Claims

[Claim 1] A pharmaceutical composition, comprising 5-{[(3R)-1-acryloylpyrrolidin-3-yl]oxy}-6-ethyl-3-({4-[4-(4-methylpiperazin-1-yl)piperidin-1-yl]phenyl}amino)pyrazine-2-carboxamide or a pharmaceutically acceptable salt thereof as an active ingredient, for use in the treatment of cancer in which one or more kinases of BTK, JAK3, and ITK is involved.

[Claim 2] The pharmaceutical composition according to claim 1, wherein the cancer in which one or more kinases of BTK, JAK3, and ITK is involved is cancer in which BTK is involved.

[Claim 3] The pharmaceutical composition according to claim 2, wherein the cancer in which BTK is involved is cancer in which BTK is overexpressed or activated.

[Claim 4] The pharmaceutical composition according to claim 2, wherein the cancer in which BTK is involved is cancer in which a B cell receptor signal is activated.

[Claim 5] The pharmaceutical composition according to claim 2, wherein the cancer in which BTK is involved is cancer selected from the group consisting of follicular lymphoma, chronic lymphocytic leukemia, small lymphocytic lymphoma, multiple myeloma, mantle cell lymphoma, diffuse large B-cell lymphoma, B-cell prolymphocytic leukemia, acute lymphocytic leukemia, histiocytic lymphoma, and acute myeloid leukemia.

[Claim 6] The pharmaceutical composition according to claim 5, wherein the cancer in which BTK is involved is diffuse large B-cell lymphoma, mantle cell lymphoma, acute myeloid leukemia and/or histiocytic lymphoma.

[Claim 7] The pharmaceutical composition according to claim 5, wherein the cancer in which BTK is involved is chronic lymphocytic leukemia.

[Claim 8] The pharmaceutical composition according to claim 1, wherein the cancer in which one or more kinases of BTK, JAK3, and ITK is involved is cancer in which JAK3 is involved.

[Claim 9] The pharmaceutical composition according to claim 8, wherein the cancer in which JAK3 is involved is cancer in which JAK3 is activation-mutated or activated.

[Claim 10] The pharmaceutical composition according to claim 8, wherein the cancer in which JAK3 is involved is acute megakaryocytic leukemia and/or anaplastic large cell lymphoma.

[Claim 11] The pharmaceutical composition according to claim 1, wherein the cancer in which one or more kinases of BTK, JAK3, and ITK is involved is cancer in which ITK is involved.

[Claim 12] The pharmaceutical composition according to claim 11, wherein the cancer in which ITK is involved is cancer in which ITK is activated.

[Claim 13] The pharmaceutical composition according to claim 11, wherein the cancer in which ITK is involved is acute T cell lymphoma and/or lymphoblastic leukemia.

[Claim 14] The pharmaceutical composition according to claim 1, wherein the cancer in which one or more kinases of BTK, JAK3, and ITK is involved is cancer in which BTK and JAK3 are involved.

[Claim 15] The pharmaceutical composition according to claim 1, wherein the cancer in which one or more kinases of BTK, JAK3, and ITK is involved is cancer in which BTK and ITK are involved.

[Claim 16] The pharmaceutical composition according to claim 1, wherein the cancer in which one or more kinases of BTK, JAK3, and ITK is involved is cancer in which JAK3 and ITK are involved.

[Claim 17] The pharmaceutical composition according to claim 1, wherein the cancer in which one or more kinases of BTK, JAK3, and ITK is involved is cancer in which BTK, JAK3 and ITK are involved.

[Claim 18] The pharmaceutical composition according to any one of claims 1 to 17, wherein 5-{[(3R)-1-acryloylpyrrolidin-3-yl]oxy}-6-ethyl-3-({4-[4-(4-methylpiperazin-1-yl)piperidin-1-yl]phenyl}amino)pyrazine-2-carboxamide or a pharmaceutically acceptable salt thereof is 5-{[(3R)-1-acryloylpyrrolidin-3-yl]oxy}-6-ethyl-3-({4-[4-(4-methylpiperazin-1-yl)piperidin-1-yl]phenyl}amino)pyrazine-2-carboxamide monomethanesulfonate.

[Claim 19] The use of 5-{[(3R)-1-acryloylpyrrolidin-3-yl]oxy}-6-ethyl-3-({4-[4-(4-

methylpiperazin-1-yl)piperidin-1-yl]phenyl}amino)pyrazine-2-carboxamide or a pharmaceutically acceptable salt thereof in the manufacture of a medicament for the treatment of cancer in which one or more kinases of BTK, JAK3, and ITK is involved.

[Claim 20] 5-{[(3R)-1-acryloylpyrrolidin-3-yl]oxy}-6-ethyl-3-({4-[4-(4-methylpiperazin-1-yl)piperidin-1-yl]phenyl}amino)pyrazine-2-carboxamide or a pharmaceutically acceptable salt thereof for use in the treatment of cancer in which one or more kinases of BTK, JAK3, and ITK is involved.

[Claim21] An effective amount of 5-{[(3R)-1-acryloylpyrrolidin-3-yl]oxy}-6-ethyl-3-({4-[4-(4-methylpiperazin-1-yl)piperidin-1-yl]phenyl}amino)pyrazine-2-carboxamide or a pharmaceutically acceptable salt thereof for use in the treatment of cancer in which one or more kinases of BTK, JAK3, and ITK is involved, wherein the effective amount is to be administered to a subject.