Claims

What is claimed is:

1. A crystalline R-ketamine salt comprising R-ketamine fumarate Form A, R-ketamine fumarate Form B or an R-ketamine oxalate salt.

2. The R-ketamine fumarate salt Form A of claim 1, characterized by PXRD peaks at two or more, or three peaks selected from the group consisting of 11.6 °2θ, 13.4 °2θ, and 14.6 °2θ (±0.2 °2θ; ±0.1 °2θ; or ±0.0 °2θ; Cu Kα1 radiation).

3. The R-ketamine fumarate salt Form A of claim 1 or 2, characterized by PXRD peaks at 11.6 °2θ, 13.4 °2θ, and 14.6 °2θ (±0.2 °2θ; ±0.1 °2θ; or ±0.0 °2θ; Cu Kα1 radiation).

4. The R-ketamine fumarate salt Form A of any one of claims 1-3, characterized by a PXRD spectrum substantially similar to that shown in FIG. 21.

5. The R-ketamine fumarate salt Form A of any one of claims 1-4, characterized by one, two, three, four, five, six, seven, eight, nine, ten, eleven, twelve, thirteen, fourteen, fifteen or sixteen PXRD peaks selected from those set forth in Table 3

Angle in °2-theta	**d-spacing in Å**	**Intensity**	**Intensity %**
7.3	12.16	m	27
10.9	8.13	m	28
11.6	7.65	vs	71
13.4	6.62	s	50
14.2	6.23	w	14
14.6	6.07	vs	100
16.5	5.38	m	21
18.1	4.89	w	10
18.9	4.70	s	49
20.2	4.39	s	40
20.4	4.35	s	30
20.8	4.27	w	14
21.3	4.17	w	14
21.6	4.11	m	16
21.9	4.06	m	29
22.8	3.90	w	8
23.0	3.86	w	13
23.2	3.83	w	13
24.6	3.61	s	47
24.9	3.58	m	19
25.1	3.55	w	6
25.7	3.47	m	15
26.9	3.31	m	22

27.6	3.23	w	8
28.1	3.17	w	6
28.7	3.11	w	8
29.2	3.06	w	9
29.4	3.04	s	30
29.7	3.00	w	5
30.1	2.96	w	8
31.2	2.87	w	13
31.7	2.82	vw	4
32.1	2.79	w	5
32.7	2.73	m	19
33.0	2.71	m	24
33.2	2.69	w	11
33.7	2.66	w	6
33.9	2.64	w	6
34.7	2.59	vw	5
35.1	2.55	w	10
35.6	2.52	w	9
36.5	2.46	w	7
36.7	2.45	vw	4
37.0	2.43	vw	4
37.5	2.40	vw	3
37.7	2.38	vw	4
38.0	2.37	w	9
38.2	2.35	w	7
38.5	2.33	vw	4
38.9	2.31	w	6
39.7	2.27	w	7
40.1	2.25	w	9
40.8	2.21	w	9

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6. The R-ketamine fumarate salt of claim 1 , wherein the R-ketamine fumarate salt is Form B.

7. The R-ketamine fumarate salt Form B of claim 6, characterized by PXRD peaks at two or more, or three peaks selected from the group consisting of 14.5 °2θ, 15.1 °2θ, and 20.4 °2θ (±0.2 °2θ; ±0.1 °2θ; or ±0.0 °2θ; Cu Kα1 radiation).

8. The R-ketamine fumarate salt Form B of claim 1 or claim 7, characterized by PXRD peaks at 14.5 °2θ, 15.1 °2θ, and 20.4 °2θ (±0.2 °2θ; ±0.1 °2θ; or ±0.0 °2θ; Cu Kα1 radiation).

9. The R-ketamine fumarate salt Form B of any one of claims 6-8, characterized by a PXRD spectrum is substantially similar to that shown in FIG. 68.

10. The R-ketamine fumarate salt Form B of any one of claims 6-9, characterized by one, two, three, four, five, six, seven, eight, nine, ten, eleven, twelve, thirteen, fourteen, fifteen or sixteen PXRD peaks selected from those set forth in Table 4

Angle in °2-theta	**d-spacing in Å**	**Intensity**	**Intensity %**
6.4	13.84	s	57
7.2	12.21	s	31
10.6	8.34	s	36
10.8	8.15	m	29
11.5	7.66	s	63
12.8	6.91	s	46
13.1	6.73	s	47
13.4	6.62	s	38
14.5	6.13	vs	74
15.1	5.87	vs	100
18.0	4.94	m	25
19.0	4.66	s	52
20.1	4.41	s	37
20.4	4.35	vs	84
20.6	4.30	s	43
21.3	4.17	m	26
21.8	4.07	m	27
22.6	3.93	m	22
23.2	3.83	m	28
24.1	3.69	s	60
24.6	3.62	s	30
25.4	3.50	s	34
25.8	3.46	m	26
26.4	3.37	m	17
26.8	3.32	m	20
27.2	3.28	m	21
27.8	3.21	m	24
28.4	3.14	w	13
29.3	3.04	m	26
29.8	3.00	w	12
30.6	2.92	m	21
31.0	2.88	w	11
32.2	2.78	w	9
32.7	2.73	s	38
32.9	2.72	m	28
33.8	2.65	m	18
34.1	2.63	w	10
35.2	2.55	w	12

35.9	2.50	w	10
36.4	2.46	w	10
36.8	2.44	w	9
37.6	2.39	w	9
38.0	2.36	w	12
38.3	2.35	w	10
39.4	2.28	w	9
39.8	2.26	w	14
40.7	2.22	m	19

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11. The crystalline R-ketamine oxalate salt of claim 1 characterized by PXRD peaks at two or more, or three peaks selected from the group consisting of 12.8 °2θ, 14.8 °2θ and 16.2 °2θ (±0.2 °2θ; ±0.1 °2θ; or ±0.0 °2θ; Cu Kα1 radiation), optionally characterized by PXRD peaks at 12.8 °2θ, 14.8 °2θ and 16.2 °2θ (±0.2 °2θ; ±0.1 °2θ; or ±0.0 °2θ; Cu Kα1 radiation).

12. The crystalline R-ketamine oxalate salt of claim 11 characterized by a PXRD spectrum substantially similar to that shown in FIG. 43.

13. The crystalline R-ketamine oxalate salt of any one of claims 11 or 12 characterized by one, two, three, four, five, six, seven, eight, nine, ten, eleven, twelve, thirteen, fourteen, fifteen or sixteen PXRD peaks selected from those set forth in Table 12

Angle in °2-theta	**d-spacing in Å**	**Intensity**	**Intensity %**
4.5	19.63	m	16
9.1	9.76	s	31
12.0	7.35	m	27
12.3	7.21	s	33
12.8	6.90	vs	96
13.1	6.76	m	22
13.4	6.59	s	31
14.0	6.34	m	20
14.3	6.20	s	54
14.8	5.97	vs	100
15.1	5.87	s	63
15.9	5.59	m	19
16.2	5.46	vs	75
16.6	5.33	m	20
16.9	5.23	w	10
18.2	4.88	m	25
18.7	4.75	w	13
19.6	4.53	m	25
19.9	4.45	m	16
20.4	4.34	m	22

20.7	4.28	s	48
21.0	4.23	w	11
21.3	4.17	s	53
21.9	4.06	s	30
22.2	4.00	w	11
22.5	3.96	m	24
22.8	3.90	s	46
23.2	3.83	s	35
23.8	3.73	s	43
24.2	3.68	m	26
24.5	3.63	m	17
25.7	3.47	m	24
25.9	3.44	s	47
26.1	3.41	s	41
26.4	3.38	w	8
26.6	3.35	w	12
27.1	3.29	m	20
27.5	3.24	s	32
28.0	3.19	m	24
28.3	3.15	w	14
28.9	3.09	w	11
29.4	3.03	w	6
29.7	3.01	w	11
30.0	2.98	w	12
30.5	2.93	m	19
30.7	2.91	w	8
31.3	2.86	w	14
32.1	2.79	w	7
32.3	2.77	w	7
32.6	2.74	w	10
33.1	2.70	m	16
33.6	2.66	m	19
34.1	2.63	w	10
34.6	2.59	w	9
34.9	2.57	w	8
35.2	2.55	w	10
35.6	2.52	w	7
35.9	2.50	w	9
36.3	2.48	w	7
36.7	2.45	w	9
37.0	2.43	w	10
37.7	2.38	w	7
38.0	2.36	w	10
38.4	2.34	m	24
38.8	2.32	w	9

39.2	2.30	w	14
39.4	2.28	w	9
39.9	2.26	vw	5
40.5	2.23	vw	4

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14. A pharmaceutical composition comprising one or more of the salts or salt forms according to any one of claims 1-13 and a pharmaceutically acceptable excipient, diluent or carrier.

15. Use of the crystalline R-ketamine salt according to any one of claims 1-13, or the pharmaceutical composition of claim 14, in the manufacture of a medicament for treating or preventing depression or depressive symptoms in a patient in need thereof, optionally wherein the depression or depressive symptom is treatment resistant depression.