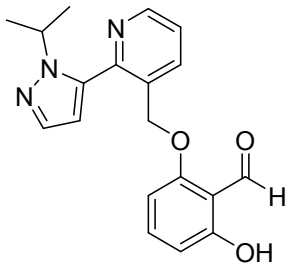
CLAIMS

1. A crystalline ansolvate of Compound 1:



Compound 1

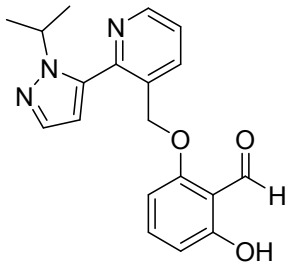
wherein the crystalline ansolvate comprises Form II, wherein Form II is characterized by an X-ray powder diffraction pattern (Cu Kα radiation) comprising at least one X-ray powder diffraction peak (Cu Kα radiation) selected from 13.37°, 14.37°, 19.95° and 23.92°2θ (each ±0.2 °2θ).

2. The crystalline ansolvate of claim 1, wherein Form II is characterized by an X-ray powder diffraction pattern (Cu Kα radiation) comprising at least two X-ray powder diffraction peaks (Cu Kα radiation) selected from 13.37°, 14.37°, 19.95° and 23.92°2θ (each ±0.2 °2θ).

3. The crystalline ansolvate of claim 1, wherein Form II is characterized by an X-ray powder diffraction pattern (Cu Kα radiation) comprising at least three X-ray powder diffraction peaks (Cu Kα radiation) selected from 13.37°, 14.37°, 19.95° and 23.92°2θ (each ±0.2 °2θ).

4. The crystalline ansolvate of claim 1, wherein Form II is characterized by an X-ray powder diffraction pattern (Cu Kα radiation) comprising X-ray powder diffraction peaks (Cu Kα radiation) at 13.37°, 14.37°, 19.95° and 23.92°2θ (each ±0.2 °2θ).

5. A crystalline ansolvate of Compound 1:



Compound 1

wherein the crystalline ansolvate comprises Form II, wherein Form II is characterized by an X-ray powder diffraction pattern (Cu Kα radiation) substantially similar to that of FIG. 5.

6. The crystalline ansolvate of any one of the preceding claims, wherein the crystalline ansolvate comprises less than 25 mole % of crystalline Form I, crystalline Material N or amorphous forms of Compound 1;

wherein

Form I is characterized by an X-ray powder diffraction pattern (Cu Kα radiation) comprising X-ray powder diffraction peaks (Cu Kα radiation) at 12.82°, 15.74°, 16.03°, 16.63°, 17.60°, 25.14°, 25.82° and 26.44°2θ (each ±0.2 °2θ); and

Material N is characterized by an X-ray powder diffraction pattern (Cu Kα radiation) comprising X-ray powder diffraction peaks (Cu Kα radiation) at 11.65°, 11.85°, 12.08°, 16.70°, 19.65° and 23.48°2θ (each ±0.2 °2θ).

7. The crystalline ansolvate of claim 6, wherein the crystalline ansolvate comprises less than 10 mole % of crystalline Form I, crystalline Material N or amorphous forms of Compound 1.

8. The crystalline ansolvate of claim 6, wherein the crystalline ansolvate comprises less than 5 mole % of crystalline Form I, crystalline Material N or amorphous forms of Compound 1.

9. The crystalline ansolvate of claim 7, wherein the crystalline ansolvate comprises less than 5 mole % of crystalline Form I.

10. The crystalline ansolvate of any one of the preceding claims, wherein the crystalline ansolvate is substantially free of a solvated polymorph of Compound 1.

11. The crystalline ansolvate of any one of the preceding claims, wherein the crystalline ansolvate is substantially free of other ansolvate polymorphs of Compound 1.

12. A pharmaceutical composition comprising a pharmaceutically acceptable excipient and the crystalline ansolvate of any one of claims 1-12.

13. The pharmaceutical composition of claim 12, wherein the crystalline ansolvate comprises less than 10 mole % of crystalline Form I, crystalline Material N or amorphous forms of Compound 1.

14. The pharmaceutical composition of claim 12, wherein the crystalline ansolvate comprises less than 5 mole % of crystalline Form I.

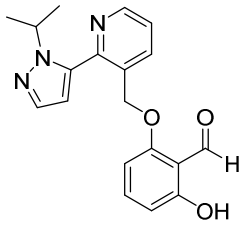
15. Use of a crystalline ansolvate of any one of claims 1-11 or a pharmaceutical composition of any one of claim 12 to 14 for use in the manufacture of a medicament for increasing oxygen affinity of hemoglobin S in a subject.

16. Use of a crystalline ansolvate of any one of claims 1-11 or a pharmaceutical composition of any one of claim 12 to 14 for use in the manufacture of a medicament for treating sickle cell disease.

17. Use of a crystalline ansolvate of any one of claims 1-11 or a pharmaceutical composition of any one of claim 12 to 14 for use in the manufacture of a medicament for treating cancer, a pulmonary disorder, stroke, high altitude sickness, an ulcer, a pressure sore, Alzheimer's disease, acute respiratory disease syndrome, or a wound.

18. Use of a crystalline ansolvate of any one of claims 1-11 or a pharmaceutical composition of any one of claim 12 to 14 for use in the manufacture of a medicament for treating a pulmonary disorder.

19. Crystalline ansolvate Form II of Compound 1:



Compound 1

wherein the crystalline ansolvate Form II is characterized by an X-ray powder diffraction pattern (Cu Kα radiation) comprising at least two X-ray powder diffraction peak selected from 13.37°, 14.37°, 19.95° and 23.92°2θ (each ±0.2 °2θ),

20. The crystalline ansolvate Form II of claim 19, characterized by an X-ray powder diffraction pattern (Cu Kα radiation) comprising at least three X-ray powder diffraction peaks (Cu Kα radiation) are selected from 13.37°, 14.37°, 19.95° and 23.92°2θ (each ±0.2 °2θ).

21. The crystalline ansolvate Form II of claim 19, characterized by an X-ray powder diffraction pattern (Cu Kα radiation) comprising X-ray powder diffraction peaks (Cu Kα radiation) at 13.37°, 14.37°, 19.95° and 23.92°2θ (each ±0.2 °2θ).

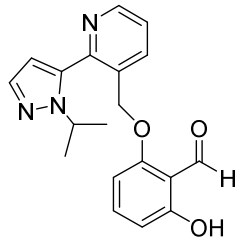
22. The crystalline ansolvate Form II of any one of claims 19 to 21, characterized by an X-ray powder diffraction pattern (Cu Kα radiation) comprising X-ray powder diffraction peaks at 5.62°, 12.85°, 12.97°, 13.37°, 14.37°, 15.31°, 16.09°, 16.45°, 16.75°, 16.96°, 19.95°, 20.22°, 23.18°, 23.92°, 24.40°, 24.73°, 24.99°, 25.12°, 25.39°, 25.70°, 26.19°, 26.72°, 27.02°, 27.34°, 28.44°2θ (each ±0.20°2θ).

23. Composition comprising crystalline ansolvate Form II of Compound 1 according to any one of claims 19 to 21 and less than 25 mole % of crystalline Form I of Compound 1, crystalline Material N of Compound 1or amorphous forms of Compound 1;
wherein Form I is characterized by an X-ray powder diffraction pattern (Cu Kα radiation) comprising X-ray powder diffraction peaks (Cu Kα radiation) at 12.82°, 15.74°, 16.03°, 16.63°, 17.60°, 25.14°, 25.82° and 26.44°2θ (each ±0.2 °2θ); and
Material N is characterized by an X-ray powder diffraction pattern (Cu Kα radiation) comprising X-ray powder diffraction peaks (Cu Kα radiation) at 11.65°, 11.85°, 12.08°, 16.70°, 19.65° and 23.48°2θ (each ±0.2 °2θ).

24. The composition of claim 23, wherein less than 10 mole % of Compound 1 is crystalline Form I, crystalline Material N or amorphous forms of Compound 1.

25. The composition of claim 23 wherein less than 5 mole % of Compound 1 is crystalline Form I.

26. A pharmaceutical composition comprising crystalline ansolvate Form II of Compound 1:



Compound 1

and a pharmaceutically acceptable excipient wherein the crystalline ansolvate Form II is characterized by an X-ray powder diffraction pattern comprising at least two X-ray powder diffraction peak (Cu Kα radiation) selected from 13.37°, 14.37°, 19.95° and 23.92°2θ (each ±0.2 °2θ).

27. A pharmaceutical composition comprising a pharmaceutically acceptable excipient and a crystalline ansolvate of Compound 1 wherein at least 90 mole % of Compound 1 is crystalline ansolvate Form II as characterized by any one of claims 19-22.

28. A pharmaceutical composition comprising a pharmaceutically acceptable excipient and a crystalline ansolvate of Compound 1 wherein at least 95 mole % of Compound 1 is crystalline ansolvate Form II as characterized by any one of claims 19-22.

29. Use of the crystalline ansolvate Form II of Compound 1 of any one of claims 19-22 or a pharmaceutical composition of claim 26, 27, or 28 in the manufacture of a medicament for treating sickle cell disease.

30. Use of the crystalline ansolvate Form II of Compound 1 of any one of claims 19-22 or a pharmaceutical composition of claim 26, 27, or 28 in the manufacture of a medicament for treating cancer, a pulmonary disorder, stroke, high altitude sickness, an ulcer, a pressure sore, Alzheimer's disease, acute respiratory disease syndrome, or a wound.

31. Use of the crystalline ansolvate Form II of Compound 1 of any one of claims 19-22 or a pharmaceutical composition of claim 26, 27, or 28 in the manufacture of a medicament for treating a pulmonary disorder.