-{5-{[1-(5-ethoxypyrimidin-2-yl)-4-ethyl-2-isopropyl-6-oxo-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}phenyl}-1,2,4-oxadiazol-5(4H)-one, and

3-{2-{5-{[2-cyclopropyl-1-(5-ethoxypyrimidin-2-yl)-4-ethyl-6-oxo-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}p

~~henyl]-1,2,4-oxadiazol-5(4H)-one.~~

12. The pharmaceutical composition according to any one of Claims 6 to 11, having both angiotensin II receptor antagonistic activity and a PPARγ activation effect.

13. The pharmaceutical composition according to any one of Claims 6 to 11, which is an agent for preventing and/or treating a circulatory disease.

14. The pharmaceutical composition according to Claim 13, wherein the circulatory disease is hypertension, heart disease, angina pectoris, cerebral vascular disorder, cerebral circulatory disorder, ischemic peripheral circulatory disorder, kidney disease, or arteriosclerosis.

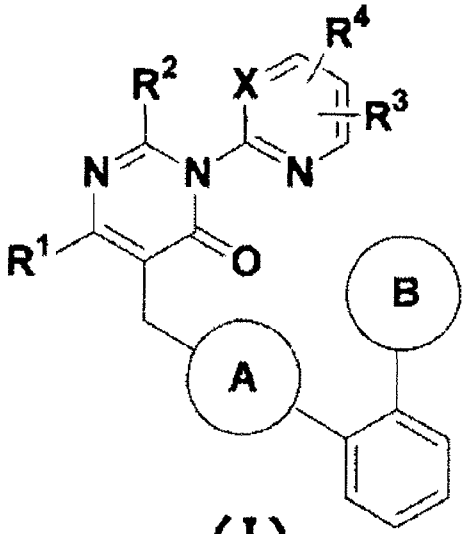
15. The pharmaceutical composition according to any one of Claims 6 to 11, which is an agent for preventing and/or treating a metabolic disease.

16. The pharmaceutical composition according to Claim 15, wherein the metabolic disease is type 2 diabetes mellitus, diabetic complication (diabetic retinopathy, diabetic neuropathy, or diabetic nephropathy), insulin resistant syndrome, metabolic syndrome, or hyperinsulinemia.

~~17. A method of preventing and/or treating a circulatory~~

~~disease, the method comprising administering an effective~~ amount of the compound represented by the following formula (I) or a salt thereof, or a solvate thereof to a patient who is in need of the treatment:

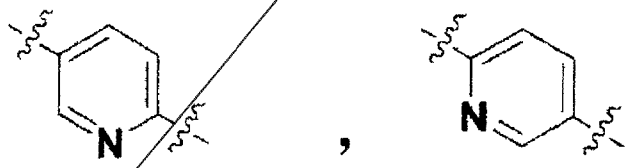
[Chemical Formula 7]



(I)

[in the formula, ring A represents the following formula (II) or formula (III):

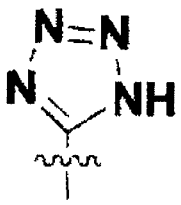
[Chemical Formula 8]



(II) (III)

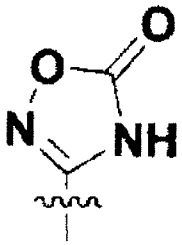
ring B represents the following formula (IV) or formula (V):

~~[Chemical Formula 9]~~



(IV)

,



(V)

X represents C-R^5 or a nitrogen atom,

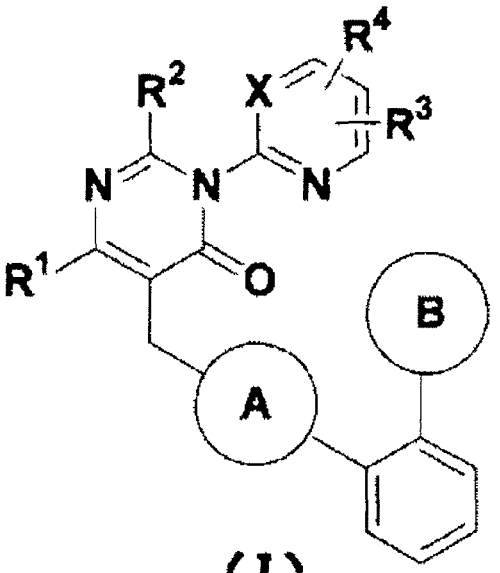
R^1 represents a C_{1-6} alkyl group,

R^2 represents a C_{1-6} alkyl group or a C_{3-8} cycloalkyl group, and

R^3, R^4, and R^5 each independently represent a hydrogen atom, a halogen atom, a C_{1-6} alkyl group, a halo C_{1-6} alkyl group, or a C_{1-6} alkoxy group which may have a substituent group, and the broken line in the formula indicates the binding site for a neighboring group].

18. A method of preventing and/or treating a metabolic disease, the method comprising administering an effective amount of the compound represented by the following formula (I) or a salt thereof, or a solvate thereof to a patient who is in need of the treatment:

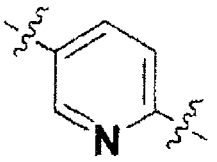
~~[Chemical Formula 10]~~



(I)

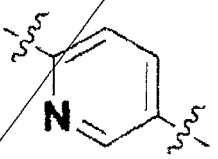
[in the formula, ring A represents the following formula (II) or formula (III):

[Chemical Formula 11]



(II)

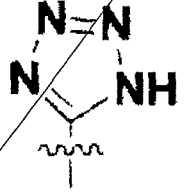
,



(III)

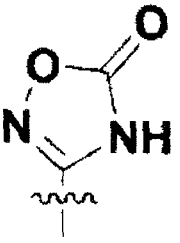
ring B represents the following formula (IV) or formula (V):

[Chemical Formula 12]



(IV)

,



(V)

~~X represents C-R^5 or a nitrogen atom,~~

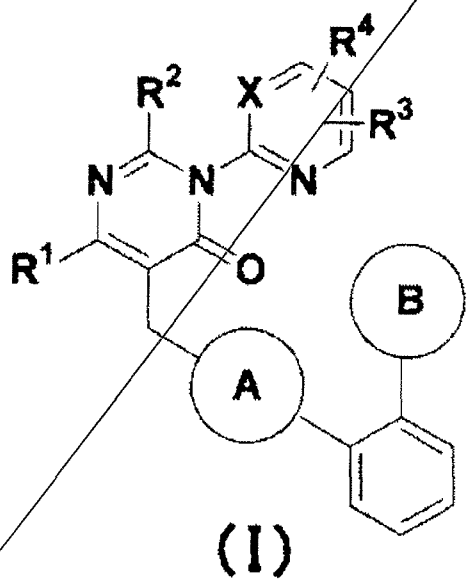
R^1 represents a C_{1-6} alkyl group,

R^2 represents a C_{1-6} alkyl group or a C_{3-8} cycloalkyl group, and

R^3, R^4, and R^5 each independently represent a hydrogen atom, a halogen atom, a C_{1-6} alkyl group, a halo C_{1-6} alkyl group, or a C_{1-6} alkoxy group which may have a substituent group, and the broken line in the formula indicates the binding site for a neighboring group].

19. A method of preventing and/or treating a circulatory disease and a metabolic disease, the method comprising administering an effective amount of the compound represented by the following formula (I) or a salt thereof, or a solvate thereof to a patient who is in need of the treatment:

[Chemical Formula 13]

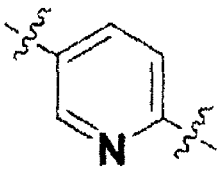


(I)

~~[in the formula, ring A represents the following formula~~

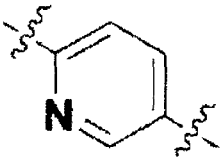
~~(II) or formula (III):~~

[Chemical Formula 14]



(II)

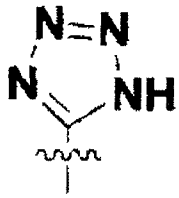
,



(III)

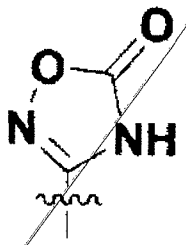
ring B represents the following formula (IV) or formula (V):

[Chemical Formula 15]



(IV)

,



(V)

X represents C-R^5 or a nitrogen atom,

R^1 represents a C_{1-6} alkyl group,

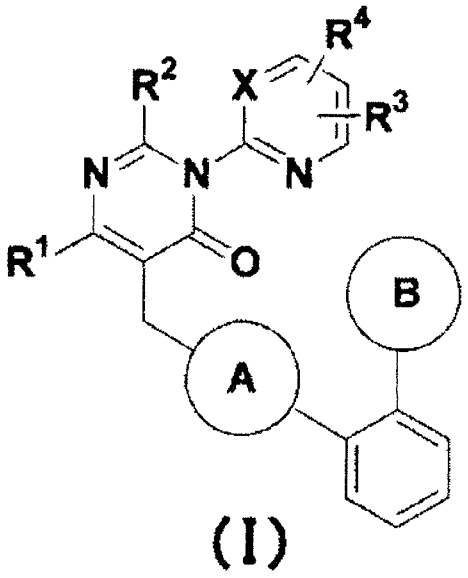
R^2 represents a C_{1-6} alkyl group or a C_{3-8} cycloalkyl group, and

R^3, R^4, and R^5 each independently represent a hydrogen atom, a halogen atom, a C_{1-6} alkyl group, a halo C_{1-6} alkyl group, or a C_{1-6} alkoxy group which may have a substituent group, and the broken line in the formula indicates the binding site for a neighboring group].

~~20. A compound represented by the following formula (I) or~~

~~a salt thereof, or a solvate thereof to be used for preventing~~ and/or treating a circulatory disease:

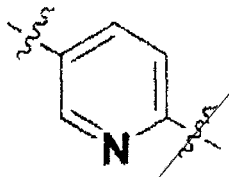
[Chemical Formula 16]



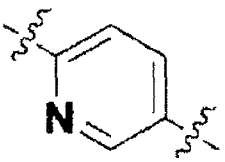
(I)

[in the formula, ring A represents the following formula (II) or formula (III):

[Chemical Formula 17]



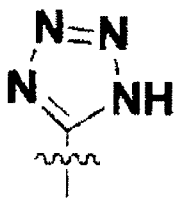
,



(II) (III)

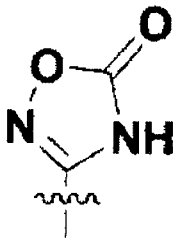
ring B represents the following formula (IV) or formula (V):

~~[Chemical Formula 18]~~



(IV)

,



(V)

X represents C-R^5 or a nitrogen atom,

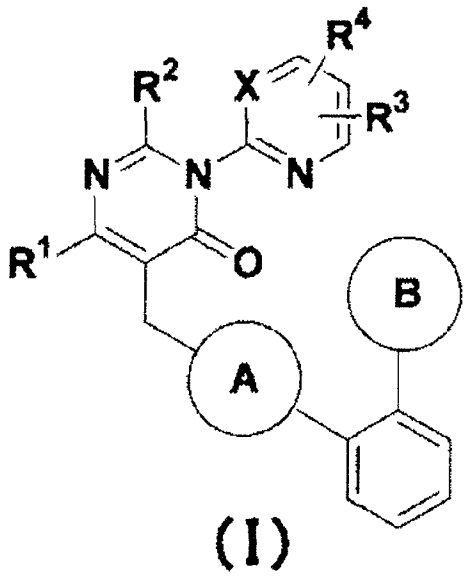
R^1 represents a C_{1-6} alkyl group,

R^2 represents a C_{1-6} alkyl group or a C_{3-8} cycloalkyl group, and

R^3, R^4, and R^5 each independently represent a hydrogen atom, a halogen atom, a C_{1-6} alkyl group, a halo C_{1-6} alkyl group, or a C_{1-6} alkoxy group which may have a substituent group, and the broken line in the formula indicates the binding site for a neighboring group].

21. A compound represented by the following formula (I) or a salt thereof, or a solvate thereof to be used for preventing and/or treating a metabolic disease:

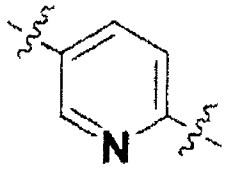
~~[Chemical Formula 19]~~



(I)

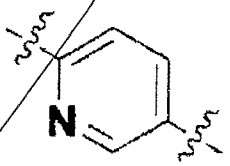
[in the formula, ring A represents the following formula (II) or formula (III):

[Chemical Formula 20]



(II)

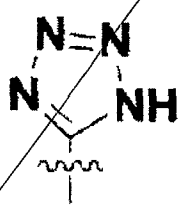
,



(III)

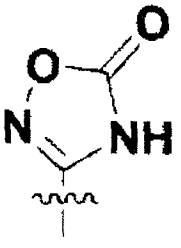
ring B represents the following formula (IV) or formula (V):

[Chemical Formula 21]



(IV)

,



(V)

~~X represents C-R^5 or a nitrogen atom,~~

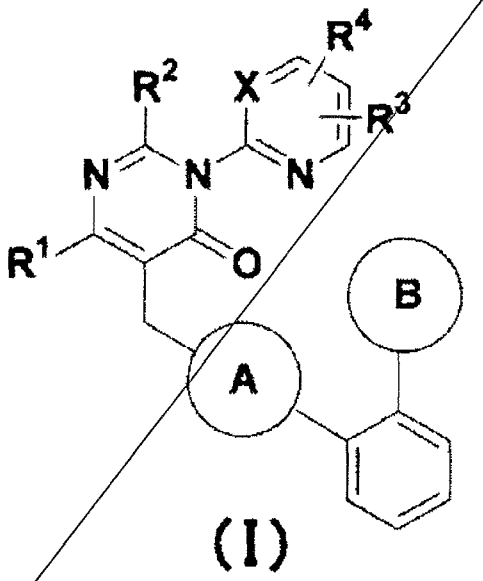
R^1 represents a C_{1-6} alkyl group,

R^2 represents a C_{1-6} alkyl group or a C_{3-8} cycloalkyl group, and

R^3, R^4, and R^5 each independently represent a hydrogen atom, a halogen atom, a C_{1-6} alkyl group, a halo C_{1-6} alkyl group, or a C_{1-6} alkoxy group which may have a substituent group, and the broken line in the formula indicates the binding site for a neighboring group].

22. A compound represented by the following formula (I) or a salt thereof, or a solvate thereof to be used for preventing and/or treating a circulatory disease and a metabolic disease:

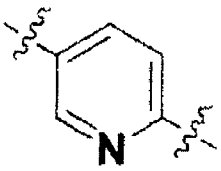
[Chemical Formula 22]



(I)

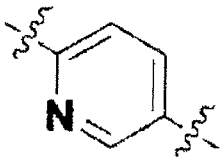
[in the formula, ring A represents the following formula (II) or formula (III):

~~[Chemical Formula 23]~~



(II)

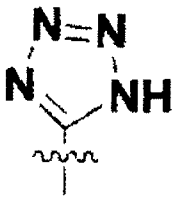
,



(III)

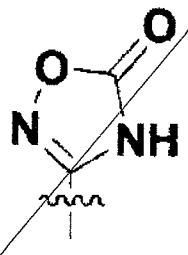
ring B represents the following formula (IV) or formula (V):

[Chemical Formula 24]



(IV)

,



(V)

X represents C-R^5 or a nitrogen atom,

R^1 represents a C_{1-6} alkyl group,

R^2 represents a C_{1-6} alkyl group or a C_{3-8} cycloalkyl group, and

R^3, R^4, and R^5 each independently represent a hydrogen atom, a halogen atom, a C_{1-6} alkyl group, a halo C_{1-6} alkyl group, or a C_{1-6} alkoxy group which may have a substituent group, and the broken line in the formula indicates the binding site for a neighboring group].

CLAIMS

1. A compound selected from the group consisting of:

3-{2-{5-{[1-(5-ethoxypyrimidin-2-yl)-2-isopropyl-6-oxo-4-propyl-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}phenyl}-1,2,4-oxadiazol-5(4H)-one,

3-{2-{5-{[2-cyclopropyl-1-(5-ethoxypyrimidin-2-yl)-6-oxo-4-propyl-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}phenyl}-1,2,4-oxadiazol-5(4H)-one,

3-{2-{5-{[1-(5-ethoxypyrimidin-2-yl)-2-isopropyl-6-oxo-4-pentyl-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}phenyl}-1,2,4-oxadiazol-5(4H)-one,

3-{2-{5-{[2-cyclopropyl-1-(5-ethoxypyrimidin-2-yl)-6-oxo-4-pentyl-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}phenyl}-1,2,4-oxadiazol-5(4H)-one,

3-{2-{5-{[1-(5-ethoxypyrimidin-2-yl)-4-ethyl-2-isopropyl-6-oxo-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}phenyl}-1,2,4-oxadiazol-5(4H)-one, and

3-{2-{5-{[2-cyclopropyl-1-(5-ethoxypyrimidin-2-yl)-4-ethyl-6-oxo-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}phenyl}-1,2,4-oxadiazol-5(4H)-one,

or a salt thereof, or a solvate thereof.

2. A pharmaceutical composition comprising a compound according to claim 1 or a salt thereof, or a solvate thereof, and a pharmaceutically acceptable carrier.

3. Use of a compound or a salt thereof, or a solvate thereof for the production of an agent for the prevention and/or treatment of a circulatory disease, wherein the compound is selected from the group consisting of:

3-{2-{5-{[1-(5-ethoxypyrimidin-2-yl)-2-isopropyl-6-oxo-4-propyl-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}phenyl}-1,2,4-oxadiazol-5(4H)-one,

3-{2-{5-{[2-cyclopropyl-1-(5-ethoxypyrimidin-2-yl)-6-oxo-4-propyl-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}phenyl}-1,2,4-oxadiazol-5(4H)-one,

3-{2-{5-{[1-(5-ethoxypyrimidin-2-yl)-2-isopropyl-6-oxo-4-pentyl-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}phenyl}-1,2,4-oxadiazol-5(4H)-one,

3-{2-{5-{[2-cyclopropyl-1-(5-ethoxypyrimidin-2-yl)-6-oxo-4-pentyl-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}phenyl}-1,2,4-oxadiazol-5(4H)-one,

3-{2-{5-{[1-(5-ethoxypyrimidin-2-yl)-4-ethyl-2-isopropyl-6-oxo-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}phenyl}-1,2,4-oxadiazol-5(4H)-one, and

3-{2-{5-{[2-cyclopropyl-1-(5-ethoxypyrimidin-2-yl)-4-ethyl-6-oxo-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}phenyl}-1,2,4-oxadiazol-5(4H)-one.

4. The use of the compound according to Claim 3 or a salt thereof, or a solvate thereof, wherein the circulatory disease is hypertension, heart disease, angina pectoris, cerebral vascular disorder, cerebral circulatory disorder, ischemic

peripheral circulatory disorder, kidney disease, or arteriosclerosis.

5. The use of the compound according to Claim 3 or 4 or a salt thereof, or a solvate thereof, which is an agent used also for the prevention and/or treatment of a metabolic disease.

6. The use of the compound according to Claim 5 or a salt thereof, or a solvate thereof, wherein the metabolic disease is type 2 diabetes mellitus, diabetic complication, insulin resistant syndrome, metabolic syndrome, or hyperinsulinemia.

7. The use of the compound according to Claim 6 or a salt thereof, or a solvate thereof, wherein diabetic complication is diabetic retinopathy, diabetic neuropathy, or diabetic nephropathy.

8. The use of the compound according to any one of Claims 5 to 7 or a salt thereof, or a solvate thereof, which is an agent having both angiotensin II receptor antagonistic activity and a PPARγ activation effect.

9. Use of a compound or a salt thereof, or a solvate thereof for the production of an agent for the prevention and/or treatment of a metabolic disease, wherein the compound is selected from the group consisting of:

3-{2-{5-{[1-(5-ethoxypyrimidin-2-yl)-2-isopropyl-6-ox

o-4-propyl-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}ph
enyl}-1,2,4-oxadiazol-5(4H)-one,

3-{2-{5-{[2-cyclopropyl-1-(5-ethoxypyrimidin-2-yl)-6-
oxo-4-propyl-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}
phenyl}-1,2,4-oxadiazol-5(4H)-one,

3-{2-{5-{[1-(5-ethoxypyrimidin-2-yl)-2-isopropyl-6-ox
o-4-pentyl-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}ph
enyl}-1,2,4-oxadiazol-5(4H)-one,

3-{2-{5-{[2-cyclopropyl-1-(5-ethoxypyrimidin-2-yl)-6-
oxo-4-pentyl-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}
phenyl}-1,2,4-oxadiazol-5(4H)-one,

3-{2-{5-{[1-(5-ethoxypyrimidin-2-yl)-4-ethyl-2-isopro
pyl-6-oxo-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}phe
nyl}-1,2,4-oxadiazol-5(4H)-one, and

3-{2-{5-{[2-cyclopropyl-1-(5-ethoxypyrimidin-2-yl)-4-
ethyl-6-oxo-1,6-dihydropyrimidin-5-yl]methyl}pyridin-2-yl}p
henyl}-1,2,4-oxadiazol-5(4H)-one.

10. The use of the compound according to Claim 9 or a salt thereof, or a solvate thereof, wherein the metabolic disease is type 2 diabetes mellitus, diabetic complication, insulin resistant syndrome, metabolic syndrome, or hyperinsulinemia.

11. The use of the compound according to Claim 10 or a salt thereof, or a solvate thereof, wherein the diabetic complication is diabetic retinopathy, diabetic neuropathy, or diabetic nephropathy.