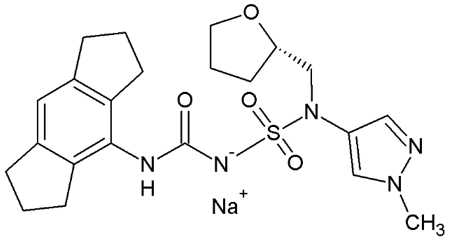
CLAIMS

1. A crystalline, morphic Form 1 of Compound A:



(Compound A),

which is characterized by at least one of the following characteristics:

(a) an XRPD pattern comprising signals at 4.5±0.5, 18.1±0.5, and 18.3±0.5 °2θ using Cu Kα radiation; or

(b) an XRPD pattern comprising signals at 4.5±0.5, 18.1±0.5, 18.3±0.5, and 22.7±0.5 °2θ using Cu Kα radiation; or

(c) an XRPD pattern comprising signals at 4.5±0.5, 18.1±0.5, 18.3±0.5, 19.0±0.5, and 22.7±0.5 °2θ using Cu Kα radiation; or

(d) an XRPD pattern comprising signals at 4.5±0.5, 18.1±0.5, 18.3±0.5, 19.0±0.5, 22.7±0.5, and 23.4±0.5 °2θ using Cu Kα radiation; or

(e) an XRPD pattern comprising signals at 4.5±0.5, 13.3±0.5, 18.1±0.5, 18.3±0.5, 19.0±0.5, 22.7±0.5, and 23.4±0.5 °2θ using Cu Kα radiation; or

(f) an XRPD pattern comprising signals at 4.5±0.5, 13.3±0.5, 16.2±0.5, 18.1±0.5, 18.3±0.5, 19.0±0.5, 22.7±0.5, and 23.4±0.5 °2θ using Cu Kα radiation; or

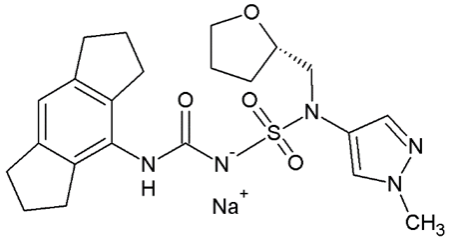
(g) an XRPD pattern comprising one or more signals as described in Table 1:

Angle (2θ °)	Intensity (%)	Angle (2θ °)	Intensity (%)
4.5	100.0	23.2	6.8
8.6	8.9	23.4	9.8
9.2	9.2	24.0	4.6
10.2	5.0	24.2	7.8
11.7	5.3	24.4	5.6
13.3	9.7	25.9	5.3
13.6	5.4	26.3	1.7
15.1	4.5	26.8	5.6

15.6	1.5	27.3	8.1
16.2	9.7	27.6	2.5
16.3	6.6	28.1	1.6
17.2	2.6	28.5	2.5
18.1	33.3	29.7	2.0
18.3	24.1	30.5	3.8
19.0	10.2	32.0	5.3
21.0	2.9	32.4	2.8
22.7	10.8		

(h) an XRPD pattern substantially similar to that set forth in FIG. 2.

2. A crystalline, morphic, dihydrate Form 2 of Compound A



(Compound A),

which is characterized by at least one of the following characteristics:

(a) an XRPD pattern comprising signals at 4.2±0.5, 16.7±0.5, and 16.8±0.5 °2θ using Cu Kα radiation; or

(b) an XRPD pattern comprising signals at 4.2±0.5, 16.7±0.5, 16.8±0.5, and 18.2±0.5 °2θ using Cu Kα radiation; or

(c) an XRPD pattern comprising signals at 4.2±0.5, 10.4±0.5, 16.7±0.5, 16.8±0.5, and 18.2±0.5 °2θ using Cu Kα radiation; or

(d) an XRPD pattern comprising signals at 4.2±0.5, 8.4±0.5, 10.4±0.5, 16.7±0.5, 16.8±0.5, and 18.2±0.5 °2θ using Cu Kα radiation; or

(e) an XRPD pattern comprising signals at 4.2±0.5, 8.4±0.5, 10.4±0.5, 16.7±0.5, 16.8±0.5, 18.2±0.5, and 20.8±0.5 °2θ using Cu Kα radiation; or

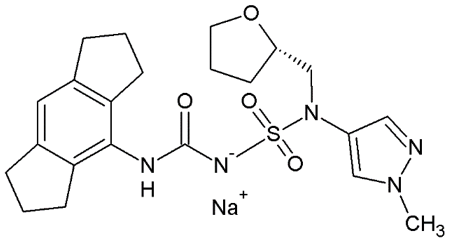
(f) an XRPD pattern comprising signals at 4.2±0.5, 8.4±0.5, 10.4±0.5, 16.7±0.5, 16.8±0.5, 18.2±0.5, 20.8±0.5, and 21.1±0.5 °2θ °2θ using Cu Kα radiation; or

(g) an XRPD pattern comprising one or more signals as described in Table 2:

Angle (2θ °)	Intensity (%)	Angle (2θ °)	Intensity (%)
4.2	100.0	24.7	18.1
8.4	35.0	25.2	10.3
10.2	16.6	25.3	10.5
10.4	44.8	25.6	7.0
13.1	19.9	26.1	8.1
13.5	11.1	26.6	25.7
16.3	9.3	27.1	3.9
16.7	50.3	28.3	4.4
16.8	55.3	28.9	4.6
18.2	47.8	29.1	7.2
18.6	17.0	29.5	5.8
19.3	5.8	29.8	6.9
20.8	32.5	30.0	4.3
21.1	32.1	30.3	3.4
23.0	14.9	30.7	3.6
23.3	13.6	31.1	3.2
23.5	14.2	31.7	15.2
24.3	31.7		

(h) an XRPD pattern substantially similar to that set forth in FIG. 4.

3. A crystalline, morphic Form 3 of Compound A:



(Compound A),

which is characterized by at least one of the following characteristics:

(a) an XRPD pattern comprising signals at 4.4±0.5, 8.4±0.5, and 17.8±0.5 °2θ using Cu Kα radiation; or

(b) an XRPD pattern comprising signals at 4.4±0.5, 8.4±0.5, 17.8±0.5, and 19.0±0.5 °2θ using Cu Kα radiation; or

(c) an XRPD pattern comprising signals at 4.4±0.5, 8.4±0.5, 17.8±0.5, 19.0±0.5, and 22.3±0.5 °2θ using Cu Kα radiation; or

(d) an XRPD pattern comprising signals at 4.4±0.5, 8.4±0.5, 17.8±0.5, 19.0±0.5, 19.6±0.5, and 22.3±0.5 °2θ using Cu Kα radiation; or

(e) an XRPD pattern comprising signals at 4.4±0.5, 8.4±0.5, 17.8±0.5, 19.0±0.5, 19.6±0.5, 20.9±0.5, and 22.3±0.5 °2θ using Cu Kα radiation; or

(f) an XRPD pattern comprising signals at 4.4±0.5, 8.4±0.5, 14.3±0.5, 17.8±0.5, 19.0±0.5, 19.6±0.5, 20.9±0.5, and 22.3±0.5 °2θ using Cu Kα radiation; or

(g) an XRPD pattern comprising one or more signals as described in Table 3:

Angle (2θ °)	**Intensity (%)**	**Angle (2θ °)**	**Intensity (%)**
4.4	55.7	21.9	14.9
8.4	100.0	22.3	22.5
8.9	11.5	22.4	16.9
11.1	5.9	22.9	9.8
11.4	13.1	23.2	7.6
12.0	8.0	23.6	6.8
14.2	16.9	24.4	7.5
14.3	18.3	24.8	5.3
15.1	10.6	25.2	7.2
16.8	7.0	26.8	17.7
17.3	14.3	27.4	5.7
17.8	31.0	27.8	4.5
19.0	30.9	29.1	5.3
19.2	16.1	29.4	12.2
19.6	19.8	29.8	5.0
20.6	15.1	30.1	4.2
20.9	18.6	31.0	5.5
21.3	16.1	31.4	4.8
21.5	13.0		

(h) an XRPD pattern substantially similar to that set forth in FIG. 10;

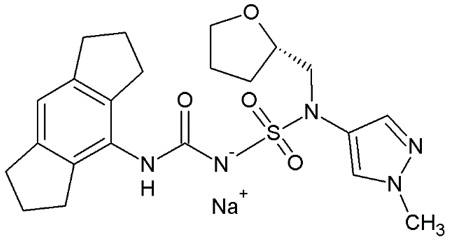
(i) a crystalline solid having crystal data as provided in Table AA:

Compound number	Compound A Na salt monohydrate	
Crystallisation solvents	EtOAc and water	
Crystallisation method	Cooling	
Empirical formula	$C_{22}H_{30}N_5NaO_5S$	
Formula weight	499.56	
Temperature	100(2) K	
Wavelength	1.54184 Å	
Crystal size	0.300 x 0.250 x 0.200 mm	
Crystal habit	colourless cut rod	
Crystal system	Monoclinic	
Space group	$P2_1$	
Unit cell dimensions	a = 10.17100(10) Å	a= 90°
	b = 12.04740(10) Å	b= 89.8050(10)°
	c = 20.0561(2) Å	g = 90°
Volume	2457.54(4) $Å^3$	
Z	4	
Density (calculated)	1.350 Mg/m^3	
Absorption coefficient	1.708 mm^{-1}	
F(000)	1056	

Overall structure quality factor: 2

(j) an XRPD pattern substantially similar to that set forth in FIG. 32.

4. A crystalline, morphic Form 4 of Compound A:



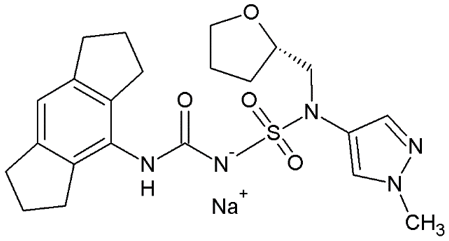
(Compound A),

which is characterized by at least one of the following characteristics:

(a) the ^{1}H-NMR spectrum substantially similar to that set forth in FIG. 16; or

(b) a DSC thermogram substantially similar to that set forth in FIG.17.

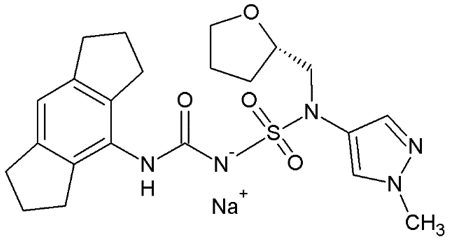
5. A crystalline, morphic Form 5 of Compound A:



(Compound A),

which is characterized by being obtainable from heptane addition of amorphous Compound A and acetone solution followed by three-day slurry.

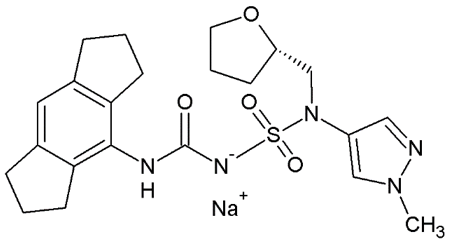
6. A crystalline, morphic Form 6 of Compound A:



(Compound A),

which is characterized by an XRPD pattern substantially similar to that set forth in FIG. 20.

7. A crystalline, morphic Form 7 of Compound A:



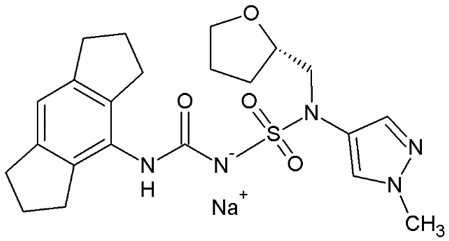
(Compound A),

which is characterized by at least one of the following characteristics:

(a) the ^{1}H-NMR spectrum substantially similar to that set forth in FIG. 21; or

(b) a DSC thermogram substantially similar to that set forth in FIG.22.

8. A crystalline, morphic Form 8 of Compound A:

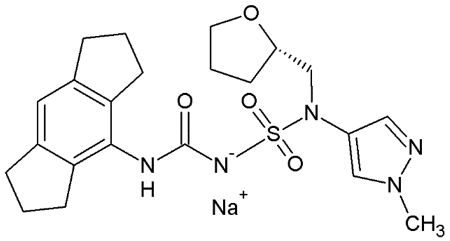

(Compound A),

which is characterized by at least one of the following characteristics:

(a) the ^{1}H-NMR spectrum substantially similar to that set forth in FIG. 23; or

(b) a DSC thermogram substantially similar to that set forth in FIG.24.

9. A crystalline, morphic Form 9 of Compound A:


(Compound A),

which is characterized by at least one of the following characteristics:

(a) an XRPD pattern comprising signals at 8.0±0.5, 21.3±0.5, and 22.1±0.5 °2θ using Cu Kα radiation; or

(b) an XRPD pattern comprising signals at 8.0±0.5, 21.3±0.5, 22.1±0.5, and 22.9±0.5 °2θ using Cu Kα radiation; or

(c) an XRPD pattern comprising signals at 8.0±0.5, 18.2±0.5, 21.3±0.5, 22.1±0.5, and 22.9±0.5 °2θ using Cu Kα radiation; or

(d) an XRPD pattern comprising signals at 8.0±0.5, 18.2±0.5, 19.7±0.5, 21.3±0.5, 22.1±0.5, and 22.9±0.5 °2θ using Cu Kα radiation; or

(e) an XRPD pattern comprising signals at 8.0±0.5, 18.2±0.5, 19.7±0.5, 21.3±0.5, 22.1±0.5, 22.9±0.5, and 25.3±0.5 °2θ using Cu Kα radiation; or

(f) an XRPD pattern comprising signals at 8.0±0.5, 18.2±0.5, 19.7±0.5, 21.3±0.5, 22.1±0.5, 22.9±0.5, 24.6±0.5, and 25.3±0.5 °2θ using Cu Kα radiation; or

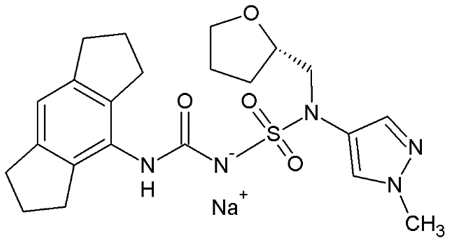
(g) an XRPD pattern comprising one or more signals as described in Table 4:

Angle (° 2θ)	**Intensity (%)**	**Angle (° 2θ)**	**Intensity (%)**
4.6	46.4	19.3	59.3

7.2	43.3	19.7	66.0
8.0	100.0	20.7	50.3
9.1	30.4	21.3	98.9
10.8	24.7	22.1	90.5
11.1	27.6	22.9	79.3
12.9	24.6	23.9	49.3
14.6	47.3	24.6	61.3
15.7	42.7	25.3	61.5
16.4	55.7	26.0	41.3
17.1	55.4	26.5	42.3
18.2	72.4	27.5	52.1
18.7	48.7	29.0	43.5
19.0	56.8	29.8	43.1

(h) an XRPD pattern substantially similar to that set forth in FIG. 25.

10. A crystalline, morphic Form 10 of Compound A.



(Compound A),

which is characterized by at least one of the following characteristics:

(a) an XRPD pattern comprising signals at 4.4±0.5, 8.3±0.5, and 17.5±0.5 °2θ using Cu Kα radiation; or

(b) an XRPD pattern comprising signals at 4.4±0.5, 8.3±0.5, 17.5±0.5, and 19.2±0.5 °2θ using Cu Kα radiation; or

(c) an XRPD pattern comprising signals at 4.4±0.5, 8.3±0.5, 14.9±0.5, 17.5±0.5, and 19.2±0.5 °2θ using Cu Kα radiation; or

(d) an XRPD pattern comprising signals at 4.4±0.5, 4.7±0.5, 8.3±0.5, 14.9±0.5, 17.5±0.5, and 19.2±0.5 °2θ using Cu Kα radiation; or

(e) an XRPD pattern comprising signals at 4.4±0.5, 4.7±0.5, 7.4±0.5, 8.3±0.5, 14.9±0.5, 17.5±0.5, and 19.2±0.5 °2θ using Cu Kα radiation; or

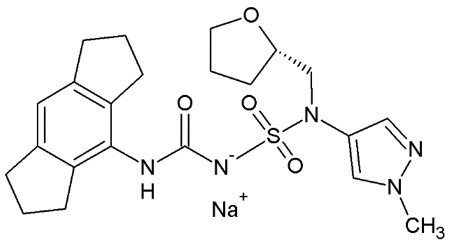
(f) an XRPD pattern comprising signals at 4.4±0.5, 4.7±0.5, 7.4±0.5, 8.3±0.5, 14.9±0.5, 17.5±0.5, 19.2±0.5, and 23.3±0.5 °2θ using Cu Kα radiation; or

(g) an XRPD pattern comprising one or more signals as described in Table 5:

Angle (° 2θ)	**Intensity (%)**	**Angle (° 2θ)**	**Intensity (%)**
4.4	100.0	16.5	7.6
4.7	15.2	17.5	23.8
7.4	13.7	17.8	8.9
8.3	36.4	19.2	22.5
11.2	4.7	19.6	10.0
11.8	7.0	20.4	9.6
12.0	8.9	20.9	9.3
12.6	5.4	21.4	10.6
13.1	9.3	22.1	10.6
14.9	17.4	23.3	13.4
15.6	9.4	26.3	8.8
16.1	6.5		

(h) an XRPD pattern substantially similar to that set forth in FIG. 27.

11. A crystalline, morphic Form 12 of Compound A:



(Compound A),

which is characterized by at least one of the following characteristics:

(a) an XRPD pattern comprising signals at 4.1±0.5, 4.7±0.5, and 8.2±0.5 °2θ using Cu Kα radiation; or

(b) an XRPD pattern comprising signals at 4.1±0.5, 4.7±0.5, 8.2±0.5, and 8.7±0.5 °2θ using Cu Kα radiation; or

(c) an XRPD pattern comprising signals at 4.1±0.5, 4.7±0.5, 8.2±0.5, 8.7±0.5, and 12.4±0.5 °2θ using Cu Kα radiation; or

(d) an XRPD pattern comprising signals at 4.1±0.5, 4.7±0.5, 8.2±0.5, 8.7±0.5, 10.2±0.5, and 12.4±0.5 °2θ using Cu Kα radiation; or

(e) an XRPD pattern comprising signals at 4.1±0.5, 4.7±0.5, 8.2±0.5, 8.7±0.5, 10.2±0.5, 11.3±0.5, and 12.4±0.5 °2θ using Cu Kα radiation; or

(f) an XRPD pattern comprising one or more signals as described in Table 5-1:

Angle (2θ °)	**Intensity** (%)
4.1	16.9
4.7	100.0
6.7	3.1
8.2	51.3
8.7	15.2
10.2	8.2
10.9	3.2
11.3	6.8
12.4	10.2
14.0	3.4
15.0	4.9
16.9	2.4
18.8	6.6
20.6	3.0
22.0	6.2
22.8	2.4
24.2	4.0

(g) an XRPD pattern substantially similar to that set forth in FIG. 34A.

12. The crystalline, morphic forms of any one of claims 1 to 11, prepared using one of the methods provided in FIG. 1.

13. A pharmaceutical composition comprising the crystalline, morphic forms of any one of claims 1 to 12, and one or more pharmaceutically acceptable carrier or excipient.

14. Use of the crystalline, morphic forms of any one of claims 1 to 12, or the pharmaceutical composition of claim 13, in the manufacture of a medicament for preventing or treating a disease or disorder in a subject.

15. Use of the crystalline, morphic forms of any one of claims 1 to 12, or the pharmaceutical composition of claim 13, in the manufacture of a medicament for inhibiting inflammasome activity in a subject.