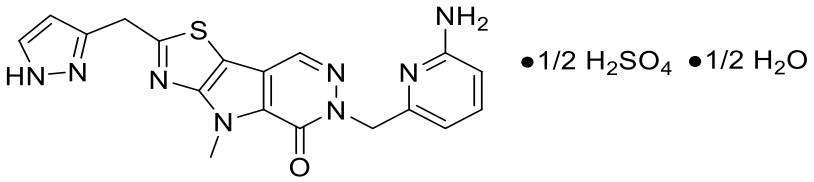
[0004] Compound **1** is currently being investigated in clinical trials for use in adult patients with sickle cell disease as well as in patients with anemia due to MDS (lower risk to intermediate risk MDS). See e.g., U.S. clinical trials identifiers NCT04536792 and NCT05490446.

SUMMARY

[0005] Provided herein are crystalline free base forms of Compound **1**.

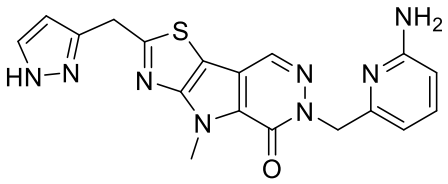
[0006] Also provided herein are crystalline salt forms of Compound **1**.

[0007] In one example, the crystalline salt form described herein is a hemi-hydrate hemi-sulfate salt of Compound **1**. In some examples the hemi-hydrate hemi-sulfate salt of Compound **1** is represented as



.

[0007a] In one aspect, the present disclosure relates to a crystalline form of a hemi-sulfate salt of Compound **1** having the structural formula:



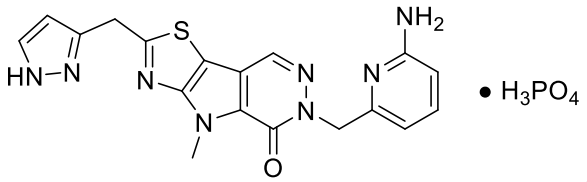
;

optionally, wherein the hemi-sulfate salt of Compound **1** is:

(a) a solvate; or

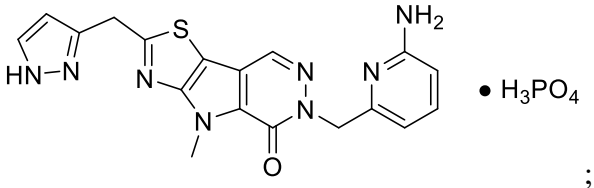
(b) is a hydrate.

[0008] In one example, the crystalline salt form described herein is a phosphate salt of Compound **1**. In some examples the phosphate salt of Compound **1** is represented as



.

[0008a] In another aspect, the present disclosure relates to a crystalline form of a phosphate salt of Compound **1** having the structural formula:



;

optionally, wherein the crystalline form is crystalline Form B, characterized by:

(a) at least two x-ray powder diffraction peaks at 2Θ angles selected from 10.2º(± 0.2°), 13.4º(± 0.2°), 13.6º(± 0.2°), 14.3º(± 0.2°), 16.8 º(± 0.2°), 20.3 º(± 0.2°), and 21.4º(± 0.2°);

(b) at least three x-ray powder diffraction peaks at 2Θ angles selected from 10.2º(± 0.2°), 13.4º(± 0.2°), 13.6º(± 0.2°), 14.3º(± 0.2°), 16.8 º(± 0.2°), 20.3 º(± 0.2°), and 21.4º(± 0.2°);

(c) at least four x-ray powder diffraction peaks at 2Θ angles selected from 10.2º(± 0.2°), 13.4º(± 0.2°), 13.6º(± 0.2°), 14.3º(± 0.2°), 16.8 º(± 0.2°), 20.3 º(± 0.2°), and 21.4º(± 0.2°);

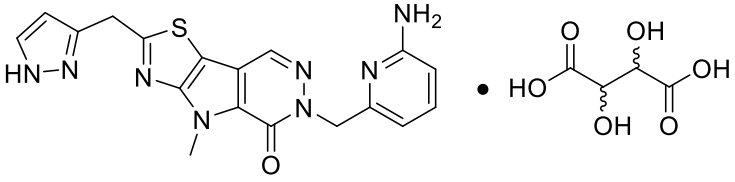
(d) at least five x-ray powder diffraction peaks at 2Θ angles selected from 10.2º(± 0.2°), 13.4º(± 0.2°), 13.6º(± 0.2°), 14.3º(± 0.2°), 16.8 º(± 0.2°), 20.3 º(± 0.2°), and 21.4º(± 0.2°);

(e) at least six x-ray powder diffraction peaks at 2Θ angles selected from 10.2º(± 0.2°), 13.4º(± 0.2°), 13.6º(± 0.2°), 14.3º(± 0.2°), 16.8 º(± 0.2°), 20.3 º(± 0.2°), and 21.4º(± 0.2°);

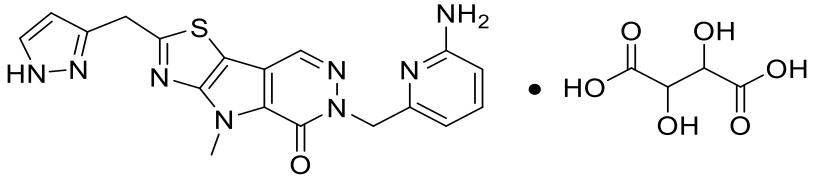
(f) x-ray powder diffraction peaks at 2Θ angles selected from 10.2º(± 0.2°), 13.4º(± 0.2°), 13.6º(± 0.2°), 14.3º(± 0.2°), 16.8 º(± 0.2°), 20.3 º(± 0.2°), and 21.4º(± 0.2°); or

(g) an x-ray powder diffraction pattern substantially the same as depicted in FIG. 4.

[0009] In one example, the crystalline salt form described herein is a DL-tartrate salt of Compound **1**. In some examples the DL-tartrate salt of Compound **1** is represented as

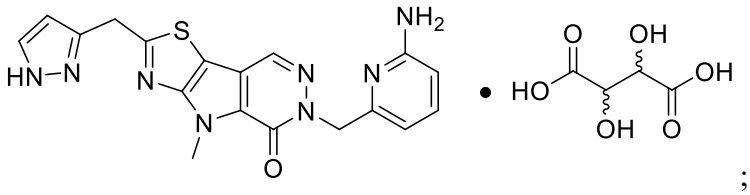


or as



.

[0009a] In another aspect, the present disclosure relates to a crystalline form of a tartrate salt of Compound **1** having the structural formula:



;

optionally, wherein the crystalline form is:

(i) crystalline Form C, characterized by:

(a) at least two x-ray powder diffraction peaks at 2Θ angles selected from 8.1º(± 0.2°), 13.3º(± 0.2°), 15.0º(± 0.2°), 20.4º(± 0.2°), 20.6 º(± 0.2°), 22.6 º(± 0.2°), and 25.3º(± 0.2°);

(b) at least three x-ray powder diffraction peaks at 2Θ angles selected from 8.1º(± 0.2°), 13.3º(± 0.2°), 15.0º(± 0.2°), 20.4º(± 0.2°), 20.6 º(± 0.2°), 22.6 º(± 0.2°), and 25.3º(± 0.2°);

(c) at least four x-ray powder diffraction peaks at 2Θ angles selected from 8.1º(± 0.2°), 13.3º(± 0.2°), 15.0º(± 0.2°), 20.4º(± 0.2°), 20.6 º(± 0.2°), 22.6 º(± 0.2°), and 25.3º(± 0.2°);

(d) at least five x-ray powder diffraction peaks at 2Θ angles selected from 8.1º(± 0.2°), 13.3º(± 0.2°), 15.0º(± 0.2°), 20.4º(± 0.2°), 20.6 º(± 0.2°), 22.6 º(± 0.2°), and 25.3º(± 0.2°);

(e) at least six x-ray powder diffraction peaks at 2Θ angles selected from 8.1º(± 0.2°), 13.3º(± 0.2°), 15.0º(± 0.2°), 20.4º(± 0.2°), 20.6 º(± 0.2°), 22.6 º(± 0.2°), and 25.3º(± 0.2°);

(f) by x-ray powder diffraction peaks at 2Θ angles selected from 8.1º(± 0.2°), 13.3º(± 0.2°), 15.0º(± 0.2°), 20.4º(± 0.2°), 20.6 º(± 0.2°), 22.6 º(± 0.2°), and 25.3º(± 0.2°); or

(g) an x-ray powder diffraction pattern substantially the same as depicted in FIG. 7;

(ii) crystalline Form F, characterized by:

(a) at least two x-ray powder diffraction peaks at 2Θ angles selected from 4.8º(± 0.2°), 9.6º(± 0.2°), 11.3º(± 0.2°), 14.5º(± 0.2°), 18.2º(± 0.2°), 19.3º(± 0.2°), 20.2º(± 0.2°), and 22.8º(± 0.2°);

(b) at least three x-ray powder diffraction peaks at 2Θ angles selected from 4.8º(± 0.2°), 9.6º(± 0.2°), 11.3º(± 0.2°), 14.5º(± 0.2°), 18.2º(± 0.2°), 19.3º(± 0.2°), 20.2º(± 0.2°), and 22.8º(± 0.2°);

(c) at least four x-ray powder diffraction peaks at 2Θ angles selected from 4.8º(± 0.2°), 9.6º(± 0.2°), 11.3º(± 0.2°), 14.5º(± 0.2°), 18.2º(± 0.2°), 19.3º(± 0.2°), 20.2º(± 0.2°), and 22.8º(± 0.2°);

(d) at least five x-ray powder diffraction peaks at 2Θ angles selected from 4.8º(± 0.2°), 9.6º(± 0.2°), 11.3º(± 0.2°), 14.5º(± 0.2°), 18.2º(± 0.2°), 19.3º(± 0.2°), 20.2º(± 0.2°), and 22.8º(± 0.2°);

(f) at least six x-ray powder diffraction peaks at 2Θ angles selected from 4.8º(± 0.2°), 9.6º(± 0.2°), 11.3º(± 0.2°), 14.5º(± 0.2°), 18.2º(± 0.2°), 19.3º(± 0.2°), 20.2º(± 0.2°), and 22.8º(± 0.2°);

(g) x-ray powder diffraction peaks at 2Θ angles selected from 4.8º(± 0.2°), 9.6º(± 0.2°), 11.3º(± 0.2°), 14.5º(± 0.2°), 18.2º(± 0.2°), 19.3º(± 0.2°), 20.2º(± 0.2°), and 22.8º(± 0.2°); or

(h) an x-ray powder diffraction pattern substantially the same as depicted in FIG. 42; or

(iii) crystalline Form G, characterized by:

(a) at least two x-ray powder diffraction peaks at 2Θ angles selected from 5.7º(± 0.2°), 7.2º(± 0.2°), 7.7º(± 0.2°), 11.3º(± 0.2°), 16.8º(± 0.2°), 18.3º(± 0.2°), and 20.1º(± 0.2°);

(b) at least three x-ray powder diffraction peaks at 2Θ angles selected from 5.7º(± 0.2°), 7.2º(± 0.2°), 7.7º(± 0.2°), 11.3º(± 0.2°), 16.8º(± 0.2°), 18.3º(± 0.2°), and 20.1º(± 0.2°);

(c) at least four x-ray powder diffraction peaks at 2Θ angles selected from 5.7º(± 0.2°), 7.2º(± 0.2°), 7.7º(± 0.2°), 11.3º(± 0.2°), 16.8º(± 0.2°), 18.3º(± 0.2°), and 20.1º(± 0.2°);

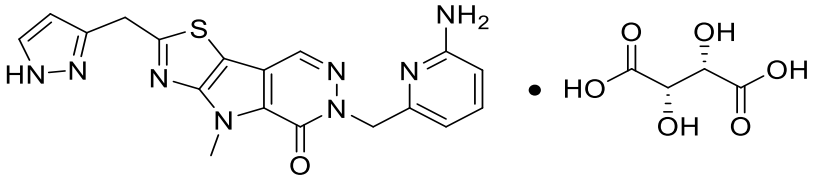
(d) at least five x-ray powder diffraction peaks at 2Θ angles selected from 5.7º(± 0.2°), 7.2º(± 0.2°), 7.7º(± 0.2°), 11.3º(± 0.2°), 16.8º(± 0.2°), 18.3º(± 0.2°), and 20.1º(± 0.2°);

(e) at least six x-ray powder diffraction peaks at 2Θ angles selected from 5.7º(± 0.2°), 7.2º(± 0.2°), 7.7º(± 0.2°), 11.3º(± 0.2°), 16.8º(± 0.2°), 18.3º(± 0.2°), and 20.1º(± 0.2°);

(f) x-ray powder diffraction peaks at 2Θ angles selected from 5.7º(± 0.2°), 7.2º(± 0.2°), 7.7º(± 0.2°), 11.3º(± 0.2°), 16.8º(± 0.2°), 18.3º(± 0.2°), and 20.1º(± 0.2°); or

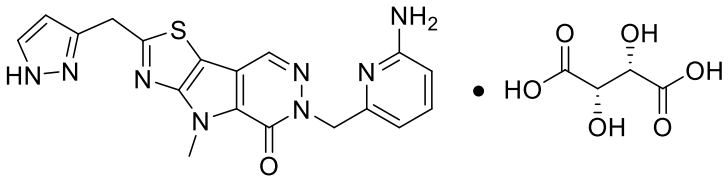
(g) an x-ray powder diffraction pattern substantially the same as depicted in FIG. 44.

[0010] In one example, the crystalline salt form described herein is an L-tartrate salt of Compound **1.** In some examples the L-tartrate salt of Compound **1** is represented as



.

[0010a] In another aspect, the present disclosure relates to a crystalline form of a tartrate salt of Compound **1** having the structural formula:



;

optionally, wherein the crystalline form is crystalline Form I, characterized by:

(a) at least two x-ray powder diffraction peaks at 2Θ angles selected from 8.0º(± 0.2°), 10.8º(± 0.2°), 13.8º(± 0.2°), 15.0º(± 0.2°), 16.0 º(± 0.2°), 16.7º(± 0.2°), and 25.2º(± 0.2°);

(b) at least three x-ray powder diffraction peaks at 2Θ angles selected from 8.0º(± 0.2°), 10.8º(± 0.2°), 13.8º(± 0.2°), 15.0º(± 0.2°), 16.0 º(± 0.2°), 16.7º(± 0.2°), and 25.2º(± 0.2°)

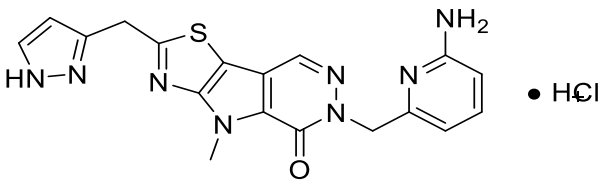
(c) at least four x-ray powder diffraction peaks at 2Θ angles selected from 8.0º(± 0.2°), 10.8º(± 0.2°), 13.8(± 0.2°), 15.0º(± 0.2°), 16.0 º(± 0.2°), 16.7º(± 0.2°), and 25.2º(± 0.2°);

(d) at least five x-ray powder diffraction peaks at 2Θ angles selected from 8.0º(± 0.2°), 10.8º(± 0.2°), 13.8º(± 0.2°), 15.0º(± 0.2°), 16.0 º(± 0.2°), 16.7º(± 0.2°), and 25.2º(± 0.2°);

(e) x-ray powder diffraction peaks at 2Θ angles selected from 8.0º(± 0.2°), 10.8º(± 0.2°), 13.8º(± 0.2°), 15.0º(± 0.2°), 16.0 º(± 0.2°), 16.7º(± 0.2°), and 25.2º(± 0.2°); or

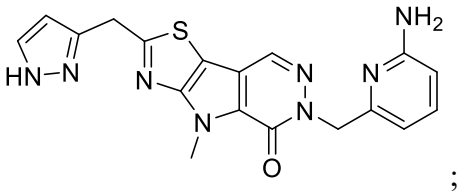
(f) an x-ray powder diffraction pattern substantially the same as depicted in FIG. 35.

In one example, the crystalline salt form described herein is a hydrochloride salt of Compound **1**. In some examples the hydrochloride salt of Compound **1** is represented as



.

[0010b] In another aspect, the present disclosure relates to a crystalline form of a hydrochloride salt of Compound **1** having the structural formula:



;

optionally, wherein the crystalline form is:

(a) crystalline Form D, characterized by:

(a) at least two x-ray powder diffraction peaks at 2Θ angles selected from 10.6º(± 0.2°), 14.4º(± 0.2°), 24.6º(± 0.2°), 24.8º(± 0.2°), 25.2 º(± 0.2°), and 27.0º(± 0.2°);

(b) at least three x-ray powder diffraction peaks at 2Θ angles selected from 10.6º(± 0.2°), 14.4º(± 0.2°), 24.6º(± 0.2°), 24.8º(± 0.2°), 25.2 º(± 0.2°), and 27.0º(± 0.2°);

(c) at least four x-ray powder diffraction peaks at 2Θ angles selected from 10.6º(± 0.2°), 14.4º(± 0.2°), 24.6º(± 0.2°), 24.8º(± 0.2°), 25.2 º(± 0.2°), and 27.0º(± 0.2°);

(d) at least five x-ray powder diffraction peaks at 2Θ angles selected from 10.6º(± 0.2°), 14.4º(± 0.2°), 24.6º(± 0.2°), 24.8º(± 0.2°), 25.2 º(± 0.2°), and 27.0º(± 0.2°);

(e) x-ray powder diffraction peaks at 2Θ angles selected from 10.6º(± 0.2°), 14.4º(± 0.2°), 24.6º(± 0.2°), 24.8º(± 0.2°), 25.2 º(± 0.2°), and 27.0º(± 0.2°); or

(f) an x-ray powder diffraction pattern substantially the same as depicted in FIG. 10 or FIG 27 or FIG 31;

(ii) crystalline Form J, characterized by:

(a) at least two x-ray powder diffraction peaks at 2Θ angles selected from 15.0º(± 0.2°), 15.6º(± 0.2°), 20.4(± 0.2°), 20.6º(± 0.2°), 21.1º(± 0.2°), 24.1º(± 0.2°), and 24.7º(± 0.2°);

(b) at least three x-ray powder diffraction peaks at 2Θ angles selected from 15.0º(± 0.2°), 15.6º(± 0.2°), 20.4(± 0.2°), 20.6º(± 0.2°), 21.1º(± 0.2°), 24.1º(± 0.2°), and 24.7º(± 0.2°);

(c) at least four x-ray powder diffraction peaks at 2Θ angles selected from 15.0º(± 0.2°), 15.6º(± 0.2°), 20.4(± 0.2°), 20.6º(± 0.2°), 21.1º(± 0.2°), 24.1º(± 0.2°), and 24.7º(± 0.2°);

(d) at least five x-ray powder diffraction peaks at 2Θ angles selected from 15.0º(± 0.2°), 15.6º(± 0.2°), 20.4(± 0.2°), 20.6º(± 0.2°), 21.1º(± 0.2°), 24.1º(± 0.2°), and 24.7º(± 0.2°);

(e) x-ray powder diffraction peaks at 2Θ angles selected from 15.0º(± 0.2°), 15.6º(± 0.2°), 20.4(± 0.2°), 20.6º(± 0.2°), 21.1º(± 0.2°), 24.1º(± 0.2°), and 24.7º(± 0.2°); or

(f) an x-ray powder diffraction pattern substantially the same as depicted in FIG. 46; or

(iii) crystalline Form K, characterized by:

(a) at least two x-ray powder diffraction peaks at 2Θ angles selected from 7.2º(± 0.2°), 9.5º(± 0.2°), 10.6(± 0.2°), 14.0º(± 0.2°), 17.4º(± 0.2°), 26.0º(± 0.2°), and 27.0º(± 0.2°);

(b) at least three x-ray powder diffraction peaks at 2Θ angles selected from 7.2º(± 0.2°), 9.5º(± 0.2°), 10.6(± 0.2°), 14.0º(± 0.2°), 17.4º(± 0.2°), 26.0º(± 0.2°), and 27.0º(± 0.2°);

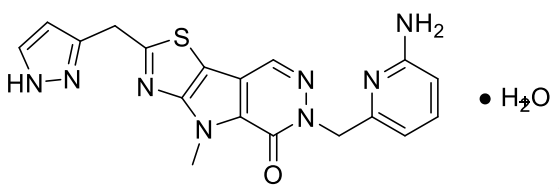
(c) at least four x-ray powder diffraction peaks at 2Θ angles selected from 7.2º(± 0.2°), 9.5º(± 0.2°), 10.6(± 0.2°), 14.0º(± 0.2°), 17.4º(± 0.2°), 26.0º(± 0.2°), and 27.0º(± 0.2°);

(d) at least five x-ray powder diffraction peaks at 2Θ angles selected from 7.2º(± 0.2°), 9.5º(± 0.2°), 10.6(± 0.2°), 14.0º(± 0.2°), 17.4º(± 0.2°), 26.0º(± 0.2°), and 27.0º(± 0.2°);

(e) by x-ray powder diffraction peaks at 2Θ angles selected from 7.2º(± 0.2°), 9.5º(± 0.2°), 10.6(± 0.2°), 14.0º(± 0.2°), 17.4º(± 0.2°), 26.0º(± 0.2°), and 27.0º(± 0.2°); or

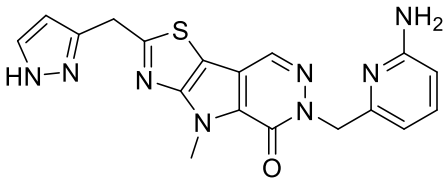
(f) an x-ray powder diffraction pattern substantially the same as depicted in FIG. 48.

[0011] In one example, the crystalline form described herein is a free base monohydrate form of Compound **1**. In some examples the free base monohydrate of Compound **1** is represented as



.

[0011a] In another aspect, the present disclosure relates to a crystalline free base of Compound **1** having the structural formula:



;

optionally, wherein the crystalline form is crystalline Form E, characterized by:

(a) at least two x-ray powder diffraction peaks at 2Θ angles selected from 11.6º(± 0.2°), 16.0º(± 0.2°), 16.8º(± 0.2°), 20.6º(± 0.2°), 23.8 º(± 0.2°), 26.0 º(± 0.2°), and 27.4º(± 0.2°);

(b) at least three x-ray powder diffraction peaks at 2Θ angles selected from 11.6º(± 0.2°), 16.0º(± 0.2°), 16.8º(± 0.2°), 20.6º(± 0.2°), 23.8 º(± 0.2°), 26.0 º(± 0.2°), and 27.4º(± 0.2°);

(c) at least four x-ray powder diffraction peaks at 2Θ angles selected from 11.6º(± 0.2°), 16.0º(± 0.2°), 16.8º(± 0.2°), 20.6º(± 0.2°), 23.8 º(± 0.2°), 26.0 º(± 0.2°), and 27.4º(± 0.2°);

(d) at least five x-ray powder diffraction peaks at 2Θ angles selected from 11.6º(± 0.2°), 16.0º(± 0.2°), 16.8º(± 0.2°), 20.6º(± 0.2°), 23.8 º(± 0.2°), 26.0 º(± 0.2°), and 27.4º(± 0.2°).;

(e) at least six x-ray powder diffraction peaks at 2Θ angles selected from 11.6º(± 0.2°), 16.0º(± 0.2°), 16.8º(± 0.2°), 20.6º(± 0.2°), 23.8 º(± 0.2°), 26.0 º(± 0.2°), and 27.4º(± 0.2°);

(f) x-ray powder diffraction peaks at 2Θ angles selected from 11.6º(± 0.2°), 16.0º(± 0.2°), 16.8º(± 0.2°), 20.6º(± 0.2°), 23.8 º(± 0.2°), 26.0 º(± 0.2°), and 27.4º(± 0.2°); or

(g) an x-ray powder diffraction pattern substantially the same as depicted in FIG. 12.

[0012] Also provided herein are pharmaceutical compositions comprising one or more of the described crystalline forms or an amorphous form of Compound **1**. Methods for the preparation of such forms and uses thereof, including their use for treating conditions such as, e.g., hemolytic anemia, sickle cell disease, and anemia due to MDS (very low risk MDS, low risk MDS, lower risk MDS and/or intermediate risk MDS) are also described.

[0012a] In another aspect, the present disclosure relates to a method for making a solid dispersion comprising:

(a) dissolving a crystalline form of Compound **1** as described herein and a polymer in a

solvent to form a feed solution; and

(b) removing the solvent to form the solid dispersion;

and optionally, wherein the crystalline form of Compound **1** used in the preparation is the crystalline hemi-hydrate hemi-sulfate salt, the crystalline free base, the crystalline hydrochloride salt, or the crystalline phosphate salt as described herein.

[0012b] In another aspect, the present disclosure relates to a pharmaceutical composition comprising:

(a) a crystalline form of Compound 1 as described herein and a pharmaceutically acceptable excipient; or

(b) amorphous Compound **1** and a pharmaceutically acceptable excipient.

[0012c] In another aspect, the present disclosure relates to use of the crystalline form of Compound **1** as described herein, or the pharmaceutical composition as described herein, in the manufacture of a medicament for:

(a) reducing 2,3-diphosphoglycerate levels in blood of a subject in need thereof;

(b) treating anemia in a subject in need thereof;

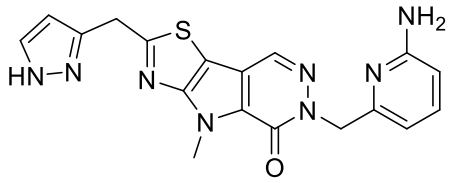
(c) treating hemolytic anemia in a subject in need thereof;

(d) treating sickle cell disease in a subject in need thereof; or

(e) increasing the amount of hemoglobin in a subject in need thereof.

[0012d] In another aspect, the present disclosure relates to a method of forming:

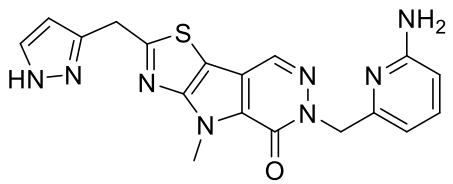
(a) a crystalline hemi-sulfate salt as described herein, the method comprising reacting a Compound **1**:



(**1**)

with H_2SO_4 in an alcoholic solution; or

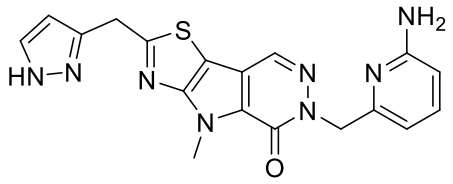
(b) a crystalline Phosphate salt as described herein, the method comprising reacting a Compound **1**:



(**1**)

with H_3PO_4 in a polar aprotic solution; or

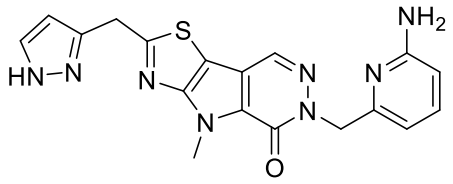
(c) a crystalline DL-tartrate salt as described herein, the method comprising reacting a Compound **1**:



(**1**)

with a solution comprising DL-tartaric acid and at least one polar aprotic solvent; or

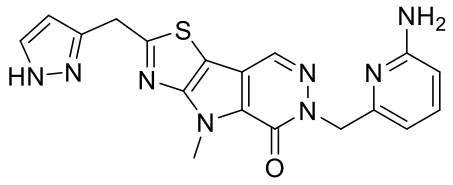
(d) a crystalline L-tartrate salt as described herein, the method comprising reacting a Compound **1**:



(**1**)

with a solution comprising L-tartaric acid in a solution; or

(e) a crystalline hydrochloride salt as described herein, the method comprising reacting a Compound **1**:



(**1**)

with a solution comprising hydrochloric acid and at least one polar aprotic solvent.

[0012e] In another aspect, the present disclosure relates to use of the crystalline form of Compound **1** as described herein, or the pharmaceutical composition as described herein, in the manufacture of a medicament for treating anemia associated with acquired pyruvate kinase deficiency in a subject with very low risk MDS, low risk MDS, lower risk MDS, and/or intermediate risk MDS, optionally, wherein the anemia is hemolytic anemia.

[0012f] In another aspect, the present disclosure relates to the crystalline form of Compound **1** as described herein, or the pharmaceutical composition as described herein, for use in therapy.

BRIEF DESCRIPTION OF THE FIGURES

[0013] **FIG. 1** depicts an X-ray powder diffraction pattern (XRPD) for crystalline hemi-hydrate hemi-sulfate salt Form A of Compound **1**.

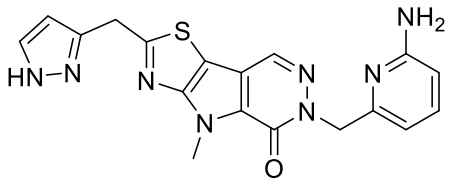
[0014] **FIG. 2** depicts the combined thermogravimetric analysis (TGA) thermogram and differential scanning calorimetry (DSC) thermogram for crystalline hemi-hydrate hemi-sulfate salt Form A of Compound **1**.

[0015] **FIG. 3** depicts the dynamic vapor sorption (DVS) isotherm for crystalline hemi-hydrate hemi-sulfate salt Form A of Compound **1**.

[0016] **FIG. 4** depicts an X-ray powder diffraction pattern for crystalline phosphate salt Form B of Compound **1**.

Listing of Claims:

1. A crystalline form of a hemi-sulfate salt of Compound **1** having the structural formula:



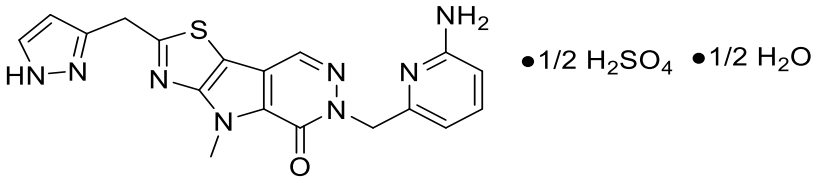
;

optionally, wherein the hemi-sulfate salt of Compound **1** is:

(a) a solvate; or

(b) is a hydrate.

2. The crystalline form of claim 1, wherein the hemi-sulfate salt of Compound **1** is a hemi-hydrate having the structural formula:



.

3. The crystalline form of claim 1 or 2, wherein the hemi-sulfate, hemi-hydrate salt of Compound **1** has a moisture content of about 1% to about 3% as measured by Karl-Fischer titration.

4. The crystalline form of any one of claims 1-3, wherein the crystalline form is:
(i) crystalline Form A, characterized by:

(a) at least two x-ray powder diffraction peaks at 2Θ angles selected from 9.8º(± 0.2°), 11.3º(± 0.2°), 13.6º(± 0.2°), 18.4º(± 0.2°), 22.8 º(± 0.2°), 23.3 º(± 0.2°), and 28.6º(± 0.2°);

(b) at least three x-ray powder diffraction peaks at 2Θ angles selected from 9.8º(± 0.2°), 11.3º(± 0.2°), 13.6º(± 0.2°), 18.4º(± 0.2°), 22.8 º(± 0.2°), 23.3 º(± 0.2°), and 28.6º(± 0.2°);

(c) at least four x-ray powder diffraction peaks at 2Θ angles selected from 9.8º(± 0.2°), 11.3º(± 0.2°), 13.6º(± 0.2°), 18.4º(± 0.2°), 22.8 º(± 0.2°), 23.3 º(± 0.2°), and 28.6º(± 0.2°);

(d) at least five x-ray powder diffraction peaks at 2Θ angles selected from 9.8º(± 0.2°), 11.3º(± 0.2°), 13.6º(± 0.2°), 18.4º(± 0.2°), 22.8 º(± 0.2°), 23.3 º(± 0.2°), and 28.6º(± 0.2°);

(e) x-ray powder diffraction peaks at 2Θ angles selected from 9.8º(± 0.2°), 11.3º(± 0.2°), 13.6º(± 0.2°), 18.4º(± 0.2°), 22.8 º(± 0.2°), 23.3 º(± 0.2°), and 28.6º(± 0.2°); or

(f) by an x-ray powder diffraction pattern substantially the same as depicted in FIG. 1; or

(ii) crystalline Form H, characterized by:

(a) at least two x-ray powder diffraction peaks at 2Θ angles selected from 6.9º(± 0.2°), 10.1º(± 0.2°), 16.6º(± 0.2°), 19.2º(± 0.2°), 19.7º(± 0.2°), 24.5 º(± 0.2°), and 26.5º(± 0.2°);

(b) at least three x-ray powder diffraction peaks at 2Θ angles selected from 6.9º(± 0.2°), 10.1º(± 0.2°), 16.6º(± 0.2°), 19.2º(± 0.2°), 19.7º(± 0.2°), 24.5 º(± 0.2°), and 26.5º(± 0.2°);

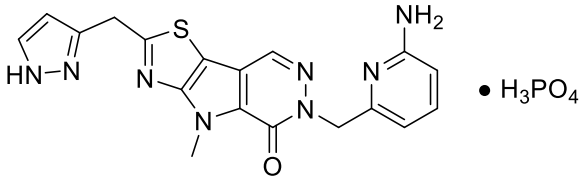
(c) at least four x-ray powder diffraction peaks at 2Θ angles selected from 6.9º(± 0.2°), 10.1º(± 0.2°), 16.6º(± 0.2°), 19.2º(± 0.2°), 19.7º(± 0.2°), 24.5 º(± 0.2°), and 26.5º(± 0.2°);

(d) at least five x-ray powder diffraction peaks at 2Θ angles selected from 6.9º(± 0.2°), 10.1º(± 0.2°), 16.6º(± 0.2°), 19.2º(± 0.2°), 19.7º(± 0.2°), 24.5 º(± 0.2°), and 26.5º(± 0.2°);

(e) x-ray powder diffraction peaks at 2Θ angles selected from 6.9º(± 0.2°), 10.1º(± 0.2°), 16.6º(± 0.2°), 19.2º(± 0.2°), 19.7º(± 0.2°), 24.5 º(± 0.2°), and 26.5º(± 0.2°); or

(f) by an x-ray powder diffraction pattern substantially the same as depicted in FIG. 39.

5. A crystalline form of a phosphate salt of Compound **1** having the structural formula:



;

optionally, wherein the crystalline form is crystalline Form B, characterized by:

(a) at least two x-ray powder diffraction peaks at 2Θ angles selected from 10.2º(± 0.2°), 13.4º(± 0.2°), 13.6º(± 0.2°), 14.3º(± 0.2°), 16.8 º(± 0.2°), 20.3 º(± 0.2°), and 21.4º(± 0.2°);

(b) at least three x-ray powder diffraction peaks at 2Θ angles selected from 10.2º(± 0.2°), 13.4º(± 0.2°), 13.6º(± 0.2°), 14.3º(± 0.2°), 16.8 º(± 0.2°), 20.3 º(± 0.2°), and 21.4º(± 0.2°);

(c) at least four x-ray powder diffraction peaks at 2Θ angles selected from 10.2º(± 0.2°), 13.4º(± 0.2°), 13.6º(± 0.2°), 14.3º(± 0.2°), 16.8 º(± 0.2°), 20.3 º(± 0.2°), and 21.4º(± 0.2°);

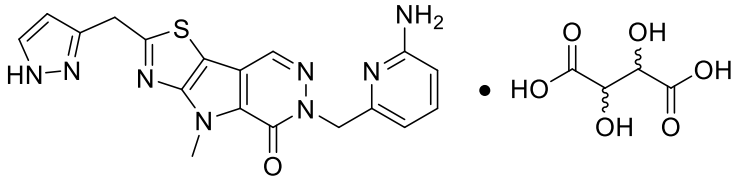
(d) at least five x-ray powder diffraction peaks at 2Θ angles selected from 10.2º(± 0.2°), 13.4º(± 0.2°), 13.6º(± 0.2°), 14.3º(± 0.2°), 16.8 º(± 0.2°), 20.3 º(± 0.2°), and 21.4º(± 0.2°);

(e) at least six x-ray powder diffraction peaks at 2Θ angles selected from 10.2º(± 0.2°), 13.4º(± 0.2°), 13.6º(± 0.2°), 14.3º(± 0.2°), 16.8 º(± 0.2°), 20.3 º(± 0.2°), and 21.4º(± 0.2°);

(f) x-ray powder diffraction peaks at 2Θ angles selected from 10.2º(± 0.2°), 13.4º(± 0.2°), 13.6º(± 0.2°), 14.3º(± 0.2°), 16.8 º(± 0.2°), 20.3 º(± 0.2°), and 21.4º(± 0.2°); or

(g) an x-ray powder diffraction pattern substantially the same as depicted in FIG. 4.

6. A crystalline form of a tartrate salt of Compound **1** having the structural formula:



;

optionally, wherein the crystalline form is:

(i) crystalline Form C, characterized by:

(a) at least two x-ray powder diffraction peaks at 2Θ angles selected from 8.1º(± 0.2°), 13.3º(± 0.2°), 15.0º(± 0.2°), 20.4º(± 0.2°), 20.6 º(± 0.2°), 22.6 º(± 0.2°), and 25.3º(± 0.2°);

(b) at least three x-ray powder diffraction peaks at 2Θ angles selected from 8.1º(± 0.2°), 13.3º(± 0.2°), 15.0º(± 0.2°), 20.4º(± 0.2°), 20.6 º(± 0.2°), 22.6 º(± 0.2°), and 25.3º(± 0.2°);

(c) at least four x-ray powder diffraction peaks at 2Θ angles selected from 8.1º(± 0.2°), 13.3º(± 0.2°), 15.0º(± 0.2°), 20.4º(± 0.2°), 20.6 º(± 0.2°), 22.6 º(± 0.2°), and 25.3º(± 0.2°);

(d) at least five x-ray powder diffraction peaks at 2Θ angles selected from 8.1º(± 0.2°), 13.3º(± 0.2°), 15.0º(± 0.2°), 20.4º(± 0.2°), 20.6 º(± 0.2°), 22.6 º(± 0.2°), and 25.3º(± 0.2°);

(e) at least six x-ray powder diffraction peaks at 2Θ angles selected from 8.1º(± 0.2°), 13.3º(± 0.2°), 15.0º(± 0.2°), 20.4º(± 0.2°), 20.6 º(± 0.2°), 22.6 º(± 0.2°), and 25.3º(± 0.2°);

(f) by x-ray powder diffraction peaks at 2Θ angles selected from 8.1º(± 0.2°), 13.3º(± 0.2°), 15.0º(± 0.2°), 20.4º(± 0.2°), 20.6 º(± 0.2°), 22.6 º(± 0.2°), and 25.3º(± 0.2°); or

(g) an x-ray powder diffraction pattern substantially the same as depicted in FIG. 7;

(ii) crystalline Form F, characterized by:

(a) at least two x-ray powder diffraction peaks at 2Θ angles selected from 4.8º(± 0.2°), 9.6º(± 0.2°), 11.3º(± 0.2°), 14.5º(± 0.2°), 18.2º(± 0.2°), 19.3º(± 0.2°), 20.2º(± 0.2°), and 22.8º(± 0.2°);

(b) at least three x-ray powder diffraction peaks at 2Θ angles selected from 4.8º(± 0.2°), 9.6º(± 0.2°), 11.3º(± 0.2°), 14.5º(± 0.2°), 18.2º(± 0.2°), 19.3º(± 0.2°), 20.2º(± 0.2°), and 22.8º(± 0.2°);

(c) at least four x-ray powder diffraction peaks at 2Θ angles selected from 4.8º(± 0.2°), 9.6º(± 0.2°), 11.3º(± 0.2°), 14.5º(± 0.2°), 18.2º(± 0.2°), 19.3º(± 0.2°), 20.2º(± 0.2°), and 22.8º(± 0.2°);

(d) at least five x-ray powder diffraction peaks at 2Θ angles selected from 4.8º(± 0.2°), 9.6º(± 0.2°), 11.3º(± 0.2°), 14.5º(± 0.2°), 18.2º(± 0.2°), 19.3º(± 0.2°), 20.2º(± 0.2°), and 22.8º(± 0.2°);

(f) at least six x-ray powder diffraction peaks at 2Θ angles selected from 4.8º(± 0.2°), 9.6º(± 0.2°), 11.3º(± 0.2°), 14.5º(± 0.2°), 18.2º(± 0.2°), 19.3º(± 0.2°), 20.2º(± 0.2°), and 22.8º(± 0.2°);

(g) x-ray powder diffraction peaks at 2Θ angles selected from 4.8º(± 0.2°), 9.6º(± 0.2°), 11.3º(± 0.2°), 14.5º(± 0.2°), 18.2º(± 0.2°), 19.3º(± 0.2°), 20.2º(± 0.2°), and 22.8º(± 0.2°); or

(h) an x-ray powder diffraction pattern substantially the same as depicted in FIG. 42; or

(iii) crystalline Form G, characterized by:

(a) at least two x-ray powder diffraction peaks at 2Θ angles selected from 5.7º(± 0.2°), 7.2º(± 0.2°), 7.7º(± 0.2°), 11.3º(± 0.2°), 16.8º(± 0.2°), 18.3º(± 0.2°), and 20.1º(± 0.2°);

(b) at least three x-ray powder diffraction peaks at 2Θ angles selected from 5.7º(± 0.2°), 7.2º(± 0.2°), 7.7º(± 0.2°), 11.3º(± 0.2°), 16.8º(± 0.2°), 18.3º(± 0.2°), and 20.1º(± 0.2°);

(c) at least four x-ray powder diffraction peaks at 2Θ angles selected from 5.7º(± 0.2°), 7.2º(± 0.2°), 7.7º(± 0.2°), 11.3º(± 0.2°), 16.8º(± 0.2°), 18.3º(± 0.2°), and 20.1º(± 0.2°);

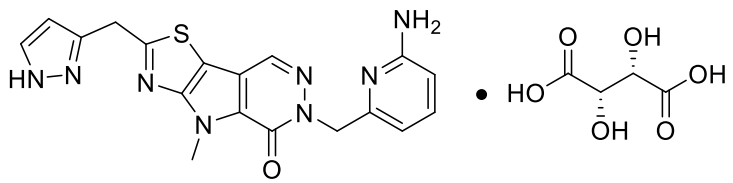
(d) at least five x-ray powder diffraction peaks at 2Θ angles selected from 5.7º(± 0.2°), 7.2º(± 0.2°), 7.7º(± 0.2°), 11.3º(± 0.2°), 16.8º(± 0.2°), 18.3º(± 0.2°), and 20.1º(± 0.2°);

(e) at least six x-ray powder diffraction peaks at 2Θ angles selected from 5.7º(± 0.2°), 7.2º(± 0.2°), 7.7º(± 0.2°), 11.3º(± 0.2°), 16.8º(± 0.2°), 18.3º(± 0.2°), and 20.1º(± 0.2°);

(f) x-ray powder diffraction peaks at 2Θ angles selected from 5.7º(± 0.2°), 7.2º(± 0.2°), 7.7º(± 0.2°), 11.3º(± 0.2°), 16.8º(± 0.2°), 18.3º(± 0.2°), and 20.1º(± 0.2°); or

(g) an x-ray powder diffraction pattern substantially the same as depicted in FIG. 44.

7. A crystalline form of a tartrate salt of Compound **1** having the structural formula:



;

optionally, wherein the crystalline form is crystalline Form I, characterized by:

(a) at least two x-ray powder diffraction peaks at 2Θ angles selected from 8.0º(± 0.2°), 10.8º(± 0.2°), 13.8º(± 0.2°), 15.0º(± 0.2°), 16.0 º(± 0.2°), 16.7º(± 0.2°), and 25.2º(± 0.2°);

(b) at least three x-ray powder diffraction peaks at 2Θ angles selected from 8.0º(± 0.2°), 10.8º(± 0.2°), 13.8º(± 0.2°), 15.0º(± 0.2°), 16.0 º(± 0.2°), 16.7º(± 0.2°), and 25.2º(± 0.2°)

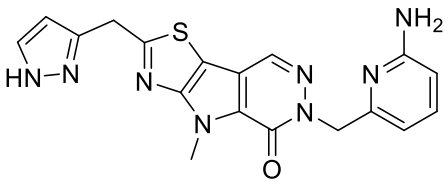
(c) at least four x-ray powder diffraction peaks at 2Θ angles selected from 8.0º(± 0.2°), 10.8º(± 0.2°), 13.8(± 0.2°), 15.0º(± 0.2°), 16.0 º(± 0.2°), 16.7º(± 0.2°), and 25.2º(± 0.2°);

(d) at least five x-ray powder diffraction peaks at 2Θ angles selected from 8.0º(± 0.2°), 10.8º(± 0.2°), 13.8º(± 0.2°), 15.0º(± 0.2°), 16.0 º(± 0.2°), 16.7º(± 0.2°), and 25.2º(± 0.2°);

(e) x-ray powder diffraction peaks at 2Θ angles selected from 8.0º(± 0.2°), 10.8º(± 0.2°), 13.8º(± 0.2°), 15.0º(± 0.2°), 16.0 º(± 0.2°), 16.7º(± 0.2°), and 25.2º(± 0.2°); or

(f) an x-ray powder diffraction pattern substantially the same as depicted in FIG. 35.

8. A crystalline form of a hydrochloride salt of Compound **1** having the structural formula:



;

optionally, wherein the crystalline form is:

(a) crystalline Form D, characterized by:

(a) at least two x-ray powder diffraction peaks at 2Θ angles selected from 10.6º(± 0.2°), 14.4º(± 0.2°), 24.6º(± 0.2°), 24.8º(± 0.2°), 25.2 º(± 0.2°), and 27.0º(± 0.2°);

(b) at least three x-ray powder diffraction peaks at 2Θ angles selected from 10.6º(± 0.2°), 14.4º(± 0.2°), 24.6º(± 0.2°), 24.8º(± 0.2°), 25.2 º(± 0.2°), and 27.0º(± 0.2°);

(c) at least four x-ray powder diffraction peaks at 2Θ angles selected from 10.6º(± 0.2°), 14.4º(± 0.2°), 24.6º(± 0.2°), 24.8º(± 0.2°), 25.2 º(± 0.2°), and 27.0º(± 0.2°);

(d) at least five x-ray powder diffraction peaks at 2Θ angles selected from 10.6º(± 0.2°), 14.4º(± 0.2°), 24.6º(± 0.2°), 24.8º(± 0.2°), 25.2 º(± 0.2°), and 27.0º(± 0.2°);

(e) x-ray powder diffraction peaks at 2Θ angles selected from 10.6º(± 0.2°), 14.4º(± 0.2°), 24.6º(± 0.2°), 24.8º(± 0.2°), 25.2 º(± 0.2°), and 27.0º(± 0.2°); or

(f) an x-ray powder diffraction pattern substantially the same as depicted in FIG. 10 or FIG 27 or FIG 31;

(ii) crystalline Form J, characterized by:

(a) at least two x-ray powder diffraction peaks at 2Θ angles selected from 15.0º(± 0.2°), 15.6º(± 0.2°), 20.4(± 0.2°), 20.6º(± 0.2°), 21.1º(± 0.2°), 24.1º(± 0.2°), and 24.7º(± 0.2°);

(b) at least three x-ray powder diffraction peaks at 2Θ angles selected from 15.0º(± 0.2°), 15.6º(± 0.2°), 20.4(± 0.2°), 20.6º(± 0.2°), 21.1º(± 0.2°), 24.1º(± 0.2°), and 24.7º(± 0.2°);

(c) at least four x-ray powder diffraction peaks at 2Θ angles selected from 15.0º(± 0.2°), 15.6º(± 0.2°), 20.4(± 0.2°), 20.6º(± 0.2°), 21.1º(± 0.2°), 24.1º(± 0.2°), and 24.7º(± 0.2°);

(d) at least five x-ray powder diffraction peaks at 2Θ angles selected from 15.0º(± 0.2°), 15.6º(± 0.2°), 20.4(± 0.2°), 20.6º(± 0.2°), 21.1º(± 0.2°), 24.1º(± 0.2°), and 24.7º(± 0.2°);

(e) x-ray powder diffraction peaks at 2Θ angles selected from 15.0º(± 0.2°), 15.6º(± 0.2°), 20.4(± 0.2°), 20.6º(± 0.2°), 21.1º(± 0.2°), 24.1º(± 0.2°), and 24.7º(± 0.2°); or

(f) an x-ray powder diffraction pattern substantially the same as depicted in FIG. 46; or

(iii) crystalline Form K, characterized by:

(a) at least two x-ray powder diffraction peaks at 2Θ angles selected from 7.2º(± 0.2°), 9.5º(± 0.2°), 10.6(± 0.2°), 14.0º(± 0.2°), 17.4º(± 0.2°), 26.0º(± 0.2°), and 27.0º(± 0.2°);

(b) at least three x-ray powder diffraction peaks at 2Θ angles selected from 7.2º(± 0.2°), 9.5º(± 0.2°), 10.6(± 0.2°), 14.0º(± 0.2°), 17.4º(± 0.2°), 26.0º(± 0.2°), and 27.0º(± 0.2°);

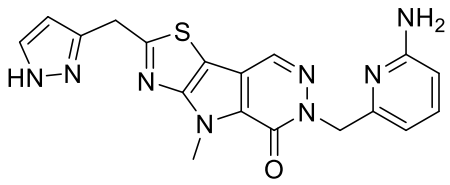
(c) at least four x-ray powder diffraction peaks at 2Θ angles selected from 7.2º(± 0.2°), 9.5º(± 0.2°), 10.6(± 0.2°), 14.0º(± 0.2°), 17.4º(± 0.2°), 26.0º(± 0.2°), and 27.0º(± 0.2°);

(d) at least five x-ray powder diffraction peaks at 2Θ angles selected from 7.2º(± 0.2°), 9.5º(± 0.2°), 10.6(± 0.2°), 14.0º(± 0.2°), 17.4º(± 0.2°), 26.0º(± 0.2°), and 27.0º(± 0.2°);

(e) by x-ray powder diffraction peaks at 2Θ angles selected from 7.2º(± 0.2°), 9.5º(± 0.2°), 10.6(± 0.2°), 14.0º(± 0.2°), 17.4º(± 0.2°), 26.0º(± 0.2°), and 27.0º(± 0.2°); or

(f) an x-ray powder diffraction pattern substantially the same as depicted in FIG. 48.

9. A crystalline free base of Compound **1** having the structural formula:



;

optionally, wherein the crystalline form is crystalline Form E, characterized by:

(a) at least two x-ray powder diffraction peaks at 2Θ angles selected from 11.6º(± 0.2°), 16.0º(± 0.2°), 16.8º(± 0.2°), 20.6º(± 0.2°), 23.8 º(± 0.2°), 26.0 º(± 0.2°), and 27.4º(± 0.2°);

(b) at least three x-ray powder diffraction peaks at 2Θ angles selected from 11.6º(± 0.2°), 16.0º(± 0.2°), 16.8º(± 0.2°), 20.6º(± 0.2°), 23.8 º(± 0.2°), 26.0 º(± 0.2°), and 27.4º(± 0.2°);

(c) at least four x-ray powder diffraction peaks at 2Θ angles selected from 11.6º(± 0.2°), 16.0º(± 0.2°), 16.8º(± 0.2°), 20.6º(± 0.2°), 23.8 º(± 0.2°), 26.0 º(± 0.2°), and 27.4º(± 0.2°);

(d) at least five x-ray powder diffraction peaks at 2Θ angles selected from 11.6º(± 0.2°), 16.0º(± 0.2°), 16.8º(± 0.2°), 20.6º(± 0.2°), 23.8 º(± 0.2°), 26.0 º(± 0.2°), and 27.4º(± 0.2°).;

(e) at least six x-ray powder diffraction peaks at 2Θ angles selected from 11.6º(± 0.2°), 16.0º(± 0.2°), 16.8º(± 0.2°), 20.6º(± 0.2°), 23.8 º(± 0.2°), 26.0 º(± 0.2°), and 27.4º(± 0.2°);

(f) x-ray powder diffraction peaks at 2Θ angles selected from 11.6º(± 0.2°), 16.0º(± 0.2°), 16.8º(± 0.2°), 20.6º(± 0.2°), 23.8 º(± 0.2°), 26.0 º(± 0.2°), and 27.4º(± 0.2°); or

(g) an x-ray powder diffraction pattern substantially the same as depicted in FIG. 12.

10. A method for making a solid dispersion comprising:

(a) dissolving a crystalline form of Compound **1** of any one of claims 1 to 9 and a polymer in a solvent to form a feed solution; and

(b) removing the solvent to form the solid dispersion;

and optionally, wherein the crystalline form of Compound **1** used in the preparation is the crystalline hemi-hydrate hemi-sulfate salt, the crystalline free base, the crystalline hydrochloride salt, or the crystalline phosphate salt as defined in any one of claims 1-5 and 8-9.

11. The method of claim 10 wherein:

(a) the solid dispersion is a spray dried dispersion;

(b) the solid dispersion comprises a polymer selected from hypromellose acetate succinate based amorphous solid, medium grad (HPMCAS-MG), and polyvinylpyrrolidone/vinyl acetate copolymer (PVPVA);

(c) the solvent is methanol, ethanol, n-propanol, isopropanol, butanol, acetone, methyl ethyl ketone, methyl isobutyl ketone, ethyl acetate, propyl acetate, tetrahydrofuran (THF), acetonitrile (ACN), dichloromethane, toluene, or a mixture thereof;

(d) the solvent is a methanol/ dichloromethane mixture; and/or

(e) the solid dispersion is formulated as a tablet, optionally wherein the tablet further comprises hypromellose acetate succinate based amorphous solid, medium grad, polyvinylpyrrolidone, tocofersolan, and simethicone.

12. A pharmaceutical composition comprising:

(a) a crystalline form of Compound **1** according to any one of claims 1-9 and a pharmaceutically acceptable excipient; or

(b) amorphous Compound **1** and a pharmaceutically acceptable excipient.

13. Use of the crystalline form of Compound **1** according to any one of claims 1-9, or the pharmaceutical composition of claim 12, in the manufacture of a medicament for:

(a) reducing 2,3-diphosphoglycerate levels in blood of a subject in need thereof;

(b) treating anemia in a subject in need thereof;

(c) treating hemolytic anemia in a subject in need thereof;

(d) treating sickle cell disease in a subject in need thereof; or

(e) increasing the amount of hemoglobin in a subject in need thereof.

14. The use of claim 13, wherein:

(a) the anemia is hemolytic anemia associated with acquired Pyruvate Kinase Deficiency (PKD);

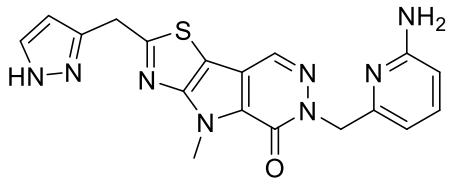
(b) the anemia is associated with very low risk MDS, low risk MDS, lower risk MDS and/or intermediate risk MDS (myelodysplastic syndrome); or

(c) the hemolytic anemia is hereditary or congenital hemolytic anemia, acquired hemolytic anemia, or anemia associated with very low risk MDS, low risk MDS, lower risk MDS and/or intermediate risk MDS.

15. The use of claim 14 wherein the subject is to be administered 2, 5, 10, 15, 20, 25, or 30 mg of Compound **1** per day.

16. A method of forming:

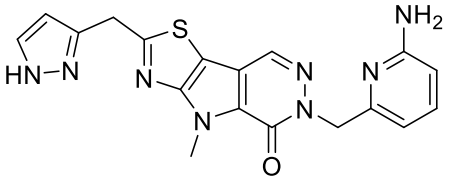
(a) a crystalline hemi-sulfate salt of any one of claims 1-4, the method comprising reacting a Compound **1**:



(**1**)

with H_2SO_4 in an alcoholic solution; or

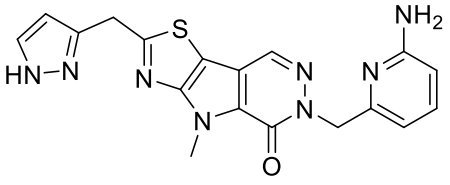
(b) a crystalline Phosphate salt of claim 5, the method comprising reacting a Compound **1**:



(**1**)

with H_3PO_4 in a polar aprotic solution; or

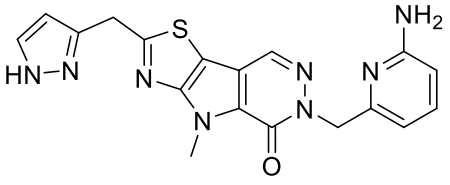
(c) a crystalline DL-tartrate salt of claim 6, the method comprising reacting a Compound **1**:



(**1**)

with a solution comprising DL-tartaric acid and at least one polar aprotic solvent; or

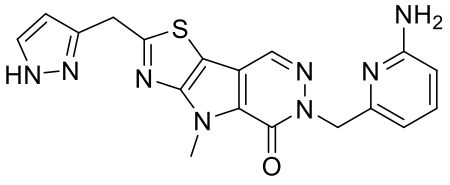
(d) a crystalline L-tartrate salt of claim 7, the method comprising reacting a Compound **1**:



(**1**)

with a solution comprising L-tartaric acid in a solution; or

(e) a crystalline hydrochloride salt of claim 8, the method comprising reacting a Compound **1**:



(**1**)

with a solution comprising hydrochloric acid and at least one polar aprotic solvent.

17. The method of claim 16, wherein:

(i) for option (a):

(a) the alcoholic solution further comprises water, optionally wherein the ratio of alcohol to water is about 8:2 v/v;

(b) the alcohol is methanol, ethanol, *n*-propanol, isopropyl alcohol, *n*-butanol, or isobutanol, or any combination thereof; and/or

(c) the alcohol is *n*-propanol; or

(ii) for option (b):

(a) the polar aprotic solvent is acetone, acetonitrile, dichloromethane, dimethylformamide, dimethyl sulfoxide, pyridine, or tetrahydrofuran, or any combination thereof;

(b) the polar aprotic solvent is dimethylsulfoxide; and/or

(c) the method further comprises a second step of adding an antisolvent, optionally, wherein:

(I) the antisolvent is an alcoholic solution;

(II) the alcoholic solution further comprises water, optionally wherein:

(A) the ratio of alcohol to water is about 8:2 v/v;

(B) the alcohol is methanol, ethanol, *n*-propanol, isopropyl alcohol, *n*-butanol, or isobutanol, or any combination thereof; and/or

(C) the alcohol is ethanol; or

(iii) for option (c):

(a) the polar aprotic solvent is selected from acetone, acetonitrile, dichloromethane, dimethylformamide, dimethyl sulfoxide, pyridine, or tetrahydrofuran, or any combination thereof;

(b) the polar aprotic solvent is tetrahydrofuran; and/or

(c) wherein the solvent further comprises water, optionally wherein:

(I) the ratio of solvent to water is about 99:1, about 95:5, about 90:10, about 80:20, or about 60:40 v/v;

(II) the ratio of solvent to water is about 95:5 v/v; or

(iv) for option (d):

(a) the solution comprises L-tartaric acid, water, and an alcohol, optionally wherein:

(I) the solution comprises a ratio of alcohol to water of about 99:1, about 95:5, about 90:10, about 80:20, or about 60:40 v/v; or

(II) the solution comprises a ratio of alcohol to water of about 95:5 v/v;

(b) the alcohol is selected from methanol, ethanol, n-propanol, isopropyl alcohol, n-butanol, or isobutanol, propylene glycol, ethylene glycol, t-amyl alcohol, diethylene glycol, n-pentanol, benzyl alcohol, or cyclohexanol or any combination thereof; and/or

(c) the alcohol is ethanol; or

(v) for option (e):

(a) the polar aprotic solvent is selected from acetone, acetonitrile, dichloromethane, dimethylformamide, dimethyl sulfoxide, pyridine, or tetrahydrofuran, or any combination thereof; or

(b) the polar aprotic solvent is tetrahydrofuran.

18. Use of the crystalline form of Compound **1** according to any one of claims 1-9, or the pharmaceutical composition of claim 12, in the manufacture of a medicament for treating anemia associated with acquired pyruvate kinase deficiency in a subject with very low risk MDS, low risk MDS, lower risk MDS, and/or intermediate risk MDS, optionally, wherein the anemia is hemolytic anemia.

19. The use of claim 18 wherein the subject is to be administered:

(a) 2, 5, 10, 15, 20, 25, or 30 mg of Compound **1** per day; or

(b) 2, 5, 10, 15, 20, 25, or 30 mg of Compound **1** per day.

20. The crystalline form of Compound **1** according to any one of claims 1-9, or the pharmaceutical composition of claim 12, for use in therapy.