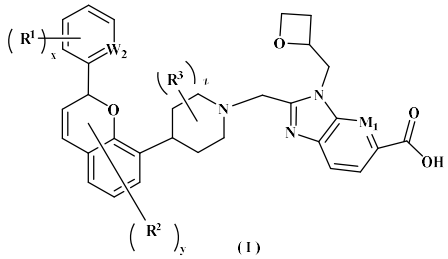
Claims

1. A base salt of a compound as represented by general formula (I) or a stereoisomer thereof, wherein the compound has a structure as follows:



(I)

wherein:

each R^1 is independently selected from hydrogen, deuterium, fluorine, chlorine, cyano, C_{1-3} alkyl, C_{1-3} deuteroalkyl, C_{1-3} haloalkyl, C_{1-3} alkoxy, C_{1-3} deuteroalkoxy or C_{1-3} haloalkoxy;

each R^2 is independently selected from hydrogen, deuterium, fluorine, chlorine, cyano, C_{1-3} alkyl, C_{1-3} deuteroalkyl, C_{1-3} haloalkyl, C_{1-3} alkoxy, C_{1-3} deuteroalkoxy or C_{1-3} haloalkoxy;

each R^3 is independently selected from hydrogen, deuterium or halogen;

M_1 is N or CH;

W_2 is N or CH;

x, y and z are each independently 0, 1 or 2;

wherein the base is an organic base or an inorganic base, and the organic base is selected from diethylamine, diethanolamine, triethylamine, triethanolamine, choline hydroxide, tromethamine, meglumine, N-hydroxyethylmorpholine, piperazine, N-hydroxyethylpyrrolidine, N,N-dibenzylethylenediamine, 2-diethylaminoethanol, ethanolamine, betaine, L-arginine, lysine, phenethylbenzylamine, benzathine penicillin, dimethylaminoethanol, imidazole or a mixture thereof; and the inorganic base is selected from sodium hydroxide, potassium hydroxide, calcium hydroxide, magnesium hydroxide, zinc hydroxide, ammonia water or a mixture thereof.

2. The base salt of the compound or the stereoisomer thereof according to claim 1, wherein

each R_1 is independently selected from hydrogen, deuterium, fluorine, chlorine, methoxy or -OCD_3;

each R^2 is independently selected from hydrogen, deuterium, fluorine, chlorine or methyl;

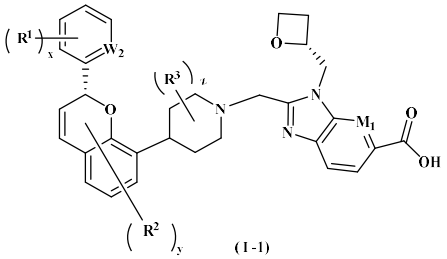
each R^3 is independently hydrogen;

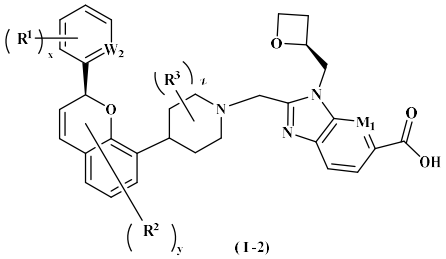
M_1 is CH;

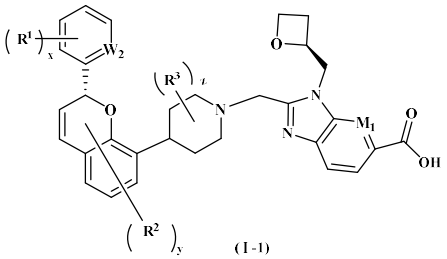
W_2 is CH; and

x, y and z are each independently 0, 1 or 2.

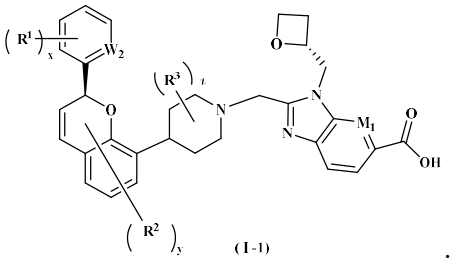
3. The base salt of the compound or the stereoisomer thereof according to claim 1, wherein the compound is further as represented by the following general formula (I-1) to (I-4):


(I-1)


(I-2)

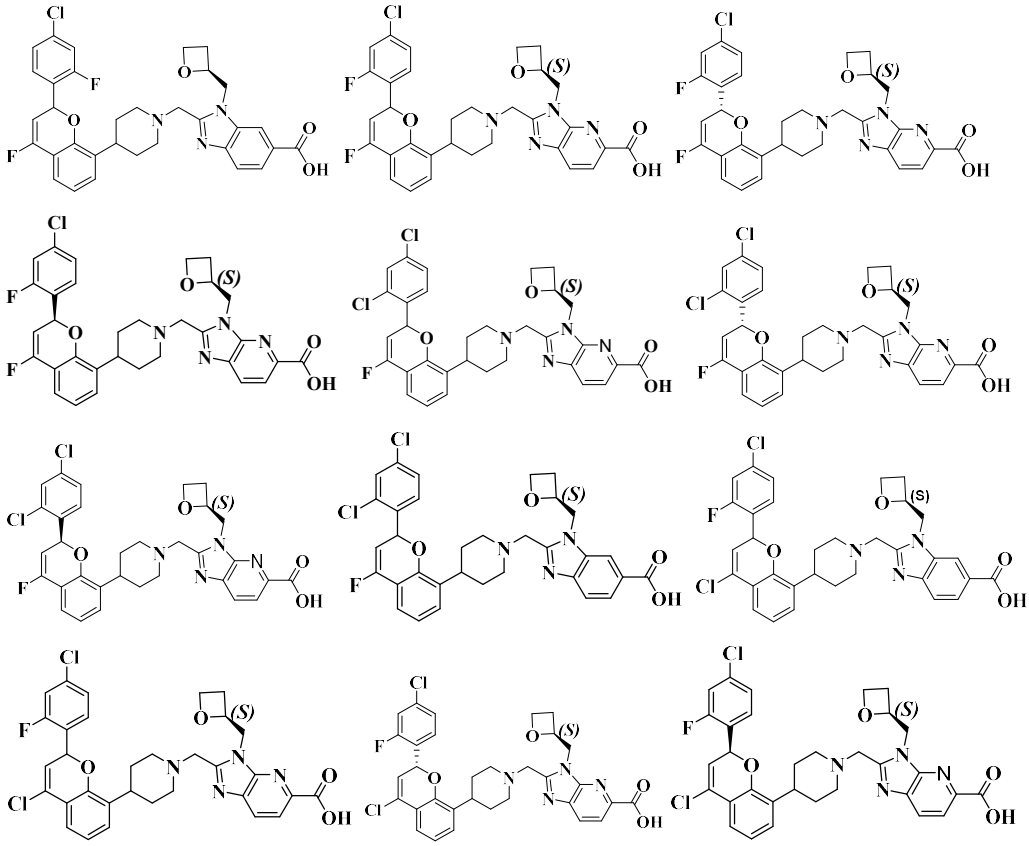

(I-1)

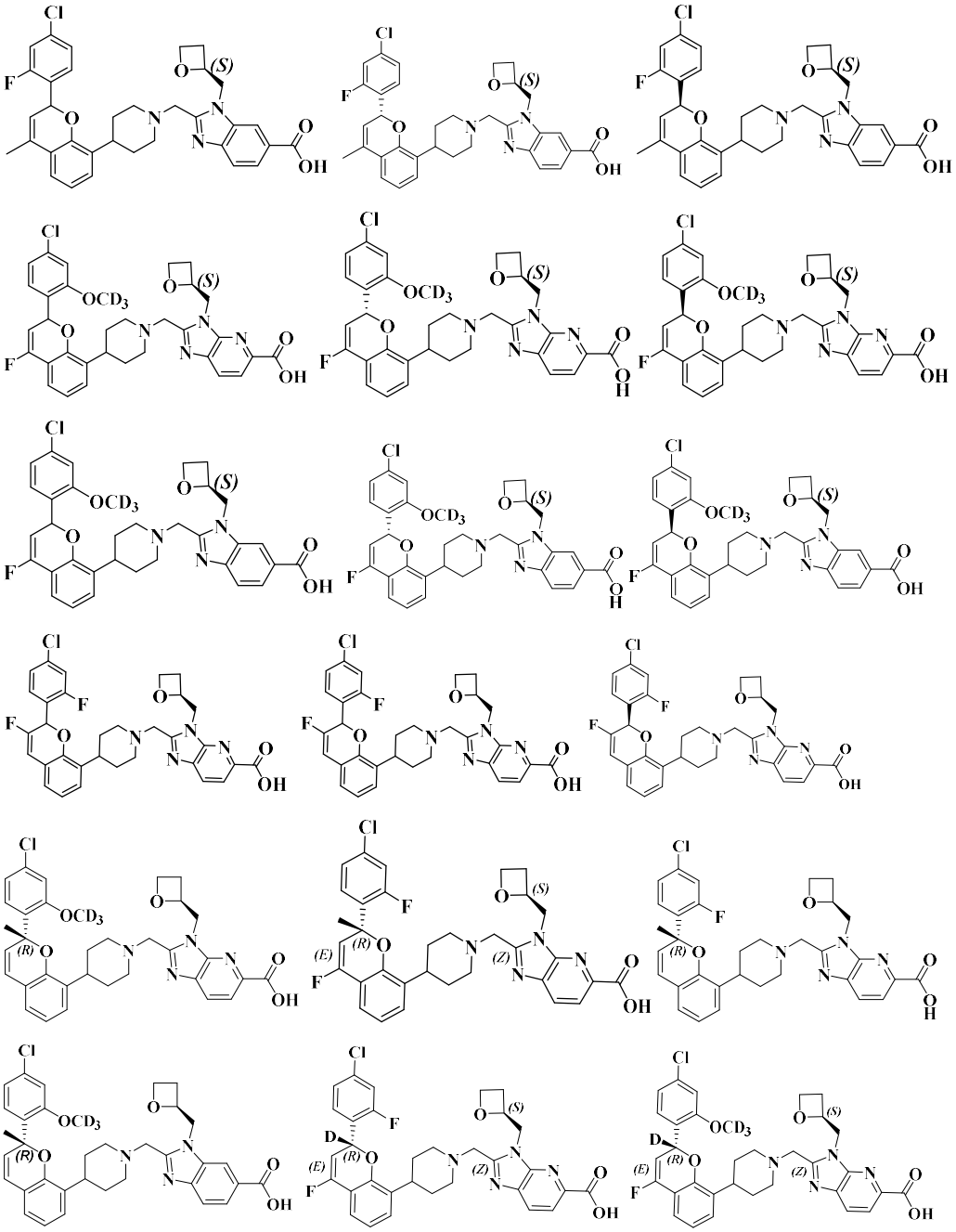
or

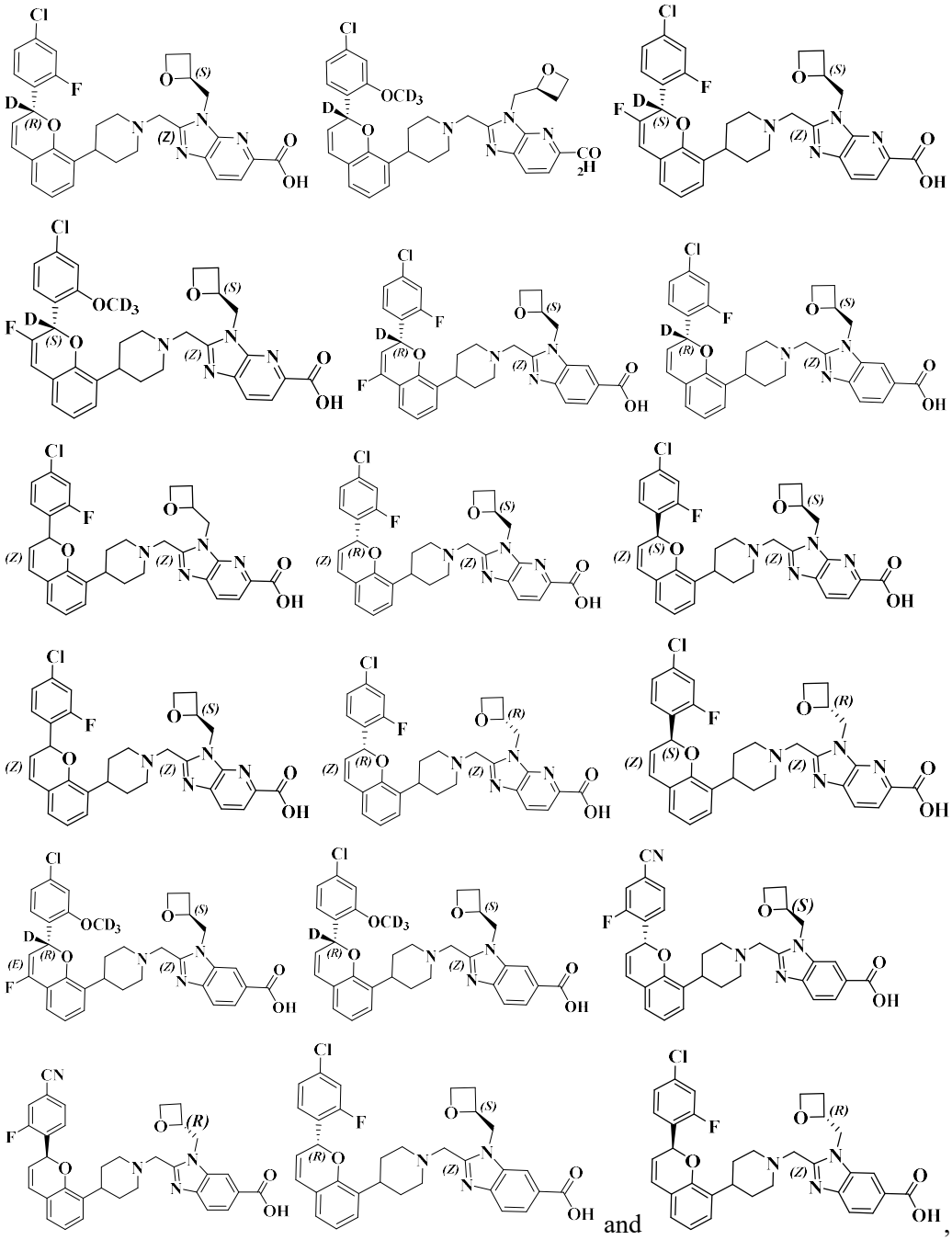

(I-1)

.

4. The base salt of the compound or the stereoisomer thereof according to claims 1-3, wherein the general formula is selected from the following compounds:







and

wherein the base is an organic base or an inorganic base, and the organic base is selected from diethylamine, diethanolamine, triethylamine, triethanolamine, choline hydroxide, tromethamine, or a mixture thereof; and the inorganic base is selected from sodium hydroxide, potassium hydroxide, calcium hydroxide, magnesium hydroxide, or a mixture thereof.

5. The base salt of the compound according to claim 4, wherein the compound is 2-((4-((R)-2-(4-chloro-2-fluorophenyl)-2H-chromen-8-yl)piperidin-1-yl)methyl)-3-(((S)-oxetan-2-yl)methyl)-1H-

benzo[d]imidazole-6-carboxylic acid, wherein the organic base is selected from diethylamine, diethanolamine, triethylamine, triethanolamine, choline hydroxide, tromethamine or a mixture thereof; and the inorganic base is selected from sodium hydroxide, potassium hydroxide, calcium hydroxide, magnesium hydroxide, or a mixture thereof.

6. The base salt of the compound according to any one of claims 1-5, wherein the number of the base is 0.5-3, preferably 0.5, 1, 1.5, 2, 2.5 or 3, further preferably 0.5, 1, 2 or 3, and even further preferably 1.
7. The base salt of the compound according to any one of claims 1-5, wherein the base salt is a hydrate or an anhydrate, preferably an anhydrate;
   when the base salt is a hydrate, the number of water molecules is 0.2-3, preferably 0.2, 0.5, 1, 1.5, 2, 2.5 or 3, and more preferably 0.5, 1, 2 or 3.
8. The base salt of the compound according to claim 4, wherein the base salt of 2-((4-((R)-2-(4-chloro-2-fluorophenyl)-2H-chromen-8-yl)piperidin-1-yl)methyl)-3-(((S)-oxetan-2-yl)methyl)-1H-benzo[d]imidazole-6-carboxylic acid is in a crystal form.
9. The base salt of the compound according to claim 8, wherein the crystal form of the base salt of 2-((4-((R)-2-(4-chloro-2-fluorophenyl)-2H-chromen-8-yl)piperidin-1-yl)methyl)-3-(((S)-oxetan-2-yl)methyl)-1H-benzo[d]imidazole-6-carboxylic acid is selected from crystal forms A to E of tromethamine salt, wherein:
   the X-ray powder diffraction pattern of the crystal form A of tromethamine salt has a characteristic peak at 2θ of 7.7±0.2°, or has a characteristic peak at 2θ of 9.8±0.2°, or has a characteristic peak at 2θ of 10.8±0.2°, or has a characteristic peak at 2θ of 11.6±0.2°, or has a characteristic peak at 2θ of 14.0±0.2°, or has a characteristic peak at 2θ of 14.5±0.2°, or has a characteristic peak at 2θ of 14.8±0.2°, or has a characteristic peak at 2θ of 15.1±0.2°, or has a characteristic peak at 2θ of 15.9±0.2°, or has a characteristic peak at 2θ of 18.0±0.2°, or has a characteristic peak at 2θ of 18.7±0.2°, or has a characteristic peak at 2θ of 19.3±0.2°, or has a characteristic peak at 2θ of 20.0±0.2°, or has a characteristic peak at 2θ of 20.5±0.2°, or has a characteristic peak at 2θ of 21.1±0.2°, or has a characteristic peak at 2θ of 22.6±0.2°, or has a characteristic peak at 2θ of 23.7±0.2°, or has a characteristic peak at 2θ of 25.1±0.2°; preferably, the X-ray powder diffraction pattern has characteristic peaks at any 2, 4, 6, 8, 10 or 12 of the above-mentioned 2θ;
   the X-ray powder diffraction pattern of the crystal form B of tromethamine salt has a characteristic peak at 2θ of 8.2±0.2°, or has a characteristic peak at 2θ of 10.1±0.2°, or has a characteristic peak at 2θ of 12.3±0.2°, or has a characteristic peak at 2θ of 14.4±0.2°, or has a characteristic peak at 2θ of 14.8±0.2°, or has a characteristic peak at 2θ of 16.0±0.2°, or has a

characteristic peak at 2θ of 16.2±0.2°, or has a characteristic peak at 2θ of 17.5±0.2°, or has a characteristic peak at 2θ of 17.7±0.2°, or has a characteristic peak at 2θ of 18.3±0.2°, or has a characteristic peak at 2θ of 18.7±0.2°, or has a characteristic peak at 2θ of 19.7±0.2°, or has a characteristic peak at 2θ of 20.5±0.2°, or has a characteristic peak at 2θ of 20.9±0.2°, or has a characteristic peak at 2θ of 21.9±0.2°, or has a characteristic peak at 2θ of 22.1±0.2°, or has a characteristic peak at 2θ of 22.4±0.2°, or has a characteristic peak at 2θ of 24.7±0.2°; preferably, the X-ray powder diffraction pattern has characteristic peaks at any 2, 4, 6, 8, 10 or 12 of the above-mentioned 2θ;

the X-ray powder diffraction pattern of the crystal form C of tromethamine salt has a characteristic peak at 2θ of 3.6±0.2°, or has a characteristic peak at 2θ of 7.1±0.2°, or has a characteristic peak at 2θ of 9.7±0.2°, or has a characteristic peak at 2θ of 10.6±0.2°, or has a characteristic peak at 2θ of 13.5±0.2°, or has a characteristic peak at 2θ of 14.1±0.2°, or has a characteristic peak at 2θ of 15.0±0.2°, or has a characteristic peak at 2θ of 16.0±0.2°, or has a characteristic peak at 2θ of 16.5±0.2°, or has a characteristic peak at 2θ of 17.1±0.2°, or has a characteristic peak at 2θ of 17.6±0.2°, or has a characteristic peak at 2θ of 19.0±0.2°, or has a characteristic peak at 2θ of 19.7±0.2°, or has a characteristic peak at 2θ of 20.8±0.2°, or has a characteristic peak at 2θ of 21.8±0.2°, or has a characteristic peak at 2θ of 22.3±0.2°, or has a characteristic peak at 2θ of 23.1±0.2°, or has a characteristic peak at 2θ of 26.4±0.2°, or has a characteristic peak at 2θ of 28.3±0.2°; preferably, the X-ray powder diffraction pattern has characteristic peaks at any 2, 4, 6, 8, 10 or 12 of the above-mentioned 2θ;

the X-ray powder diffraction pattern of the crystal form D of tromethamine salt has a characteristic peak at 2θ of 7.4±0.2°, or has a characteristic peak at 2θ of 7.7±0.2°, or has a characteristic peak at 2θ of 9.8±0.2°, or has a characteristic peak at 2θ of 10.8±0.2°, or has a characteristic peak at 2θ of 11.6±0.2°, or has a characteristic peak at 2θ of 13.1±0.2°, or has a characteristic peak at 2θ of 14.0±0.2°, or has a characteristic peak at 2θ of 14.5±0.2°, or has a characteristic peak at 2θ of 15.1±0.2°, or has a characteristic peak at 2θ of 15.4±0.2°, or has a characteristic peak at 2θ of 15.8±0.2°, or has a characteristic peak at 2θ of 17.9±0.2°, or has a characteristic peak at 2θ of 18.8±0.2°, or has a characteristic peak at 2θ of 19.3±0.2°, or has a characteristic peak at 2θ of 20.0±0.2°, or has a characteristic peak at 2θ of 20.5±0.2°, or has a characteristic peak at 2θ of 21.2±0.2°, or has a characteristic peak at 2θ of 21.8±0.2°, or has a characteristic peak at 2θ of 23.3±0.2°; preferably, the X-ray powder diffraction pattern has characteristic peaks at any 2, 4, 6, 8, 10 or 12 of the above-mentioned 2θ;

the X-ray powder diffraction pattern of the crystal form E of tromethamine salt has a characteristic peak at 2θ of 4.3±0.2°, or has a characteristic peak at 2θ of 6.3±0.2°, or has a

characteristic peak at 2θ of 8.6±0.2°, or has a characteristic peak at 2θ of 9.3±0.2°, or has a characteristic peak at 2θ of 13.6±0.2°, or has a characteristic peak at 2θ of 14.1±0.2°, or has a characteristic peak at 2θ of 17.7±0.2°, or has a characteristic peak at 2θ of 18.5±0.2°, or has a characteristic peak at 2θ of 18.9±0.2°, or has a characteristic peak at 2θ of 20.2±0.2°, or has a characteristic peak at 2θ of 20.5±0.2°, or has a characteristic peak at 2θ of 21.4±0.2°, or has a characteristic peak at 2θ of 21.9±0.2°, or has a characteristic peak at 2θ of 22.4±0.2°, or has a characteristic peak at 2θ of 23.4±0.2°, or has a characteristic peak at 2θ of 23.9±0.2°, or has a characteristic peak at 2θ of 25.2±0.2°; preferably, the X-ray powder diffraction pattern has characteristic peaks at any 2, 4, 6, 8, 10 or 12 of the above-mentioned 2θ.

10. The crystal form of tromethamine salt according to claim 8, wherein

the X-ray powder diffraction pattern of the crystal form A of tromethamine salt has a characteristic peak at one or more of 2θ of 7.7±0.2°, 9.8±0.2°, 14.0±0.2° or 15.1±0.2°, preferably at 2 to 4 of the above-mentioned 2θ, more preferably at 3 or 4 of the above-mentioned 2θ, and most preferably at 4 of the above-mentioned 2θ; optionally, further, the X-ray powder diffraction pattern can further have a characteristic peak at one or more of 2θ of 14.5±0.2°, 18.7±0.2°, 19.3±0.2°, 20.0±0.2°, 20.5±0.2° or 21.1±0.2°, preferably at 2, 3, 4 or 6 of the above-mentioned 2θ;

the X-ray powder diffraction pattern of the crystal form B of tromethamine salt has a characteristic peak at one or more of 2θ of 10.1±0.2°, 14.4±0.2°, 18.7±0.2° or 21.9±0.2°; preferably at 2 to 4 of the above-mentioned 2θ, more preferably at 3 or 4 of the above-mentioned 2θ, and most preferably at 4 of the above-mentioned 2θ; optionally, further, the X-ray powder diffraction pattern can further have a characteristic peak at one or more of 2θ of 8.2±0.2°, 12.3±0.2°, 14.8±0.2°, 19.7±0.2°, 20.5±0.2° or 22.1±0.2°, preferably at 2, 3, 4 or 6 of the above-mentioned 2θ;

the X-ray powder diffraction pattern of the crystal form C of tromethamine salt has a characteristic peak at one or more of 2θ of 3.6±0.2°, 7.1±0.2°, 9.7±0.2°, 14.1±0.2° or 16.0±0.2°; preferably at 2 to 4 of the above-mentioned 2θ, more preferably at 3 or 4 of the above-mentioned 2θ, and most preferably at 4 of the above-mentioned 2θ; optionally, further, the X-ray powder diffraction pattern can further have a characteristic peak at one or more of 2θ of 15.0±0.2°, 16.5±0.2°, 17.1±0.2°, 17.6±0.2°, 19.7±0.2° or 20.8±0.2°, preferably at 2, 3, 4 or 6 of the above-mentioned 2θ;

the X-ray powder diffraction pattern of the crystal form D of tromethamine salt has a characteristic peak at one or more of 2θ of 7.4±0.2°, 9.8±0.2°, 13.1±0.2° or 14.0±0.2°; preferably at 2 to 4 of the above-mentioned 2θ, more preferably at 3 or 4 of the above-mentioned 2θ, and

most preferably at 4 of the above-mentioned 2θ; optionally, further, the X-ray powder diffraction pattern can further have a characteristic peak at one or more of 2θ of 7.7±0.2°, 15.1±0.2°, 17.9±0.2°, 18.8±0.2°, 19.3±0.2° or 20.0±0.2°, preferably at 2, 3, 4 or 6 of the above-mentioned 2θ;

the X-ray powder diffraction pattern of the crystal form E of tromethamine salt has a characteristic peak at one or more of 2θ of 4.3±0.2°, 6.3±0.2°, 13.6±0.2° or 18.9±0.2°; preferably at 2 to 4 of the above-mentioned 2θ, more preferably at 3 or 4 of the above-mentioned 2θ, and most preferably at 4 of the above-mentioned 2θ; optionally, further, the X-ray powder diffraction pattern can further have a characteristic peak at one or more of 2θ of 8.6±0.2°, 14.1±0.2°, 17.7±0.2°, 20.2±0.2°, 20.5±0.2° or 22.4±0.2°, preferably at 2, 3, 4 or 6 of the above-mentioned 2θ.

11. The crystal form of tromethamine salt according to claim 8, wherein

the X-ray powder diffraction pattern of the crystal form A of tromethamine salt has characteristic peaks at 2θ of 9.8±0.2° and 14.0±0.2°; preferably, the X-ray powder diffraction pattern further has characteristic peaks at 2θ of 7.7±0.2° and 15.1±0.2°; more preferably, the X-ray powder diffraction pattern further has characteristic peaks at 2θ of 18.7±0.2°, 19.3±0.2°, 20.0±0.2° and 21.1±0.2°; further preferably, the X-ray powder diffraction pattern further has characteristic peaks at 2θ of 14.5±0.2° and 20.5±0.2°; more further preferably, the X-ray powder diffraction pattern further has a characteristic peak at one or more of 10.8±0.2°, 11.6±0.2°, 18.0±0.2° and 22.6±0.2°;

the X-ray powder diffraction pattern of the crystal form B of tromethamine salt has characteristic peaks at 2θ of 10.1±0.2° and 14.4±0.2°; preferably, the X-ray powder diffraction pattern further has characteristic peaks at 2θ of 18.7±0.2° and 21.9±0.2°; more preferably, the X-ray powder diffraction pattern further has characteristic peaks at 2θ of 8.2±0.2°, 14.8±0.2°, 20.5±0.2° and 22.1±0.2°; further preferably, the X-ray powder diffraction pattern further has characteristic peaks at 2θ of 12.3±0.2° and 19.7±0.2°; more further preferably, the X-ray powder diffraction pattern further has a characteristic peak at one or more of 16.0±0.2°, 16.2±0.2°, 18.3±0.2° and 20.9±0.2°;

the X-ray powder diffraction pattern of the crystal form C of tromethamine salt has characteristic peaks at 2θ of 3.6±0.2° and 7.1±0.2°; preferably, the X-ray powder diffraction pattern further has characteristic peaks at 2θ of 9.7±0.2° and 14.1±0.2°; more preferably, the X-ray powder diffraction pattern further has characteristic peaks at 2θ of 15.0±0.2°, 16.0±0.2°, 16.5±0.2°, 17.6±0.2° and 20.8±0.2°; further preferably, the X-ray powder diffraction pattern further has characteristic peaks at 2θ of 17.1±0.2° and 19.7±0.2°; more further preferably, the X-ray powder diffraction pattern further has a characteristic peak at one or more of 13.5±0.2°, 19.0±0.2°, 21.8±0.2° and 26.4±0.2°;

the X-ray powder diffraction pattern of the crystal form D of tromethamine salt has characteristic peaks at 2θ of 9.8±0.2° and 14.0±0.2°; preferably, the X-ray powder diffraction pattern further has characteristic peaks at 2θ of 7.4±0.2° and 13.1±0.2°; more preferably, the X-ray powder diffraction pattern further has characteristic peaks at 2θ of 7.7±0.2°, 15.1±0.2°, 18.8±0.2° and 20.0±0.2°; further preferably, the X-ray powder diffraction pattern further has characteristic peaks at 2θ of 17.9±0.2° and 19.3±0.2°; more further preferably, the X-ray powder diffraction pattern further has a characteristic peak at one or more of 14.5±0.2°, 15.4±0.2°, 15.8±0.2° and 21.2±0.2°; the X-ray powder diffraction pattern of the crystal form E of tromethamine salt has characteristic peaks at 2θ of 6.3±0.2° and 13.6±0.2°; preferably, the X-ray powder diffraction pattern further has characteristic peaks at 2θ of 4.3±0.2° and 18.9±0.2°; more preferably, the X-ray powder diffraction pattern further has characteristic peaks at 2θ of 8.6±0.2°, 17.7±0.2°, 20.2±0.2° and 22.4±0.2°; further preferably, the X-ray powder diffraction pattern further has characteristic peaks at 2θ of 14.1±0.2° and 20.5±0.2°; more further preferably, the X-ray powder diffraction pattern further has a characteristic peak at one or more of 9.3±0.2°, 18.5±0.2°, 21.4±0.2° and 21.9±0.2°.

12. The crystal form of tromethamine salt according to claim 8, wherein
the X-ray powder diffraction pattern of the form A is as shown in FIG. 1, and preferably, the form A has a DSC pattern as shown in FIG. 2, or has a TGA pattern as shown in FIG. 3;
the X-ray powder diffraction pattern of the form B at 2θ is as shown in FIG. 4, preferably, the form B has a DSC pattern as shown in FIG. 5;
the X-ray powder diffraction pattern of the form C at 2θ is as shown in FIG. 6, preferably, the form C has a DSC pattern as shown in FIG. 7, or has a TGA pattern as shown in FIG. 8;
the X-ray powder diffraction pattern of the form D at 2θ is as shown in FIG. 9, preferably, the form D has a DSC pattern as shown in FIG. 10;
and the X-ray powder diffraction pattern of the form E at 2θ is as shown in FIG. 11, preferably, the form E has a DSC pattern as shown in FIG. 12.

13. The crystal form of tromethamine salt according to claim 8, wherein the positions of diffraction peaks with the top ten relative peak intensities in the X-ray powder diffraction patterns of the crystal form A, the crystal form B, the crystal form C, the crystal form D and the crystal form E have a 2θ deviation of ±0.2° to ±0.5°, preferably ±0.2° to ±0.3°, and more preferably ±0.2° from the corresponding positions of diffraction peaks in the FIG. 1, FIG. 4, FIG. 6, FIG. 9 and FIG. 11.

14. A method for preparing the base salt of the compound according to any one of claims 1-13, wherein the method specifically comprises the following steps:
1) weighing an appropriate amount of a free acid and dissolving the free acid in a good solvent;

2) weighing an appropriate amount of a counter-ion base and dissolving the counter-ion base in an organic solvent; wherein the amount of the counter-ion base is preferably 1.0 to 1.5 equivalents;
3) combining the above two solutions, and stirring the combined solution to allow precipitation, or dropwise adding a poor solvent followed by the stirring to allow precipitation; and
4) subjecting the mixture to rapid centrifugation or standing to evaporate to dryness so as to obtain a target product;
wherein:
the good solvent is selected from acetone, tetrahydrofuran, ethyl formate, ethyl acetate, 2-methyl-tetrahydrofuran, 2-butanone, n-butanol, 1,4-dioxane, isobutanol, N,N-dimethylformamide, N,N-dimethylacetamide, n-propanol or tert-butanol; preferably 2-methyl-tetrahydrofuran, ethyl acetate, 2-butanone, acetone or ethyl formate;
the organic solvent is selected from methanol, ethanol, ethyl acetate, dichloromethane, acetone, n-hexane, petroleum ether, benzene, toluene, chloroform, acetonitrile, carbon tetrachloride, dichloroethane, tetrahydrofuran, 2-methyl-tetrahydrofuran, 2-butanone, 3-pentanone, heptane, methyl tert-butyl ether, isopropyl ether, 1,4-dioxane, tert-butanol, or N,N-dimethylformamide; preferably methanol, ethanol, or acetonitrile; the above good solvent and organic solution must be miscible when used;
the poor solvent is selected from heptane, methyl tert-butyl ether, cyclohexane, toluene, isopropyl ether, and ethyl acetate; preferably methyl tert-butyl ether and isopropyl ether;
the counter-ion base is an organic base or an inorganic base, and the organic base is selected from diethylamine, diethanolamine, triethylamine, triethanolamine, choline hydroxide, tromethamine, meglumine, N-hydroxyethylmorpholine, piperazine, N-hydroxyethylpyrrolidine, N,N-dibenzylethylenediamine, 2-diethylaminoethanol, ethanolamine, betaine, L-arginine, lysine, phenethylbenzylamine, benzathine penicillin, dimethylaminoethanol, imidazole or a mixture thereof; preferably, diethylamine, diethanolamine, triethylamine, triethanolamine, choline hydroxide, tromethamine, or a mixture thereof; further preferably, tromethamine; the inorganic base is selected from sodium hydroxide, potassium hydroxide, calcium hydroxide, magnesium hydroxide, zinc hydroxide, ammonia water or a mixture thereof, preferably sodium hydroxide, potassium hydroxide, calcium hydroxide, magnesium hydroxide or a mixture thereof;
alternatively,
1) weighing an appropriate amount of a free acid, and suspending the free acid with a poor solvent;

2) weighing an appropriate amount of a counter-ion base and dissolving the counter-ion base in an organic solvent; wherein the amount of the counter-ion base is preferably 1.0 to 1.5 equivalents;

3) combining the above two solutions and stirring the combined solution to allow dissolution, followed by continue stirring;

4) subjecting the mixture to rapid centrifugation or standing to evaporate to dryness so as to obtain a target product;

wherein:

the poor solvent is selected from ethanol, ethyl acetate, ethyl formate, isopropanol, isopropyl acetate, methyl tert-butyl ether, dichloromethane, methanol, acetonitrile, chlorobenzene, benzene, toluene, n-butanol, isobutanol or 3-pentanone; preferably, ethanol, ethyl acetate, isopropanol and isopropyl acetate;

the organic solvent is selected from methanol, ethanol, ethyl acetate, dichloromethane, acetone, n-hexane, petroleum ether, benzene, toluene, chloroform, acetonitrile, carbon tetrachloride, dichloroethane, tetrahydrofuran, 2-methyl-tetrahydrofuran, 2-butanone, 3-pentanone, heptane, methyl tert-butyl ether, isopropyl ether, 1,4-dioxane, tert-butanol, or N,N-dimethylformamide; preferably methanol, ethanol, or acetonitrile; the above good solvent and organic solution must be miscible when used;

the counter-ion base is an organic base or an inorganic base, and the organic base is selected from diethylamine, diethanolamine, triethylamine, triethanolamine, choline hydroxide, tromethamine, meglumine, N-hydroxyethylmorpholine, piperazine, N-hydroxyethylpyrrolidine, N,N-dibenzylethylenediamine, 2-diethylaminoethanol, ethanolamine, betaine, L-arginine, lysine, phenethylbenzylamine, benzathine penicillin, dimethylaminoethanol, imidazole or a mixture thereof; preferably, diethylamine, diethanolamine, triethylamine, triethanolamine, choline hydroxide, tromethamine, or a mixture thereof; further preferably, tromethamine; the inorganic base is selected from sodium hydroxide, potassium hydroxide, calcium hydroxide, magnesium hydroxide, zinc hydroxide, ammonia water or a mixture thereof, preferably sodium hydroxide, potassium hydroxide, calcium hydroxide, magnesium hydroxide or a mixture thereof;

alternatively,

1) weighing an appropriate amount of the base salt of the compound, and suspending the base salt with a poor solvent preferably at a suspension density of 50-200 mg/mL;

2) shaking the obtained suspension at a certain temperature for a certain time, preferably at a temperature of 25-50°C for preferably 1-15 days;

3) quickly centrifuging the suspension obtained above, removing a supernatant, placing a remaining solid in a vacuum drying oven and drying to a constant weight to afford a target product;

wherein:

the poor solvent is selected from dichloromethane, 1,4-dioxane, acetonitrile, chlorobenzene, benzene, toluene, acetone, ethyl acetate, water, 88% acetone, isopropyl acetate, 3-pentanone, ethyl formate, tetrahydrofuran, 2-methyl-tetrahydrofuran, isopropanol, n-butanol, isobutanol, n-propanol, methyl tert-butyl ether, n-heptane, tert-butanol or 2-butanone.

15. A pharmaceutical composition comprising a therapeutically effective amount of the base salt or the crystal form thereof of the compound or the stereoisomer thereof according to any one of claims 1 to 14, and one or more pharmaceutically acceptable carriers, diluents or excipients.
16. The base salt or the crystal form thereof of the compound or the stereoisomer thereof according to any one of claims 1 to 14, and the pharmaceutical composition according to claim 15, comprising a therapeutically effective amount of the base salt or the crystal form thereof, and the therapeutically effective amount includes 0.0001-99%, 0.0001-95%, 0.0001-90%, 0.0001-85%, 0.0001-80%, 0.0001-75%, 0.0001-70%, 0.001-60%, 0.001-55%, 0.01-50%, 0.01-40%, 0.01-30%, 0.01-20%, 0.01-10% or 0.01-5%.
17. Use of the base salt or the crystal form thereof of the compound or the stereoisomer thereof according to any one of claims 1 to 14, or the pharmaceutical composition according to claim 15 in the preparation of a GLP-1 receptor agonist drug.
18. Use of the base salt or the crystal form thereof of the compound or the stereoisomer thereof according to any one of claims 1 to 14, or the pharmaceutical composition according to claim 15 in the preparation of a drug for treating metabolism related diseases, wherein preferably, the metabolism related diseases are selected from diabetes, obesity or non-alcohol steatohepatitis related diseases or other related diseases caused by diabetes, obesity or non-alcoholic steatohepatitis.
19. The base salt or the crystal form thereof of the compound or the stereoisomer thereof according to any one of claims 1 to 14, or the pharmaceutical composition according to claim 15 for use in therapy.