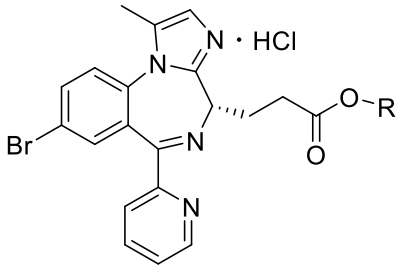
What is claimed is:

1. A crystalline form of the hydrochloride of a benzodiazepine derivative of Formula I,



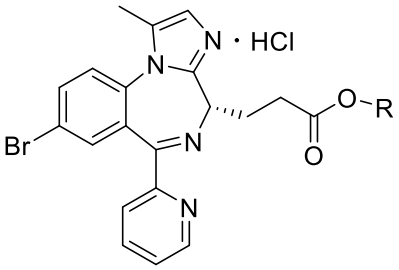
Formula I

wherein R is ethyl, and it has an X-ray powder diffraction pattern with the following 2θ values measured using CuKα radiation: about 6.87, 7.38, 9.53, 13.65, 18.71, 22.13, 22.67, 25.10, 27.25, 29.30±0.2 degrees.

2. The crystal form according to claim 1, wherein the X-ray powder diffraction pattern further shows the following 2θ values measured using CuKα radiation: about 14.96, 15.43, 20.23, 20.67, 21.13, 23.52, 28.22, 31.26±0.2 degrees.

3. The crystal form according to claim 1 or 2, wherein the crystal form has an X-ray powder diffraction pattern substantially as shown in any one of FIGs. 5-8.

4. A crystalline form of the hydrochloride of a benzodiazepine derivative of Formula I,



Formula I

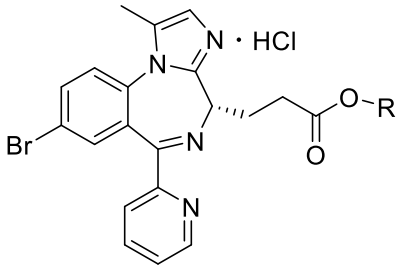
wherein R is ethyl, and the crystal form has an X-ray powder diffraction pattern with the following 2θ values measured using CuKα radiation: about 7.41, 9.24, 12.71, 13.64, 15.06, 18.30, 18.72, 21.59, 22.18, 25.74±0.2 degrees.

5. The crystal form according to claim 4, wherein the X-ray powder diffraction

pattern further shows the following 2θ values measured using CuKα radiation: about 9.52, 11.69, 20.90, 22.60, 23.65, 24.26, 26.40, 28.43, 29.35±0.2 degrees.

6. The crystal for according to claim 4 or 5, wherein the crystal form has an X-ray powder diffraction pattern substantially as shown in FIG. 9.

7. The crystalline form of the hydrochloride of a benzodiazepine derivative of Formula I,



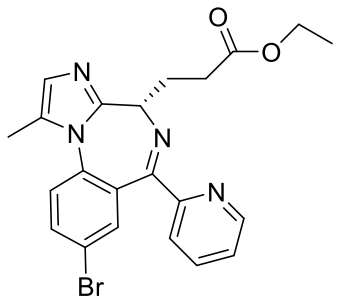
Formula I

wherein R is ethyl, and the crystal form has an X-ray powder diffraction pattern with the following 2θ values measured using CuKα radiation: about 6.84, 7.37, 9.53, 13.66, 22.63, 25.57, 29.28, 31.26±0.2 degrees.

8. The crystal form according to claim 7, wherein the X-ray powder diffraction pattern further shows the following 2θ values measured using CuKα radiation: about 15.43, 19.07, 22.16, 34.25±0.2 degrees.

9. The crystal from according to claim 7 or 8, wherein the crystal form has an X-ray powder diffraction pattern substantially as shown in any one of FIGs. 10-13.

10. A method for preparing the crystal form according to any one of claims 1 to 9, comprising the following steps: dissolving the free base of the benzodiazepine derivative of the following Formula II-2 in an organic solvent 1, adding HCl donor A wherein $[H^+]$ is equimolar to the free base, to form a salt at a temperature of -20 to 60°C, after decolorizing the crude salt, crystallizing it in a crystallization solvent 1 at a temperature of -60 to 80°C, to obtain the crystal form of the hydrochloride of the benzodiazepine derivative of Formula I,



Formula II-2

wherein the crystallization solvent 1 comprises methanol, ethanol, n-propanol, isopropanol, n-butanol, iso-butanol, ethyl ether, isopropyl ether, methyl tert-butyl ether, or a combination thereof.

11. The method according to claim 10, wherein the organic solvent 1 is an alcohol solvent, such as methanol, ethanol, n-propanol, isopropanol, n-butanol, isobutanol; an ester solvent, such as methyl acetate, ethyl acetate, propyl acetate, isopropyl acetate, butyl acetate; a ketone solvent, such as acetone and butanone; or a mixture thereof.

12. The method according to claim 10, wherein the HCl donor A is an amino acid hydrochloride, such as glycine hydrochloride, alanine hydrochloride, valine hydrochloride; a HCl-anhydrous alcohol solution, that is, an alcohol solution of dry HCl gas, such as dry HCl-methanol solution, dry HCl-ethanol solution, dry HCl-isopropanol solution; or a solution B that can generate HCl, such as acetyl chloride-methanol solution, acetyl chloride-ethanol solution, propionyl chloride-ethanol solution, acetyl chloride-isopropanol solution.

13. The method according to claim 12, wherein the HCl donor A is an amino acid hydrochloride, and the crystal form of the hydrochloride of the benzodiazepine derivative has an amount of amino acid of 0%-8% (w/w).

14. The method according to claim 12, wherein the HCl donor A is a HCl-anhydrous alcohol solution or a solution B that can generate HCl, and the ratio of amount of substance (molar ratio) of the free base of the benzodiazepine derivative to the HCl donor A (calculated by $[H^+]$) is 1:0.4 - 1; the HCl donor A is an amino acid hydrochloride, and the ratio of amount of substance (molar ratio) of the free base of

the benzodiazepine derivative to the amino acid hydrochloride is 1:1-10.

15. The method according to claim 10, wherein the temperature for forming a salt is -10 to 30°C, and the temperature for crystallizing is -20 to 60°C.

16. A pharmaceutical composition comprising the crystal form according to any one of claims 1 to 9, and a pharmaceutically acceptable excipient, carrier and/or other auxiliary materials.

17. The crystal form according to any one of claims 1 to 9 or the pharmaceutical composition according to claim 16 for use as intravenous anesthetics.

18. Use of the crystal form according to any one of claims 1 to 9 in manufacturing intravenous anesthetics.