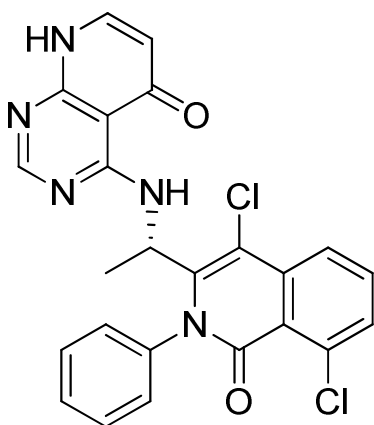


【CLAIMS】

【Claim 1】

An amorphous form of a compound represented by formula 1 below.

[Formula 1]



【Claim 2】 The amorphous form according to claim 1, wherein the amorphous compound exhibits a halo pattern in an X-ray powder diffraction pattern.

【Claim 3】

The amorphous form according to claim 1, wherein the

amorphous compound has a differential scanning calorimetry (DSC) endothermic transition at 281 to 285°C when a heating rate is 10°C/min.

【Claim 4】

A pharmaceutical composition, comprising the amorphous compound according to any one of claims 1 to 3, and a pharmaceutically acceptable carrier.

【Claim 5】

The pharmaceutical composition according to claim 4, wherein the pharmaceutical composition is used for preventing or treating PI3K-associated diseases.

【Claim 6】

The pharmaceutical composition according to claim 4, wherein

the pharmaceutical composition is used for preventing or treating cancer diseases.

【Claim 7】

The pharmaceutical composition according to claim 6, wherein the cancer disease is any one selected from the group consisting of lung cancer, non-small cell lung cancer (NSCLC), bronchiolo-alveolar cell lung cancer, gastric cancer, gastrointestinal cancer, liver cancer, bone cancer, pancreatic cancer, skin cancer, head and neck cancer, skin or ocular melanoma, uterine cancer, ovarian cancer, rectal cancer, colorectal cancer, colon cancer, breast cancer, sarcoma of uterus, fallopian tube carcinoma, internal endometrium carcinoma, cervical carcinoma, vaginal carcinoma, vulvar carcinoma, esophageal cancer, laryngeal cancer, small intestine cancer, thyroid cancer, parathyroid cancer, soft tissue sarcoma, urethral cancer, penis cancer, prostate cancer, multiple myeloma, chronic or acute leukemia, solid tumor of childhood, lymphoma, bladder cancer, renal cancer, renal cell carcinoma,

renal pelvic carcinoma, spinal axis tumor, brainstem glioma, and pituitary gland adenoma.

【Claim 8】

A method for treating cancer diseases, the method comprising administering a therapeutically effective amount of the amorphous compound according to any one of claims 1 to 3 into a subject.

【Claim 9】

The method according to claim 8, wherein the cancer disease is any one selected from the group consisting of lung cancer, non-small cell lung cancer (NSCLC), bronchiolo-alveolar cell lung cancer, gastric cancer, gastrointestinal cancer, liver cancer, bone cancer, pancreatic cancer, skin cancer, head and neck cancer, skin or ocular melanoma, uterine cancer, ovarian cancer, rectal cancer, colorectal cancer, colon cancer, breast cancer, sarcoma of uterus, fallopian tube carcinoma, internal endometrium carcinoma,

cervical carcinoma, vaginal carcinoma, vulvar carcinoma, esophageal cancer, laryngeal cancer, small intestine cancer, thyroid cancer, parathyroid cancer, soft tissue sarcoma, urethral cancer, penis cancer, prostate cancer, multiple myeloma, chronic or acute leukemia, solid tumor of childhood, lymphoma, bladder cancer, renal cancer, renal cell carcinoma, renal pelvic carcinoma, spinal axis tumor, brainstem glioma, and pituitary gland adenoma.

【Claim 10】

Use of the amorphous compound according to any one of claims 1 to 3, in the manufacture of a medicament for preventing or treating cancer diseases.

【Claim 11】

The use according to claim 10, wherein the cancer disease is any one selected from the group consisting of lung cancer, non-small cell lung cancer (NSCLC), bronchiolo-alveolar cell lung

cancer, gastric cancer, gastrointestinal cancer, liver cancer, bone cancer, pancreatic cancer, skin cancer, head and neck cancer, skin or ocular melanoma, uterine cancer, ovarian cancer, rectal cancer, colorectal cancer, colon cancer, breast cancer, sarcoma of uterus, fallopian tube carcinoma, internal endometrium carcinoma, cervical carcinoma, vaginal carcinoma, vulvar carcinoma, esophageal cancer, laryngeal cancer, small intestine cancer, thyroid cancer, parathyroid cancer, soft tissue sarcoma, urethral cancer, penis cancer, prostate cancer, multiple myeloma, chronic or acute leukemia, solid tumor of childhood, lymphoma, bladder cancer, renal cancer, renal cell carcinoma, renal pelvic carcinoma, spinal axis tumor, brainstem glioma, and pituitary gland adenoma.

【Claim 12】

Use of the amorphous compound according to any one of claims 1 to 3, for preventing or treating cancer diseases.

【Claim 13】

The use according to claim 12, wherein the cancer disease is any one selected from the group consisting of lung cancer, non-small cell lung cancer (NSCLC), bronchiolo-alveolar cell lung cancer, gastric cancer, gastrointestinal cancer, liver cancer, bone cancer, pancreatic cancer, skin cancer, head and neck cancer, skin or ocular melanoma, uterine cancer, ovarian cancer, rectal cancer, colorectal cancer, colon cancer, breast cancer, sarcoma of uterus, fallopian tube carcinoma, internal endometrium carcinoma, cervical carcinoma, vaginal carcinoma, vulvar carcinoma, esophageal cancer, laryngeal cancer, small intestine cancer, thyroid cancer, parathyroid cancer, soft tissue sarcoma, urethral cancer, penis cancer, prostate cancer, multiple myeloma, chronic or acute leukemia, solid tumor of childhood, lymphoma, bladder cancer, renal cancer, renal cell carcinoma, renal pelvic carcinoma, spinal axis tumor, brainstem glioma, and pituitary gland adenoma.