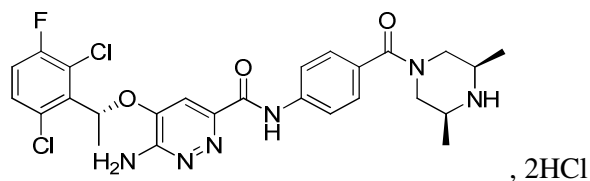


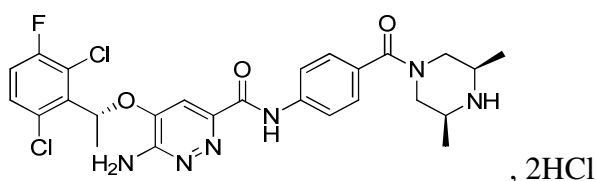
CLAIMS

1. A crystalline form of a compound of formula I, hydrates and/or solvates thereof,



Formula I

- 5 wherein an X-ray powder diffraction pattern of the crystalline form has characteristic peaks at diffraction angles 2θ of $4.9 \pm 0.2^\circ$, $10.0 \pm 0.2^\circ$ and $19.3 \pm 0.2^\circ$.
2. The crystalline form of the compound of formula I, hydrates and/or solvates thereof according to claim 1, wherein the X-ray powder diffraction pattern of the crystalline form has characteristic peaks at diffraction angles 2θ of $4.9 \pm 0.2^\circ$, $10.0 \pm 0.2^\circ$, $14.7 \pm 0.2^\circ$,
10 $16.9 \pm 0.2^\circ$, $19.3 \pm 0.2^\circ$ and $20.3 \pm 0.2^\circ$.
3. The crystalline form of the compound of formula I, hydrates and/or solvates thereof according to claim 1, wherein the X-ray powder diffraction pattern of the crystalline form has characteristic peaks at diffraction angles 2θ of $4.9 \pm 0.2^\circ$, $10.0 \pm 0.2^\circ$, $14.7 \pm 0.2^\circ$, $16.9 \pm 0.2^\circ$, $19.3 \pm 0.2^\circ$, $20.3 \pm 0.2^\circ$, $25.5 \pm 0.2^\circ$ and $30.7 \pm 0.2^\circ$.
- 15 4. The crystalline form of the compound of formula I, hydrates and/or solvates thereof according to claim 1, wherein the crystalline form has the X-ray powder diffraction pattern approximately as shown in Figure 1.
5. The crystalline form of the compound of formula I, hydrates and/or solvates thereof according to claim 1, wherein the crystalline form is a dihydrate.
- 20 6. A crystalline form of the compound of formula I, hydrates and/or solvates thereof



Formula I

- wherein an X-ray powder diffraction pattern of the crystalline form has characteristic peaks at diffraction angles 2θ of $10.5 \pm 0.2^\circ$, $17.4 \pm 0.2^\circ$ and $21.1 \pm 0.2^\circ$.
- 25 7. The crystalline form of the compound of formula I, hydrates and/or solvates thereof according to claim 6, wherein the X-ray powder diffraction pattern of the crystalline form

has characteristic peaks at diffraction angles 2θ of $10.5\pm0.2^\circ$, $17.4\pm0.2^\circ$, $19.7\pm0.2^\circ$, $21.1\pm0.2^\circ$, $23.9\pm0.2^\circ$ and $25.5\pm0.2^\circ$.

8. The crystalline form of the compound of formula I, hydrates and/or solvates thereof according to claim 6, wherein the X-ray powder diffraction pattern of the crystalline form has characteristic peaks at diffraction angles 2θ of $10.5\pm0.2^\circ$, $17.4\pm0.2^\circ$, $19.7\pm0.2^\circ$, $21.1\pm0.2^\circ$, $21.5\pm0.2^\circ$, $23.9\pm0.2^\circ$, $25.2\pm0.2^\circ$ and $25.5\pm0.2^\circ$.
9. The crystalline form of the compound of formula I, hydrates and/or solvates thereof according to claim 6, wherein the X-ray powder diffraction pattern approximately as shown in Figure 2.
10. The crystalline form of the compound of formula I, hydrates and/or solvates thereof according to claim 6, wherein the crystalline form is a trihydrate.
11. The crystalline form of the compound of formula I, hydrates and/or solvates thereof according to claim 3, wherein the crystalline form has a purity of $\geq 85\%$.
12. The crystalline form of the compound of formula I, hydrates and/or solvates thereof according to claim 3, wherein the crystalline form has a purity of $\geq 95\%$.
13. The crystalline form of the compound of formula I, hydrates and/or solvates thereof according to claim 3, wherein the crystalline form has a purity of $\geq 99\%$.
14. A pharmaceutical composition, comprising a therapeutically effective amount of the crystalline form of the compound of formula I, hydrates and/or solvates thereof according to claim 3, and pharmaceutically acceptable excipients, adjuvants and/or carriers, and optionally at least one of other active ingredients.
15. The pharmaceutical composition according to claim 14, wherein the pharmaceutical composition is in a form of an oral preparation.
16. The pharmaceutical composition according to claim 14, wherein the pharmaceutical composition is in a form of a tablet or a capsule.
17. The pharmaceutical composition according to claim 14, wherein 20 mg to 150 mg of the crystalline form is formulated with at least one excipient, adjuvant and/or carrier to a total amount of about 50 mg to 500 mg.
18. The pharmaceutical composition according to claim 14, wherein the excipient, adjuvant and/or carrier is microcrystalline cellulose, mannitol, crospovidone, croscarmellose sodium

cellulose, sodium starch glycolate, povidone, hydroxypropyl cellulose, and/or stearic acid.

19. The pharmaceutical composition according to claim 14, wherein the pharmaceutical composition comprises 0.01% to 99% by weight of the crystalline form.

20. The pharmaceutical composition according to claim 14, wherein the pharmaceutical composition comprises 0.1% to 70% by weight of the crystalline form.

21. The pharmaceutical composition according to claim 14, wherein the pharmaceutical composition comprises 1% to 70% by weight of the crystalline form.

22. The pharmaceutical composition according to claim 14, wherein the pharmaceutical composition comprises 1% to 50% by weight of the crystalline form.

23. The pharmaceutical composition according to claim 14, wherein the pharmaceutical composition comprises 1% to 30% by weight of the crystalline form.

24. The pharmaceutical composition according to claim 14, wherein the pharmaceutical composition comprises 10% to 30% by weight of the crystalline form.

25. Use of the crystalline form of the compound of formula I, hydrates and/or solvates thereof according to any one of claims 1-13, or the pharmaceutical composition according to any one of claims 14-24 in the manufacture of a medicament for treating a disease, disorder or condition, wherein the disease, disorder or condition is selected from lung cancer, melanoma, colon cancer, breast cancer, liver cancer, pancreatic cancer, brain cancer, kidney cancer, ovarian cancer, gastric cancer, skin cancer, bone cancer, glioma, lymphoma, neuroblastoma, hepatocellular carcinoma, papillary renal cell carcinoma, and/or head and neck squamous cell carcinoma.

26. The use according to claim 25, wherein the disease, disorder or condition is non-small cell lung cancer resistant to crizotinib therapy.

27. The use according to claim 25 or 26, wherein the disease, disorder or condition is melanoma.

28. The use according to any one of claims 25-27, wherein the disease, disorder or condition is neurological disease, psychiatric disease, obesity, diabetes, and/or cardiovascular disease.

29. The use according to claim 28, wherein the psychiatric disease is schizophrenia, depression and/or addiction or abuse of substance.

30. The use according to claim 29, wherein the addiction or abuse of substance is addiction or abuse of cocaine, tobacco or alcohol.

31. A method for preparing the crystalline form of the compound of formula I, hydrates and/or solvates thereof according to claim 3, comprising following steps:

an amorphous sample of the compound of formula I was placed in centrifuge tubes, and stored in an airtight ethanol or acetonitrile atmosphere for 6 to 10 days at room temperature to

5 obtain the crystalline form; or

an amorphous sample of the compound of formula I was added into ethanol, stirred at 4 °C to 25 °C, and filtrated to give the crystalline form; or

an amorphous sample of the compound of formula I was added into ethanol at 4 °C to 25 °C, and dissolved to get a clear solution; the solution was filtered to give filtrate; then the
10 filtrate was added with n-heptane under stirring until a large amount of crystal being observed, then filtered to obtain the crystalline form; or

an amorphous sample of the compound of formula I was added into methyl tert-butyl ether/ethanol or n-heptane/ethanol at 55 °C to 70 °C, and dissolved to get a clear solution; and the solution was filtered to give filtrate; then the filtrate was stirred at -20 °C until solid being
15 observed, and filtered to obtain the crystalline form; or

an amorphous sample of the compound of formula I was added into methanol, and dissolved to get a clear solution, filtrated, then exposed to 35 °C to 50 °C to evaporate solvent, giving the crystalline form; or

an amorphous sample of the compound of formula I was added into methanol, and
20 dissolved to get a clear solution; the solution was filtered to give filtrate; then the filtrate was added with carboxymethyl cellulose, and exposed to room temperature to evaporate solvent, obtaining the crystalline form.

32. A method for preparing the crystalline form of the compound of formula I, hydrates and/or solvates thereof according to claim 8, comprising following steps:

25 the crystalline form of the compound of formula I of which the X-ray powder diffraction pattern has characteristic peaks at diffraction angles 2θ of $4.9\pm0.2^\circ$, $10.0\pm0.2^\circ$, $14.7\pm0.2^\circ$, $16.9\pm0.2^\circ$, $19.3\pm0.2^\circ$, $20.3\pm0.2^\circ$, $25.5\pm0.2^\circ$ and $30.7\pm0.2^\circ$ was added into methanol, ethanol or water, dissolved to get a clear solution, filtered, then exposed to room temperature (20 °C) to 40 °C to evaporate solvent, obtaining the crystalline form; or

30 the crystalline form of the compound of formula I of which the X-ray powder diffraction pattern has characteristic peaks at diffraction angles 2θ of $4.9\pm0.2^\circ$, $10.0\pm0.2^\circ$, $14.7\pm0.2^\circ$,

16.9±0.2°, 19.3±0.2°, 20.3±0.2°, 25.5±0.2° and 30.7±0.2° was added into methanol/water, methanol/acetone, methanol/ethyl acetate, methanol/methyl tert-butyl ether, methanol/tetrahydrofuran, methanol/dichloromethane, ethanol/water, ethanol/butanone, ethanol/isopropyl acetate, ethanol/n-heptane, trifluoroethanol/water, trifluoroethanol/ethyl acetate, trifluoroethanol/tetrahydrofuran, water/methanol, water/ethanol, water/trifluoroethanol, water/isopropanol, water/acetone, water/tetrahydrofuran, or water/acetonitrile, dissolved to get a clear solution; then the solution was filtrated and exposed to room temperature (20 °C) to 40 °C to evaporate solvent, obtaining the crystalline form; or

the crystalline form of the compound of formula I of which the X-ray powder diffraction pattern has characteristic peaks at diffraction angles 2θ of 4.9±0.2°, 10.0±0.2°, 14.7±0.2°, 16.9±0.2°, 19.3±0.2°, 20.3±0.2°, 25.5±0.2° and 30.7±0.2° was added to a lower alcohol, water, nitromethane, butanone, diethyl ether, ethyl acetate, tetrahydrofuran, toluene or n-heptane to form a suspension; then the suspension was stirred for 4 to 5 days at room temperature to 40 °C, and centrifuged to obtain the crystalline form; or

the crystalline form of the compound of formula I of which the X-ray powder diffraction pattern has characteristic peaks at diffraction angles 2θ of 4.9±0.2°, 10.0±0.2°, 14.7±0.2°, 16.9±0.2°, 19.3±0.2°, 20.3±0.2°, 25.5±0.2° and 30.7±0.2° was added to water-saturated ethyl acetate layer, ethyl acetate saturated aqueous layer, ethanol/diethyl ether, toluene/acetonitrile, butanone/ethanol or toluene/isopropyl ether to form a suspension; then the suspension was stirred at 4 °C to 40 °C for 4 to 5 days and centrifuged to obtain the crystalline form; or

the crystalline form of the compound of formula I of which the X-ray powder diffraction pattern has characteristic peaks at diffraction angles 2θ of 4.9±0.2°, 10.0±0.2°, 14.7±0.2°, 16.9±0.2°, 19.3±0.2°, 20.3±0.2°, 25.5±0.2° and 30.7±0.2° was added into methanol, acetone/water (3:1 v/v), or acetonitrile/water (3:2 v/v) at room temperature, and dissolved to get a clear solution; then the solution were added with hydroxypropylcellulose, ethylcellulose, povidone K30, polyallylamine hydrochloride, carboxymethyl cellulose, or polyvinyl alcohol, exposed to room temperature to evaporate solvent, obtaining the crystalline form; or

the crystalline form of the compound of formula I of which the X-ray powder diffraction pattern has characteristic peaks at diffraction angles 2θ of 4.9±0.2°, 10.0±0.2°, 14.7±0.2°, 16.9±0.2°, 19.3±0.2°, 20.3±0.2°, 25.5±0.2° and 30.7±0.2° was added into a lower alcohol or

water at 60 °C to 70 °C, dissolved to get a clear solution, and stirred at 4 °C until crystals being observed, obtaining the crystalline form; or

the crystalline form of the compound of formula I of which the X-ray powder diffraction pattern has characteristic peaks at diffraction angles 2θ of $4.9\pm0.2^\circ$, $10.0\pm0.2^\circ$, $14.7\pm0.2^\circ$, $16.9\pm0.2^\circ$, $19.3\pm0.2^\circ$, $20.3\pm0.2^\circ$, $25.5\pm0.2^\circ$ and $30.7\pm0.2^\circ$ was added into acetone/trifluoroethanol, acetone/water, dioxane/water, acetonitrile/water or methyl tert-butyl ether/n-propanol at 55 °C to 70 °C, dissolved to get a clear solution; and the solution was filtered to give filtrate; then the filtrate was stirred at -20 °C until crystal being observed, then filtered to give the crystalline form; or

the crystalline form of the compound of formula I of which the X-ray powder diffraction pattern has characteristic peaks at diffraction angles 2θ of $4.9\pm0.2^\circ$, $10.0\pm0.2^\circ$, $14.7\pm0.2^\circ$, $16.9\pm0.2^\circ$, $19.3\pm0.2^\circ$, $20.3\pm0.2^\circ$, $25.5\pm0.2^\circ$ and $30.7\pm0.2^\circ$ was added into nitromethane/methanol, acetonitrile/methanol, butanone/ethanol, ethyl acetate/ethanol, 1,4-dioxane/ethanol or tetrahydrofuran/water at 60 °C to 70 °C, and dissolved to get a clear solution, filtered and exposed to room temperature to evaporate solvent, obtaining the crystalline form; or

the crystalline form of the compound of formula I of which the X-ray powder diffraction pattern has characteristic peaks at diffraction angles 2θ of $4.9\pm0.2^\circ$, $10.0\pm0.2^\circ$, $14.7\pm0.2^\circ$, $16.9\pm0.2^\circ$, $19.3\pm0.2^\circ$, $20.3\pm0.2^\circ$, $25.5\pm0.2^\circ$ and $30.7\pm0.2^\circ$ was added into methanol, ethanol, water, trifluoroethanol, n-propanol or dimethyl sulfoxide at room temperature, and dissolved to get a clear solution; the solution was filtered, and the filtrate was added dropwise with acetone, ethyl acetate, methyl tert-butyl ether, isopropyl ether, isopropyl acetate, tetrahydrofuran, 1,4-dioxane, acetonitrile, n-heptane, methylene chloride or chloroform until a large amount of crystal being observed, obtaining the crystalline form; or

the crystalline form of the compound of formula I of which the X-ray powder diffraction pattern has characteristic peaks at diffraction angles 2θ of $4.9\pm0.2^\circ$, $10.0\pm0.2^\circ$, $14.7\pm0.2^\circ$, $16.9\pm0.2^\circ$, $19.3\pm0.2^\circ$, $20.3\pm0.2^\circ$, $25.5\pm0.2^\circ$ and $30.7\pm0.2^\circ$ was added into methanol or ethanol at room temperature, and dissolved to get a clear solution; and the solution was then filtrated to give filtrate; then the filtrate was added with dichloromethane or tetrahydrofuran, and exposed to room temperature to evaporate solvent, obtaining the crystalline form; or

an amorphous sample of the compound of formula I was placed in centrifuge tubes, and then the centrifuge tubes were placed in the atmosphere of n-butanol, water, nitromethane, ethyl acetate, methyl tert-butyl ether, tetrahydrofuran, dichloromethane, chloroform and toluene to diffuse, to give the crystalline form; or

5 an amorphous sample of the compound of formula I was added to n-propanol, water, butanone, ethyl acetate, tetrahydrofuran, dichloromethane, ethanol, isopropanol, n-butanol, acetone, ester, isopropyl acetate, 1,4-dioxane, acetonitrile, chloroform, sec-butanol, nitromethane or toluene, stirred at -4 °C to -40 °C for 30 minutes, then filtered to give the crystalline form; or

10 an amorphous sample of the compound of formula I was added into isopropyl ether/methanol, ethyl acetate/methanol, 1,4-dioxane/methanol, butanone/ethanol, acetonitrile/ethanol, n-heptane/trifluoroethanol, nitromethane/trifluoroethanol, ether/trifluoroethanol, tetrahydrofuran/trifluoroethanol, acetone/water, tetrahydrofuran/water, acetonitrile/water, methyl tert-butyl ether/isopropanol, isopropyl acetate/n-propanol,
15 methylcyclohexane/n-butanol, acetone/dimethylsulfoxide, ethyl acetate/dimethyl sulfoxide, acetonitrile/dimethyl sulfoxide, methyl tert-butyl ether/chloroform, or toluene/ethyl acetate to form a suspension, stirred at 4 °C to 40 °C, then filtered to give the crystalline form; or

an amorphous sample of the compound of formula I was placed at room temperature at a humidity of 85% RH to obtain the crystalline form; or

20 the crystalline form of the compound of formula I of which the X-ray powder diffraction pattern has characteristic peaks at diffraction angles 2θ of $4.9\pm0.2^\circ$, $10.0\pm0.2^\circ$, $14.7\pm0.2^\circ$, $16.9\pm0.2^\circ$, $19.3\pm0.2^\circ$, $20.3\pm0.2^\circ$, $25.5\pm0.2^\circ$ and $30.7\pm0.2^\circ$ was dissolved into water or methanol to get a clear solution; the solution was filtered to give filtrate; then the filtrate was rotary evaporated to dry, obtaining the crystalline form.