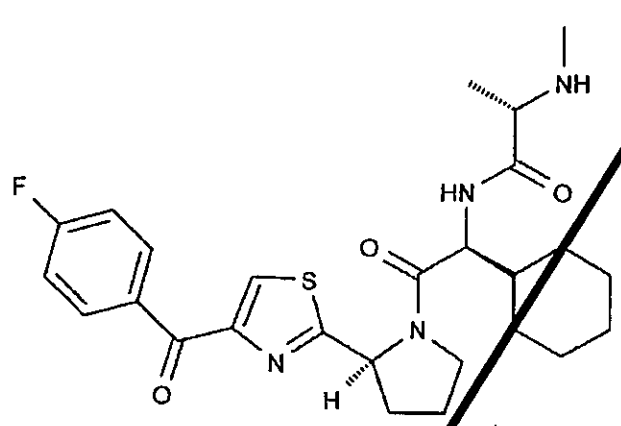
CLAIMS

We claim:

Claim 1. Crystalline hemihydrate Form H_A of (S)-N-((S)-1-cyclohexyl-2-{(S)-2-[4-(4-fluoro-benzoyl)-thiazol-2-yl]-pyrrolidin-1-yl}-2-oxo-ethyl)-2-methylamino-propionamide, described by Formula (I):



(I)

Compound (I).

Claim 2. Crystalline hemihydrate Form H_A of Compound (I) characterized by a powder x-ray diffraction pattern comprising three or more 2Θ values selected from the group consisting of 8.3± 0.2, 9.5± 0.2, 13.5± 0.2, 17.3± 0.2, 18.5± 0.2, and 18.9 ± 0.2, at ambient temperature.

Claim 3. Crystalline hemihydrate Form H_A of Compound (I) characterized by a powder x-ray diffraction pattern at ambient temperature, substantially in accordance with that shown in FIG 1.

Claim 4. Crystalline hemihydrate Form H_A of Compound (I) characterized by a differential scanning calorimetry (DSC) thermogram substantially in accordance with that shown in FIG. 2.

Claim 5. Crystalline hemihydrate Form H_A of Compound (I) characterized by a thermo gravimetric analysis (TGA) diagram substantially in accordance with that shown in FIG. 2.

Claim 6. Crystalline Form A of Compound (I) characterized by a powder x-ray diffraction pattern comprising three or more 2Θ values selected from the group consisting of 5.3 ± 0.2, 6.7 ± 0.2, 9.1 ± 0.2, 13.4 ± 0.2, 13.6 ± 0.2, 15.0 ± 0.2, 15.3 ± 0.2, 17.4 ± 0.2, 18.2 ± 0.2, 18.7 ± 0.2, 18.9 ± 0.2, 20.2 ± 0.2, 21.3 ± 0.2, 21.8 ± 0.2, 23.0 ± 0.2, 23.5 ± 0.2, 24.6 ± 0.2, and 27.6 ± 0.2, at ambient temperature.

Claim 7. Crystalline Form A of Compound (I) characterized by a powder x-ray diffraction pattern at ambient temperature, substantially in accordance with that shown in FIG 1.

Claim 8. Crystalline Form A of Compound (I) characterized by a differential scanning calorimetry (DSC) thermogram substantially in accordance with that shown in FIG. 3.

Claim 9. Crystalline Form A of Compound (I) characterized by a thermo gravimetric analysis (TGA) diagram substantially in accordance with that shown in FIG. 3.

Claim 10. Crystalline Form B of Compound (I) characterized by a powder x-ray diffraction pattern comprising three or more 2Θ values selected from the group consisting of 3.8 ± 0.2, 7.7 ± 0.2, 13.8 ± 0.2, 14.6 ± 0.2, 15.4 ± 0.2, 17.6 ± 0.2, 19.1 ± 0.2, 19.2 ± 0.2, 19.4 ± 0.2, 20.0 ± 0.2, 20.7 ± 0.2, 20.9 ± 0.2, and 22.8 ± 0.2.

Claim 11. Crystalline Form B of Compound (I) characterized by a powder x-ray diffraction pattern at ambient temperature substantially in accordance with that shown in FIG 1.

Claim 12. Crystalline Form B of Compound (I) characterized by a differential scanning calorimetry (DSC) thermogram substantially in accordance with that shown in FIG. 4.

Claim 13. Crystalline Form B of Compound (I) characterized by a thermo gravimetric analysis (TGA) diagram substantially in accordance with that shown in FIG. 4.

Claim 14. Crystalline Form C of Compound (I) characterized by a powder x-ray diffraction pattern comprising three or more 2Θ values selected from the group consisting of 5.8 ± 0.2, 7.7 ± 0.2, 9.9 ± 0.2, 13.0 ± 0.2, 14.3 ± 0.2, 15.5 ± 0.2, 17.5 ± 0.2, 19.4 ± 0.2, 20.0 ± 0.2, 22.9 ± 0.2, and 24.8 ± 0.2, at ambient temperature.

Claim 15. Crystalline Form C of Compound (I) characterized by a powder x-ray diffraction pattern at ambient temperature (i.e., at temperature from about 20°C to 25°C), substantially in accordance with that shown in FIG 1.

Claim 16. Crystalline Form C of Compound (I) characterized by a differential scanning calorimetry (DSC) thermogram substantially in accordance with that shown in FIG. 5.

Claim 17. Crystalline Form C of Compound (I) characterized by a thermo gravimetric analysis (TGA) diagram substantially in accordance with that shown in FIG. 5.

Claim 18. Crystalline Form D of Compound (I) characterized by a powder x-ray diffraction pattern comprising three or more 2Θ values selected from the group consisting of 6.5 ± 0.2, 8.6 ± 0.2, 11.3 ± 0.2, 11.9 ± 0.2, 13.1 ± 0.2, 14.2 ± 0.2, 15.1 ± 0.2, 17.4 ± 0.2, 19.6 ± 0.2, 19.9 ± 0.2, 20.4 ± 0.2, 21.7 ± 0.2, 25.6 ± 0.2, and 31.7 ± 0.2, at ambient temperature.

Claim 19. Crystalline Form D of Compound (I) characterized by a powder x-ray diffraction pattern at ambient temperature, substantially in accordance with that shown in FIG 1.

Claim 20. Crystalline Form D of Compound (I) characterized by a differential scanning calorimetry (DSC) thermogram substantially in accordance with that shown in FIG. 6.

Claim 21. Crystalline Form D of Compound (I) characterized by a thermo gravimetric analysis (TGA) diagram substantially in accordance with that shown in FIG. 6.

Claim 22. A pharmaceutical formulation comprising active ingredient (S)-N-((S)-1-cyclohexyl-2-{(S)-2-[4-(4-fluoro-benzoyl)-thiazol-2-yl]-pyrrolidin-1-yl}-2-oxo-ethyl)-2-methylamino-propionamide or a pharmaceutically acceptable salt thereof in amount higher than 100mg, and pharmaceutically acceptable excipients there of.

Claim 23. The formulation of claim 22, wherein (S)-N-((S)-1-cyclohexyl-2-{(S)-2-[4-(4-fluoro-benzoyl)-thiazol-2-yl]-pyrrolidin-1-yl}-2-oxo-ethyl)-2-methylamino-propionamide is in amount higher than 125 mg.

Claim 24. The formulation of claim 22, wherein (S)-N-((S)-1-cyclohexyl-2-{(S)-2-[4-(4-fluoro-benzoyl)-thiazol-2-yl]-pyrrolidin-1-yl}-2-oxo-ethyl)-2-methylamino-propionamide is in amount higher than 200 mg.

Claim 25. The formulation of claim 22, wherein (S)-N-((S)-1-cyclohexyl-2-{(S)-2-[4-(4-fluoro-benzoyl)-thiazol-2-yl]-pyrrolidin-1-yl}-2-oxo-ethyl)-2-methylamino-propionamide is in amount higher than 250 mg.

Claim 26. The formulation of claim 22, wherein (S)-N-((S)-1-cyclohexyl-2-{(S)-2-[4-(4-fluoro-benzoyl)-thiazol-2-yl]-pyrrolidin-1-yl}-2-oxo-ethyl)-2-methylamino-propionamide is in amount higher than 300 mg.

Claim 27. The formulation of claim 22, wherein (S)-N-((S)-1-cyclohexyl-2-{(S)-2-[4-(4-fluoro-benzoyl)-thiazol-2-yl]-pyrrolidin-1-yl}-2-oxo-ethyl)-2-methylamino-propionamide is in amount higher than 400 mg.

Claim 28. The formulation of claim 22, wherein (S)-N-((S)-1-cyclohexyl-2-{(S)-2-[4-(4-fluoro-benzoyl)-thiazol-2-yl]-pyrrolidin-1-yl}-2-oxo-ethyl)-2-methylamino-propionamide is in amount higher than 500 mg.

Claim 29. The formulation of claim 22, made by wet granulation.

Claim 30. The formulation of claim 22, made by dry granulation.

Claim 31. The formulation of claim 22 further comprising a surfactant.

Claim 32. The formulation of claim 22 further comprising an acid.

Claim 33. The formulation of claim 22 further comprising an antioxidant.

Claim 34. The formulation of claim 22 wherein the pharmaceutical formulation is a solid oral dosage form, and the (S)-N-((S)-1-cyclohexyl-2-{(S)-2-[4-(4-fluoro-benzoyl)-thiazol-2-yl]-pyrrolidin-1-yl}-2-oxo-ethyl)-2-methylamino-propionamide or its salt can be in small particle form with a median particle size of about 10 nm to about 40 microns.

Claim 35. The pharmaceutical formulation of claim 22, further comprising a disintegrant or super disintegrant.

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Claim 36. The pharmaceutical formulation of claim 22, further comprising a glidant, a lubricant, or both a glidant and a lubricant.

Claim 37. The pharmaceutical formulation of claim 22, wherein the active ingredient is more than 40% of the total formulation.

Claim 38. The pharmaceutical formulation of claim 22, wherein the active ingredient is more than 50% of the total formulation.

Claim 39. The pharmaceutical formulation of claim 22, wherein the active ingredient is more than 60% of the total formulation.

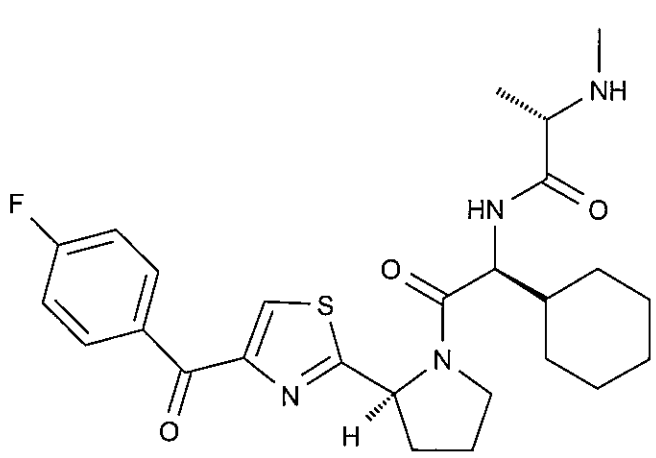
Claim 40. The pharmaceutical formulation of claim 22, wherein the active ingredient is more than 70% of the total formulation.

Claim 41. The pharmaceutical formulation of claim 22, wherein the active ingredient is more than 80% of the total formulation.

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CLAIMS

1. Crystalline hemihydrate Form H_A of (S)-N-((S)-1-cyclohexyl-2-{(S)-2-[4-(4-fluoro-benzoyl)-thiazol-2-yl]-pyrrolidin-1-yl}-2-oxo-ethyl)-2-methylamino-propionamide, described by Formula (I):



(I)

Compound of Formula (I).

2. The crystalline hemihydrate Form H_A of Claim 1 having a powder x-ray diffraction pattern comprising three or more 2Θ values selected from the group consisting of 8.3± 0.2, 9.5± 0.2, 13.5± 0.2, 17.3± 0.2, 18.5± 0.2, and 18.9 ± 0.2, at ambient temperature.