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(54) **METHYL SUBSTITUTED QUATERNARY TRYPTAMINE DERIVATIVES**

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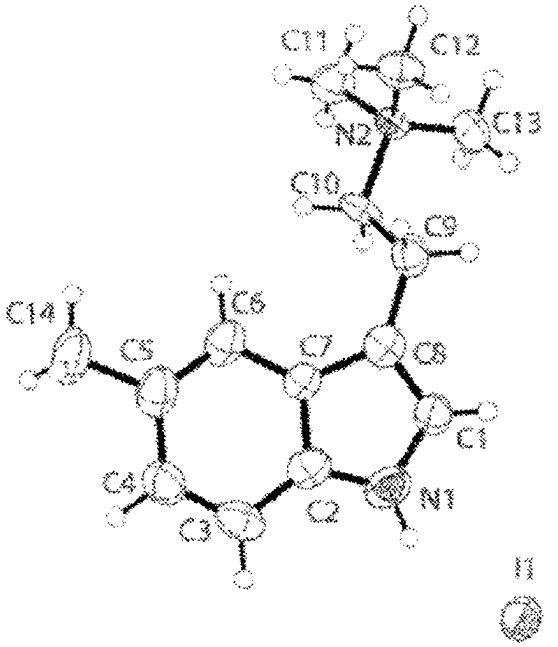
(52) **U.S. Cl.**

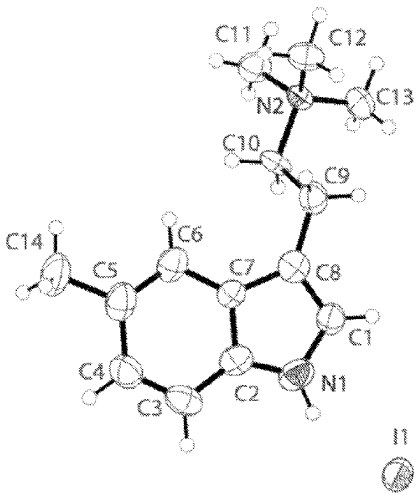
CPC ***C07D 209/16*** (2013.01); ***A61K 31/4045*** (2013.01); ***A61K 45/06*** (2013.01)

(57) **ABSTRACT**

This disclosure relates to trimethyl[2-(5-methyl-1H-indol-3-yl)ethyl]azanium iodide (5-methyl-A/,A/,A/trimethyltryptammonium iodide or 5-Me-TMT iodide), crystalline 5-Me-TMT iodide, triethyl [2-(5-methyl-1H-indol-3-yl)ethyl]azanium iodide (5-methyl-A/,/V,/V-triethyltryptammonium iodide or 5-Me-TET iodide), crystalline 5-Me-TET iodide, triethyl[2-(1-methyl-1H-indol-3-yl)ethyl]azanium iodide (1-methyl-/V,/V,/V-triethyltryptammonium iodide or 1-Me-TET iodide), crystalline 1-Me-TET iodide, [2-(5-methyl-1H-indol-3-yl)ethyl]tripropylazanium acetonitrile iodide (5-methyl-/V,/V,/V-tri-n-propyltryptammonium iodide acetonitrile or 5-Me-TPT iodide acetonitrile), crystalline 5-Me-TPT iodide acetonitrile, [2-(7-methyl-1H-indol-3-yl)ethyl]tripropylazanium iodide (7-methyl-A/,A/,A/-tri-n-propyltryptammonium iodide or 7-Me-TPT iodide), crystalline 7-Me-TPT iodide, and specific crystalline forms thereof, including crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide, to compositions containing the same, and to methods of treatment using them.

FIG. 1





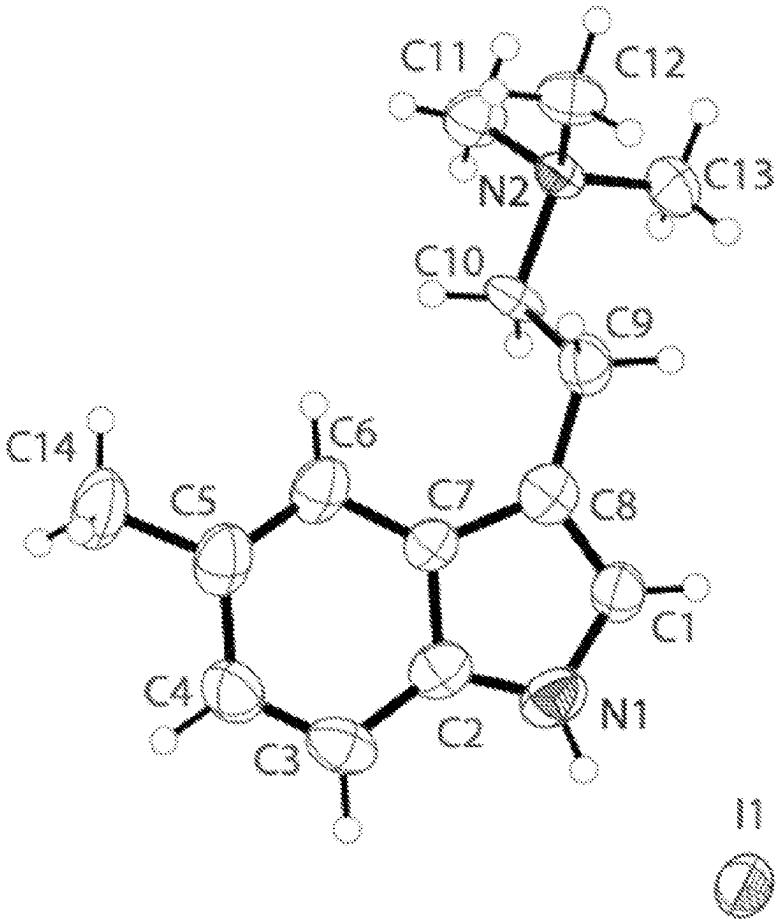


FIG. 1

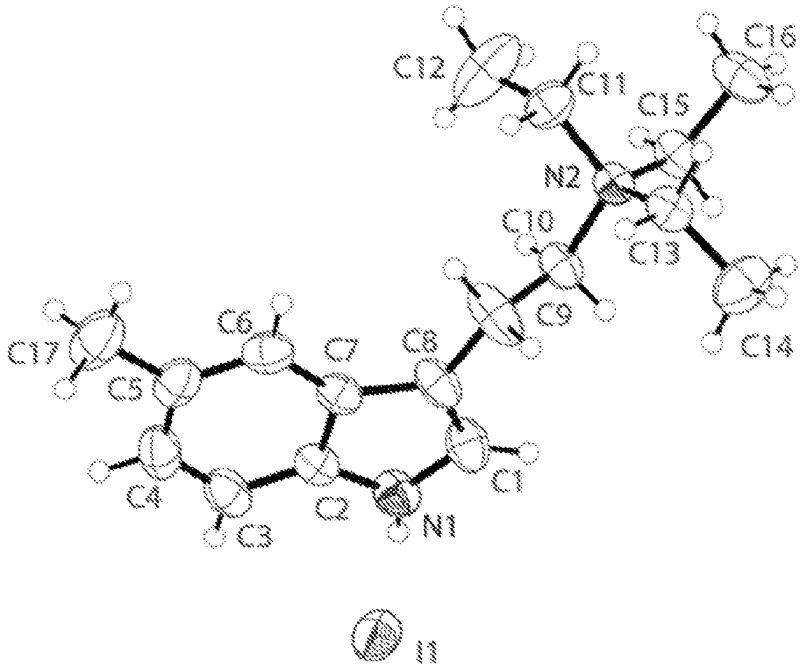


FIG. 2

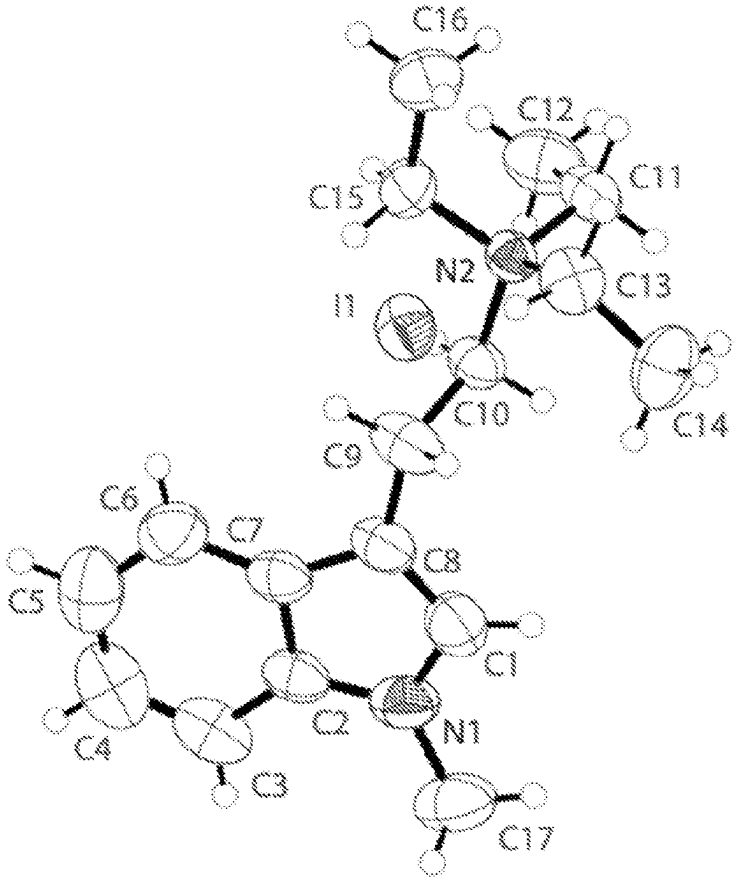
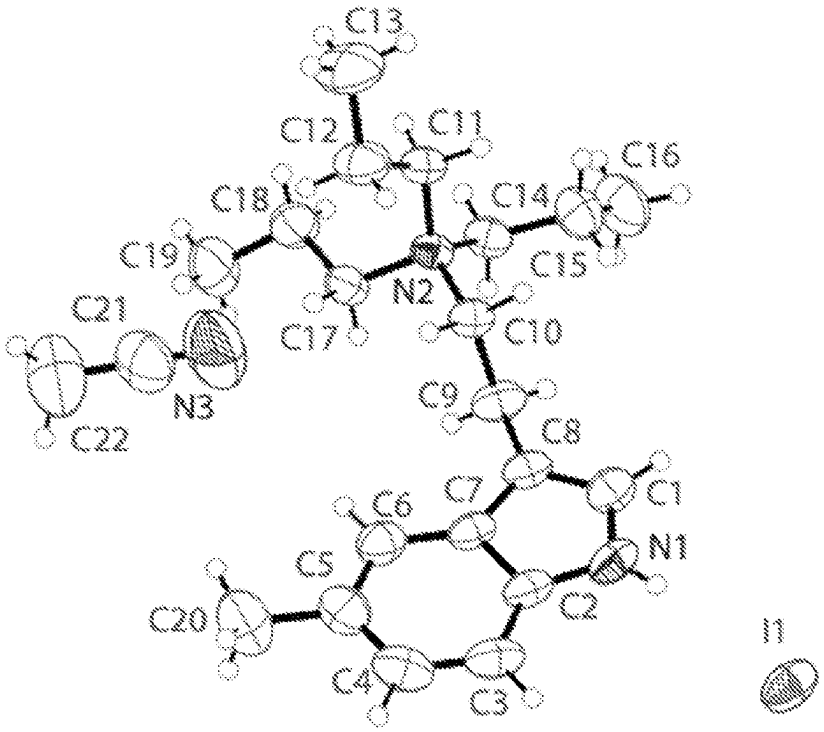


FIG. 3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C11
C16
C18
C14
C19
C15
N2
C21
C17
C10
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C9
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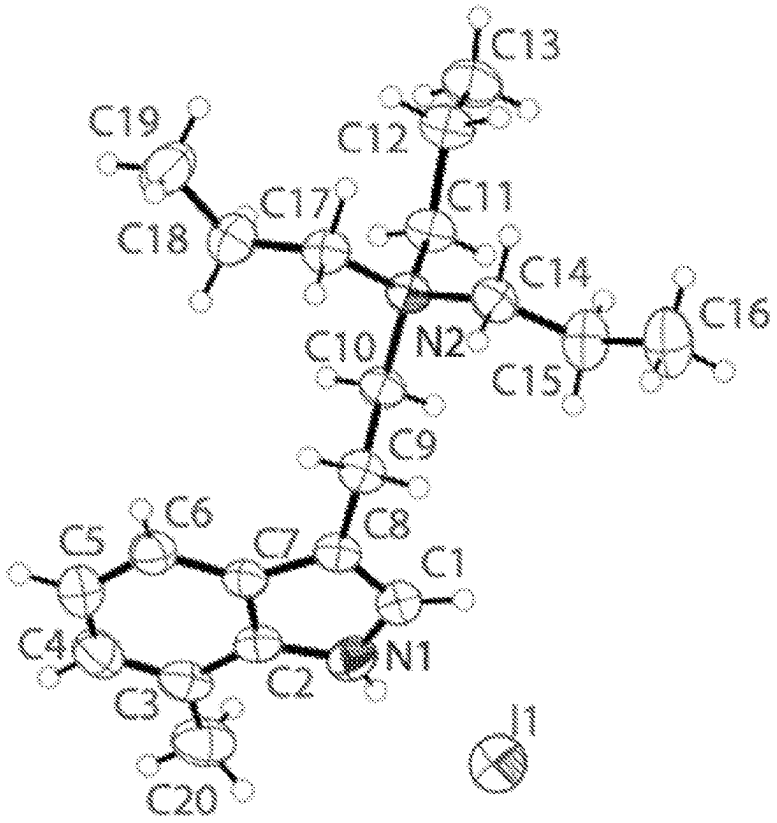
C8
C7
C1
C6
N1
C5
C2
C20
I1
C4
C3

FIG. 4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C2
C3
I1
C20

FIG. 5

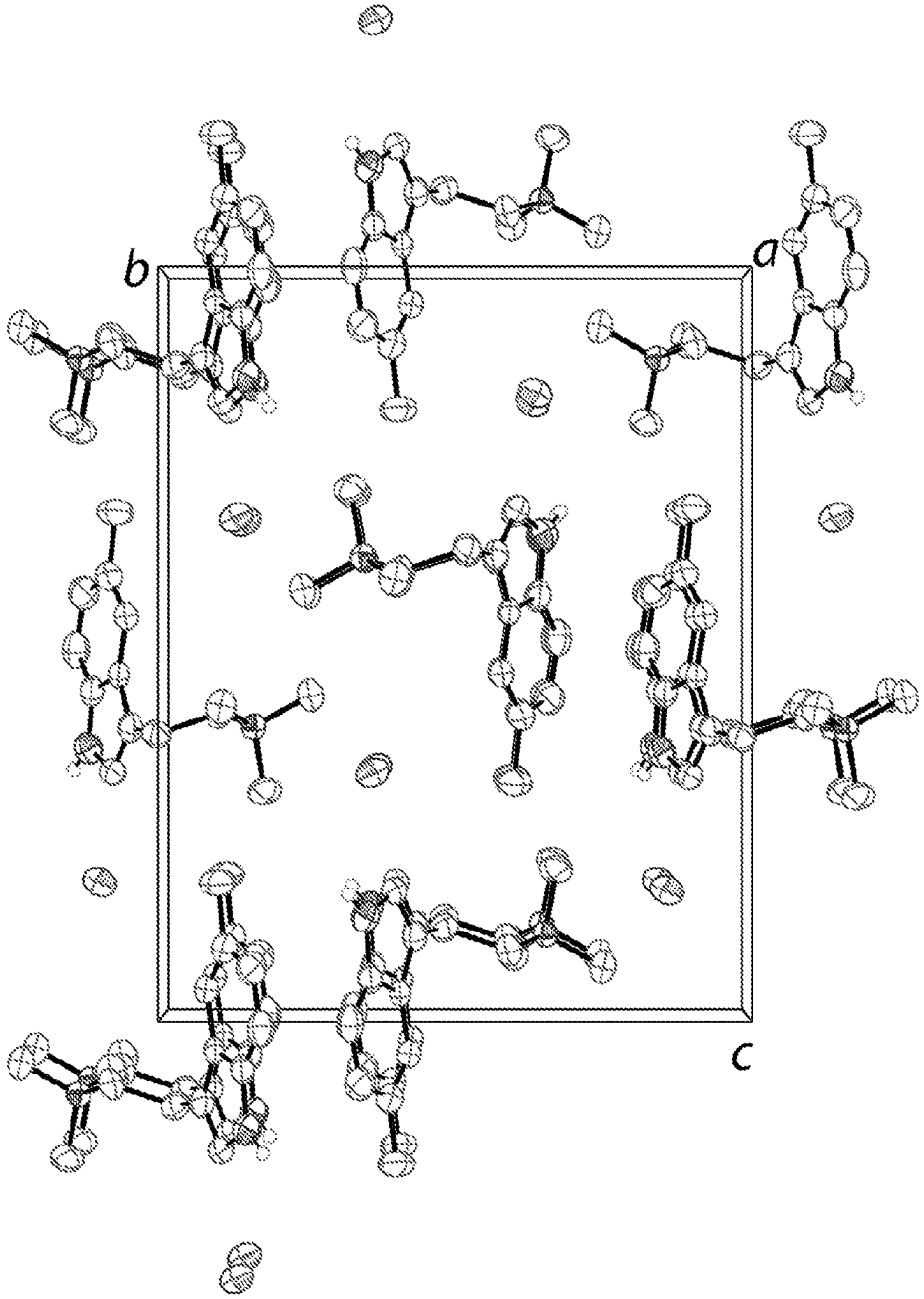


FIG. 6

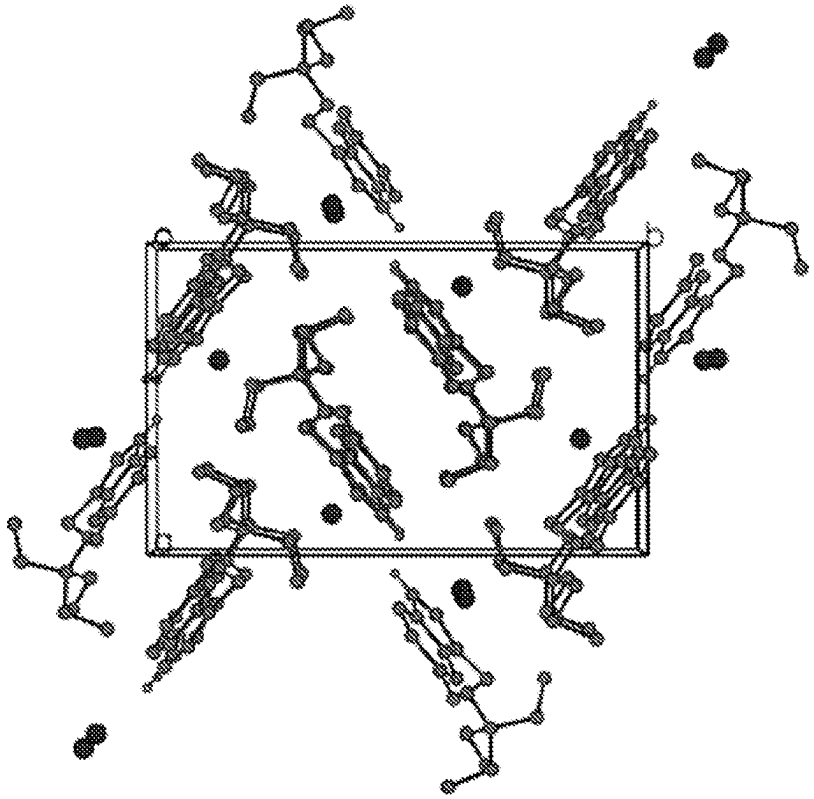


FIG. 7

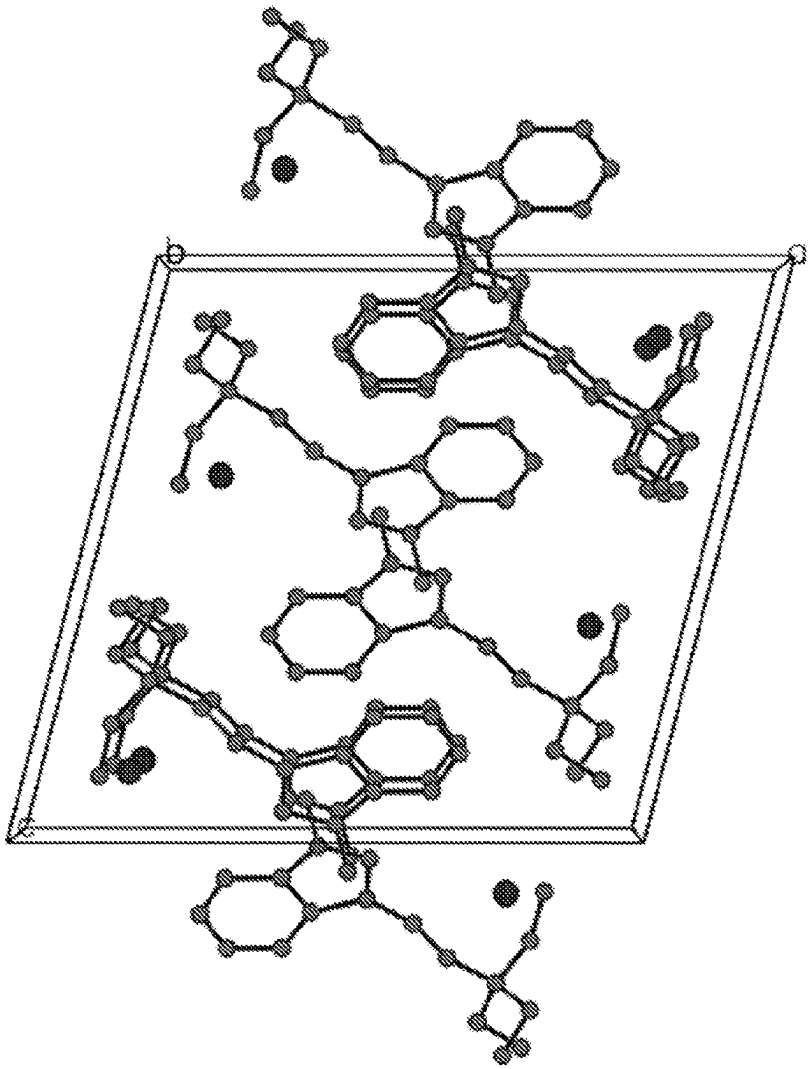


FIG. 8

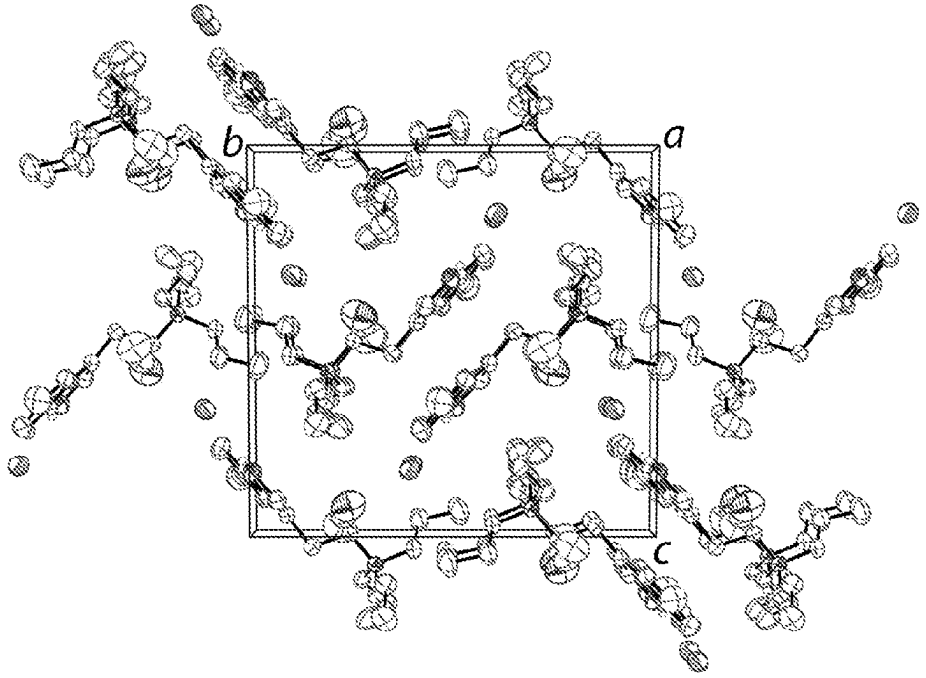


FIG. 9

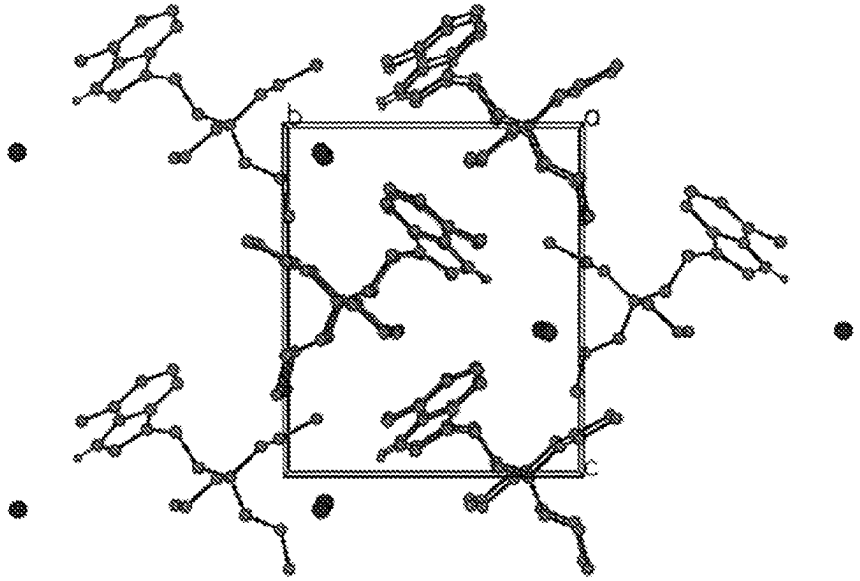
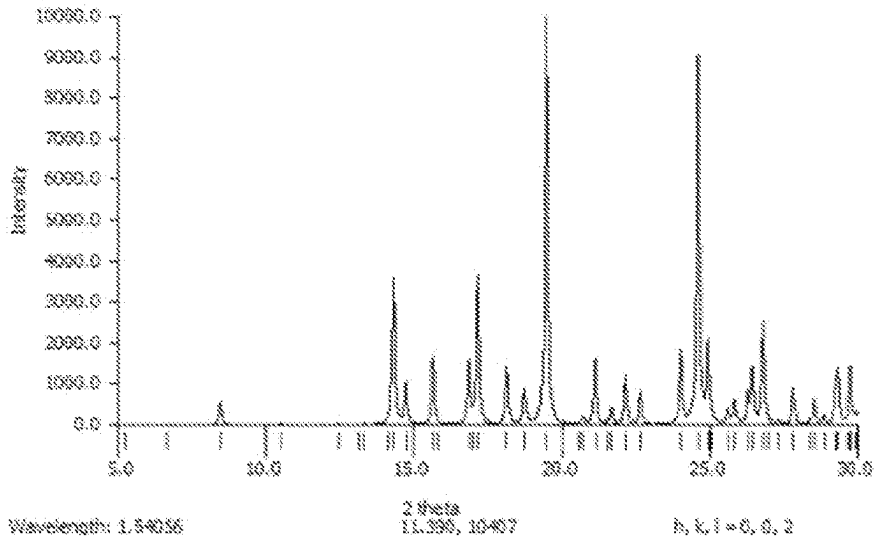


FIG. 10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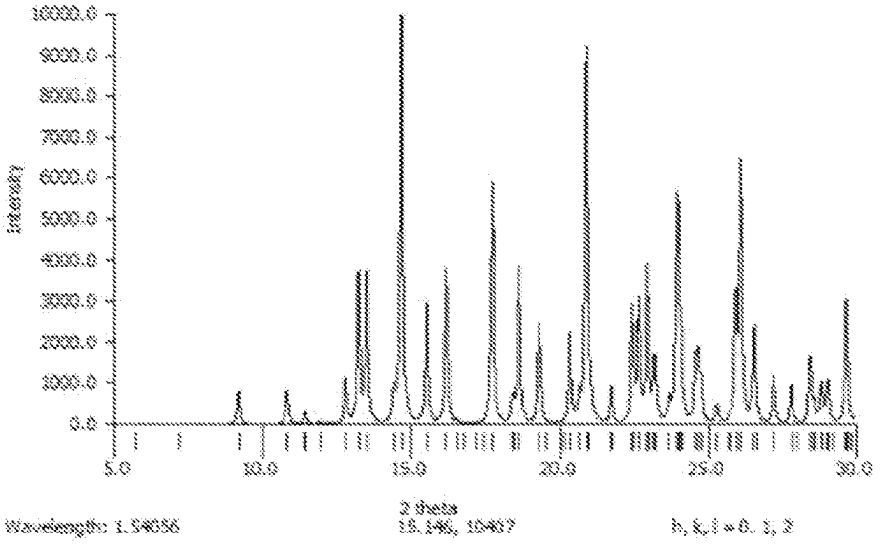
10.0
15.0
20.0
25.0
30.0
2 Theta
Wavelength: 1.54056
11.398, 10407
h, k, l = 0, 0, 2

FIG. 11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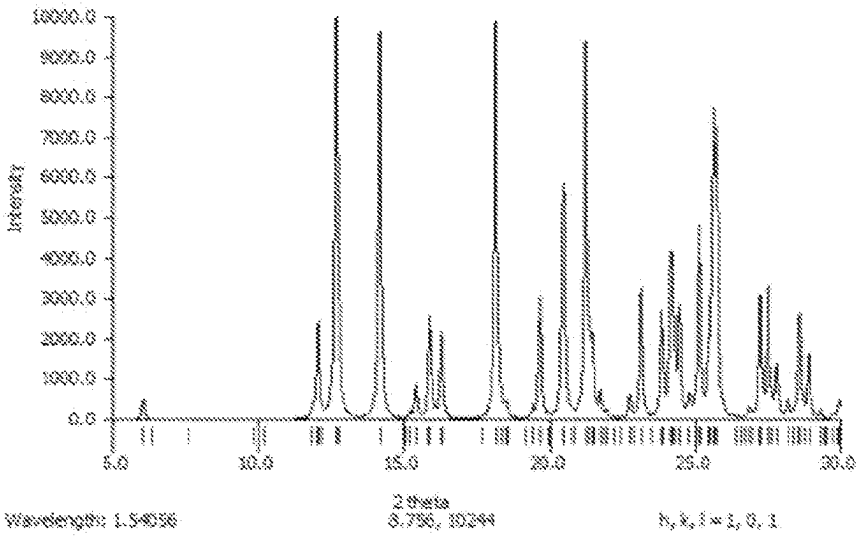
5.0
10.0
15.0
20.0
25.0
30.0
2 Theta
Wavelength: 1.54056
15.146, 10407
h, k, l = 0, 1, 2

FIG. 12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5.0
10.0
15.0
20.0
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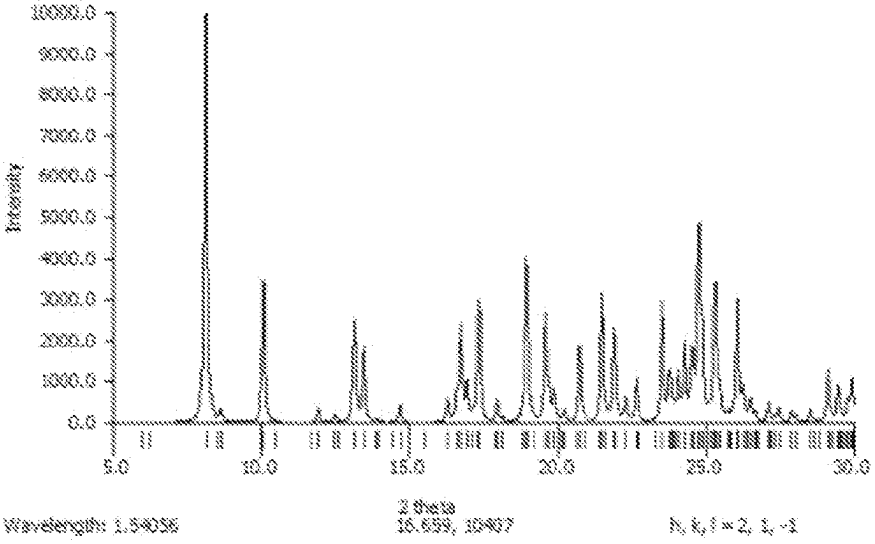
30.0
2-Theta
Wavelength: 1.54056
8.756, 10.244
h, k, l = 1, 0, 1

FIG. 13


Intensity
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7000.0
6000.0
5000.0
4000.0
3000.0
2000.0
1000.0
0.0
5.0
10.0
15.0
20.0
25.0
30.0
2-Theta
Wavelength: 1.54056
h, k, l = 2, 1, -1

FIG. 14

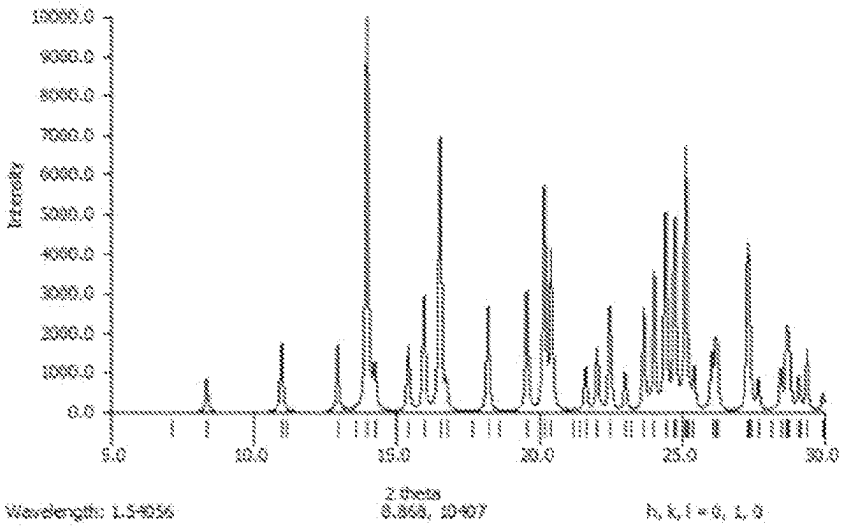


FIG. 15

METHYL SUBSTITUTED QUATERNARY TRYPTAMINE DERIVATIVES

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to U.S. Provisional Application No. 63/369,298, filed on Jul. 25, 2022; U.S. Provisional Application No. 63/370,137, filed on Aug. 2, 2022; U.S. Provisional Application No. 63/370,139, filed on Aug. 2, 2022; U.S. Provisional Application No. 63/370,148, filed on Aug. 2, 2022; and U.S. Provisional Application No. 63/370,149, filed on Aug. 2, 2022; the disclosures of which are all incorporated herein by reference.

TECHNICAL FIELD

[0002] This disclosure relates to trimethyl[2-(5-methyl-1H-indol-3-yl)ethyl]azanium iodide (5-methyl-N,N,N-trimethyltryptammonium iodide or 5-Me-TMT iodide), crystalline 5-Me-TMT iodide, and specific crystalline forms thereof, including crystalline form 1 of 5-Me-TMT iodide; to pharmaceutical compositions containing 5-Me-TMT iodide or crystalline 5-Me-TMT iodide, including crystalline form 1 of 5-Me-TMT iodide; and to methods of treatment/therapeutic uses of 5-Me-TMT iodide or crystalline 5-Me-TMT iodide, including crystalline form 1 of 5-Me-TMT iodide.

[0003] This disclosure further relates to triethyl[2-(5-methyl-1H-indol-3-yl)ethyl]azanium iodide (5-methyl-N,N,N-triethyltryptammonium iodide or 5-Me-TET iodide), crystalline 5-Me-TET iodide, and specific crystalline forms thereof, including crystalline form 1 of 5-Me-TET iodide; to pharmaceutical compositions containing 5-Me-TET iodide or crystalline 5-Me-TET iodide, including crystalline form 1 of 5-Me-TET iodide; and to methods of treatment/therapeutic uses of 5-Me-TET iodide or crystalline 5-Me-TET iodide, including crystalline form 1 of 5-Me-TET iodide.

[0004] This disclosure further relates to triethyl[2-(1-methyl-1H-indol-3-yl)ethyl]azanium iodide (1-methyl-N,N,N-triethyltryptammonium iodide or 1-Me-TET iodide), crystalline 1-Me-TET iodide, and specific crystalline forms thereof, including crystalline form 1 of 1-Me-TET iodide; to pharmaceutical compositions containing 1-Me-TET iodide or crystalline 1-Me-TET iodide, including crystalline form 1 of 1-Me-TET iodide; and to methods of treatment/therapeutic uses of 1-Me-TET iodide or crystalline 1-Me-TET iodide, including crystalline form 1 of 1-Me-TET iodide.

[0005] This disclosure further relates to [2-(5-methyl-1H-indol-3-yl)ethyl]tripropylazanium acetonitrile iodide (5-methyl-N, N, N-tri-n-propyltryptammonium iodide acetonitrile or 5-Me-TPT iodide acetonitrile), crystalline 5-Me-TPT iodide acetonitrile, and specific crystalline forms thereof, including crystalline form 1 of 5-Me-TPT iodide acetonitrile; to pharmaceutical compositions containing 5-Me-TPT iodide acetonitrile or crystalline 5-Me-TPT iodide acetonitrile, including crystalline form 1 of 5-Me-TPT iodide acetonitrile; and to methods of treatment/therapeutic uses of 5-Me-TPT iodide acetonitrile or crystalline 5-Me-TPT iodide acetonitrile, including crystalline form 1 of 5-Me-TPT iodide acetonitrile.

[0006] This disclosure further relates to [2-(7-methyl-1H-indol-3-yl)ethyl]tripropylazanium iodide (7-methyl-N,N,N-tri-n-propyltryptammonium iodide or 7-Me-TPT iodide), crystalline 7-Me-TPT iodide, and specific crystalline forms thereof, including crystalline form 1 of 7-Me-TPT iodide; to pharmaceutical compositions containing 7-Me-TPT iodide or crystalline 7-Me-TPT iodide, including crystalline form 1 of 7-Me-TPT iodide; and to methods of treatment/therapeutic uses of 7-Me-TPT iodide or crystalline 7-Me-TPT iodide, including crystalline form 1 of 7-Me-TPT iodide.

BACKGROUND OF THE INVENTION

[0007] Obtaining specific salts or crystalline forms of an active pharmaceutical ingredient (API) is extremely useful in drug development. It permits better characterization of the drug candidate's chemical and physical properties. Crystalline forms often have better chemical and physical properties than the API in its amorphous state. Such crystalline forms may possess more favorable pharmaceutical and pharmacological properties or be easier to process. Additionally, preparing a crystalline API and solving its crystal structure provides the gold standard for chemical characterization and determining the molecular formula (and molecular weight) of the API. Accordingly, preparing a crystalline form with an accompanying crystal structure thereof prevents potential ambiguities and/or inaccuracies in the API's molecular weight. This is important because the API's molecular weight is used to calculate the concentration of compositions comprising that API. Thus, inaccuracies in molecular weight may lead to errors in the calculations pertaining to dosing, potency, toxicity, etc. in all downstream in vitro and in vivo assays that correlated the concentration of the API with a measured property. Accordingly, there remains a need to obtain and characterize crystalline forms of APIs, such as tryptamines and other psychedelic drug compounds.

SUMMARY OF THE INVENTION

[0008] This disclosure relates to trimethyl[2-(5-methyl-1H-indol-3-yl)ethyl]azanium iodide (5-methyl-N,N,N-trimethyltryptammonium iodide or 5-Me-TMT iodide), crystalline 5-Me-TMT iodide, and specific crystalline forms thereof. In one embodiment, this disclosure pertains to particular crystalline forms of 5-Me-TMT iodide, including crystalline form 1 of 5-Me-TMT iodide. In one embodiment, crystalline form 1 of 5-Me-TMT iodide is characterized by at least one of: an orthorhombic, $P2_12_12_1$ space group at a temperature of about 297 (2) K; unit cell dimensions a=6.7329 (5) Å, b=13.2942 (9) Å, c=16.8123 (13) Å, α=90°, β=90°, and γ=90°; an X-ray powder diffraction (XRPD) pattern substantially similar to FIG. **11**; and an X-ray powder diffraction pattern characterized by at least two peaks selected from 14.3, 15.7, and 19.5° 2θ±0.2° 2θ.

[0009] This disclosure further relates to triethyl[2-(5-methyl-1H-indol-3-yl)ethyl]azanium iodide (5-methyl-N,N,N-triethyltryptammonium iodide or 5-Me-TET iodide), crystalline 5-Me-TET iodide, and specific crystalline forms thereof. In one embodiment, this disclosure pertains to particular crystalline forms of 5-Me-TET iodide, including crystalline form 1 of 5-Me-TET iodide. In one embodiment, crystalline form 1 of 5-Me-TET iodide is characterized by at least one of: a monoclinic, $P2_{1/n}$ space group at a temperature of about 297 (2) K; unit cell dimensions a=9.6263 (4) Å, b=15.4887 (7) Å, c=12.2881 (5) Å, α=90°, β=92.496 (2)°, and γ=90°; an X-ray powder diffraction (XRPD) pattern substantially similar to FIG. **12**; and an X-ray powder

diffraction pattern characterized by at least two peaks selected from 15.5, 16.2, and 17.7° 2θ±0.2° 2θ.

[0010] This disclosure further relates to triethyl[2-(1-methyl-1H-indol-3-yl)ethyl]azanium iodide (1-methyl-N,N,N-triethyltryptammonium iodide or 1-Me-TET iodide), crystalline 1-Me-TET iodide, and specific crystalline forms thereof. In one embodiment, this disclosure pertains to particular crystalline forms of 1-Me-TET iodide, including crystalline form 1 of 1-Me-TET iodide. In one embodiment, crystalline form 1 of 1-Me-TET iodide is characterized by at least one of: a monoclinic, $P2_{1/C}$ space group at a temperature of about 297 (2) K; unit cell dimensions a=15.1283 (9) Å, b=8.6596 (5) Å, c=14.3462 (7) Å, α=90°, β=104.516 (2)°, and γ=90°; an X-ray powder diffraction (XRPD) pattern substantially similar to FIG. **13**; and an X-ray powder diffraction pattern characterized by at least two peaks selected from 12.0, 12.7, and 14.2° 2θ±0.2° 2θ.

[0011] This disclosure further relates to [2-(5-methyl-1H-indol-3-yl)ethyl]tripropylazanium acetonitrile iodide (5-methyl-N,N,N-tri-n-propyltryptammonium iodide acetonitrile or 5-Me-TPT iodide acetonitrile), crystalline 5-Me-TPT iodide acetonitrile, and specific crystalline forms thereof. In one embodiment, this disclosure pertains to particular crystalline forms of 5-Me-TPT iodide acetonitrile, including crystalline form 1 of 5-Me-TPT iodide acetonitrile. In one embodiment, crystalline form 1 of 5-Me-TPT iodide acetonitrile is characterized by at least one of: a monoclinic, $P2_{1/C}$ space group at a temperature of about 297 (2) K; unit cell dimensions a=11.4680 (5) Å, b=14.8441 (7) Å, c=14.9340 (6) Å, α=90°, β=108.347 (2)', and γ=90°; an X-ray powder diffraction (XRPD) pattern substantially similar to FIG. **14**; and an X-ray powder diffraction pattern characterized by at least two peaks selected from 8.1, 10.1, and 13.1 °2θ±0.2° 2θ.

[0012] This disclosure further relates to [2-(7-methyl-1H-indol-3-yl)ethyl]tripropylazanium iodide (7-methyl-N,N,N-tri-n-propyltryptammonium iodide or 7-Me-TPT iodide), crystalline 7-Me-TPT iodide, and specific crystalline forms thereof. In one embodiment, this disclosure pertains to particular crystalline forms of 7-Me-TPT iodide, including crystalline form 1 of 7-Me-TPT iodide. In one embodiment, crystalline form 1 of 7-Me-TPT iodide is characterized by at least one of: a monoclinic, Pn space group at a temperature of about 297 (2) K; unit cell dimensions a=7.9123 (3) Å, b=10.5779 (5) Å, c=12.4517 (5) Å, α=90°, β=93.0590 (10)°, and γ=90°; an X-ray powder diffraction (XRPD) pattern substantially similar to FIG. **15**; and an X-ray powder diffraction pattern characterized by at least two peaks selected from 11.0, 12.9, 18.2, and 19.6° 2θ±0.2° 2θ.

[0013] The disclosure further relates to a composition comprising 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, and at least one excipient.

[0014] The disclosure further relates to a composition comprising 5-Me-TET iodide, crystalline 5-Me-TET iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TET iodide, and at least one excipient.

[0015] The disclosure further relates to a composition comprising 1-Me-TET iodide, crystalline 1-Me-TET iodide, or specific crystalline forms thereof, such as crystalline form 1 of 1-Me-TET iodide, and at least one excipient.

[0016] The disclosure further relates to a composition comprising 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TPT iodide acetonitrile, and at least one excipient.

[0017] The disclosure further relates to a composition comprising 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 7-Me-TPT iodide, and at least one excipient.

[0018] The disclosure also provides a composition comprising 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide, as a first component and a second component selected from at least one of (a) a serotonergic drug, (b) a purified psilocybin derivative, (c) a purified cannabinoid, (d) a purified terpene, (e) an adrenergic drug, (f) a dopaminergic drug, (g) a monoamine oxidase inhibitor, (h) a purified erinacine, and (i) a purified hericenone; and at least one excipient.

[0019] The disclosure also relates to a method of preventing or treating a psychological disorder comprising the step of administering to a subject in need thereof a therapeutically effective amount of 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide, or a composition according to this disclosure.

[0020] The disclosure further relates to a method of preventing or treating inflammation and/or pain, preventing or treating a neurological disorder, modulating activity of a mitogen-activated protein kinase (MAPK), modulating neurogenesis, or modulating neurite outgrowth comprising the step of administering to a subject in need thereof a therapeutically effective amount of a compound of 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide, and to administering a pharmaceutical composition or a composition according to the invention.

[0021] As used herein, the term "a subject in need thereof" refers to a person requiring a composition to treat a particular disease or condition (e.g., inflammation, pain, a psychological disorder, modulating activity at a receptor, etc.). In one embodiment, the "subject in need thereof" may be identified by analyzing, diagnosing, and/or determining whether the person (or subject) requires the composition for treatment of a particular disease or condition. In one

embodiment, identifying a person in need of treatment comprises diagnosing a person with a medical condition, e.g., a neurological disorder, a chemical imbalance, a hereditary condition, etc. In one embodiment, identifying a person in need of treatment comprises performing a psychiatric evaluation. In one embodiment, identifying a person in need of treatment comprises performing a blood test. In one embodiment, identifying a person in need of treatment comprises determining whether a person has a compulsive disorder. In one embodiment, identifying a person in need of treatment comprises self-identifying as having a compulsive disorder.

DESCRIPTION OF THE FIGURES

[0022] FIG. **1** shows the molecular structure of crystalline form 1 of 5-methyl-N, N,N-trimethyltryptammonium iodide.

[0023] FIG. **2** shows the molecular structure of crystalline form 1 of 5-methyl-N, N,N-triethyltryptammonium iodide.

[0024] FIG. **3** shows the molecular structure of crystalline form 1 of 1-methyl-N, N,N-triethyltryptammonium iodide.

[0025] FIG. **4** shows the molecular structure of crystalline form 1 of 5-methyl-N,N,N-tri-n-propyltryptammonium iodide acetonitrile.

[0026] FIG. **5** shows the molecular structure of crystalline form 1 of 7-methyl-N, N,N-tri-n-propyltryptammonium iodide.

[0027] FIG. **6** shows the unit cell of crystalline form 1 5-methyl-N,N,N-trimethyltryptammonium iodide along the a-axis.

[0028] FIG. **7** shows the unit cell of crystalline form 1 of 5-methyl-N,N,N-triethyltryptammonium iodide along the c-axis.

[0029] FIG. **8** shows the unit cell of crystalline form 1 of 1-methyl-N,N,N-triethyltryptammonium iodide along the b-axis.

[0030] FIG. **9** shows the unit cell of crystalline form 1 of 5-methyl-N,N,N-tri-n-propyltryptammonium iodide acetonitrile along the a-axis.

[0031] FIG. **10** shows the unit cell of crystalline form 1 of 7-methyl-N,N,N-tri-n-propyltryptammonium iodide along the a-axis.

[0032] FIG. **11** shows the simulated X-ray powder diffraction pattern (XRPD) for crystalline form 1 of 5-methyl-N, N,N-trimethyltryptammonium iodide.

[0033] FIG. **12** shows the simulated X-ray powder diffraction pattern (XRPD) for crystalline form 1 of 5-methyl-N, N,N-triethyltryptammonium iodide.

[0034] FIG. **13** shows the simulated X-ray powder diffraction pattern (XRPD) for crystalline form 1 of 1-methyl-N,N,N-triethyltryptammonium iodide.

[0035] FIG. **14** shows the simulated X-ray powder diffraction pattern (XRPD) for crystalline form 1 of 5-methyl-N, N,N-tri-n-propyltryptammonium iodide acetonitrile.

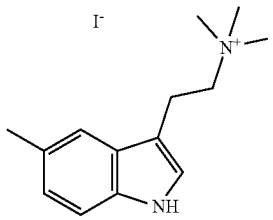
[0036] FIG. **15** shows the simulated X-ray powder diffraction pattern (XRPD) for crystalline form 1 of 7-methyl-N, N,N-tri-n-propyltryptammonium iodide.

DETAILED DESCRIPTION

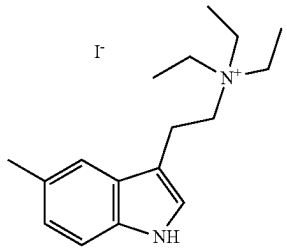
Compounds

[0037] This disclosure relates to trimethyl[2-(5-methyl-1H-indol-3-yl)ethyl]azanium iodide (5-methyl-N, N,N-trimethyltryptammonium iodide or 5-Me-TMT iodide), crystalline 5-Me-TMT iodide, triethyl[2-(5-methyl-1H-indol-3-yl) ethyl]azanium iodide (5-methyl-N,N,N-triethyltryptammonium iodide or 5-Me-TET iodide), crystalline 5-Me-TET iodide, triethyl[2-(1-methyl-1H-indol-3-yl)ethyl]azanium iodide (1-methyl-N,N,N-triethyltryptammonium iodide or 1-Me-TET iodide), crystalline 1-Me-TET iodide, [2-(5-methyl-1H-indol-3-yl)ethyl]tripropylazanium acetonitrile iodide (5-methyl-N,N,N-tri-n-propyltryptammonium iodide acetonitrile or 5-Me-TPT iodide acetonitrile), crystalline 5-Me-TPT iodide acetonitrile, [2-(7-methyl-1H-indol-3-yl)ethyl]tripropylazanium iodide (7-methyl-N,N,N-tri-n-propyltryptammonium iodide or 7-Me-TPT iodide), crystalline 7-Me-TPT iodide, and specific crystalline forms thereof, including crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide; to pharmaceutical compositions containing 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide according to the disclosure. The therapeutic uses of 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide according to the disclosure are described below as well as compositions containing it. 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide, and some exemplary methods used to characterize it are described below.

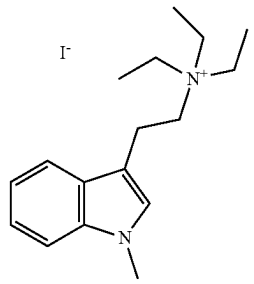
[0038] 5-Me-TMT iodide has the following chemical formula:



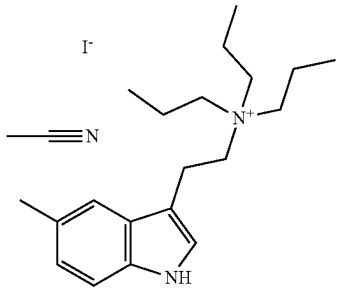
[0039] 5-Me-TET iodide has the following chemical formula:



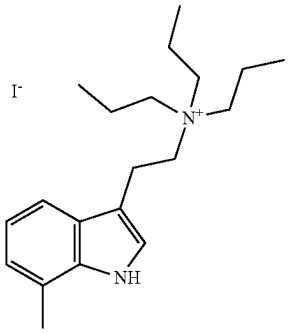
[0040] 1-Me-TET iodide has the following chemical formula:



[0041] 5-Me-TPT iodide acetonitrile has the following chemical formula:



[0042] 7-Me-TPT iodide has the following chemical formula:



Methods of Treatment and Therapeutic Uses

[0043] 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide according to the disclosure, and the methods and the compositions (e.g., pharmaceutical compositions) are used to regulate the activity of a neurotransmitter receptor by administering a therapeutically effective dose of 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide of the disclosure. In one embodiment, 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide according to the disclosure, and the methods and the compositions (e.g., pharmaceutical compositions) are used to treat inflammation and/or pain by administering a therapeutically effective dose of 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide of the disclosure.

[0044] Methods of the disclosure also relate to the administration of a therapeutically effective amount of 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide to prevent or treat a disease or condition, such as those discussed below for a subject in need of treatment. 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide may be administered neat or as a composition comprising 5-Me-TMT iodide,

crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide as discussed below.

[0045] 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide of the disclosure may be used to prevent and/or treat a psychological disorder. The disclosure provides a method for preventing and/or treating a psychological disorder by administering to a subject in need thereof a therapeutically effective amount of 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide of the disclosure, including the exemplary embodiments discussed herein. The psychological disorder may be chosen from: depression; psychotic disorder; schizophrenia; schizophreniform disorder (acute schizophrenic episode); schizoaffective disorder; bipolar I disorder (mania, manic disorder, manic-depressive psychosis); bipolar II disorder; major depressive disorder; major depressive disorder with psychotic feature (psychotic depression); delusional disorders (paranoia); shared psychotic disorder (shared paranoia disorder); brief psychotic disorder (other and unspecified reactive psychosis); psychotic disorder not otherwise specified (unspecified psychosis); paranoid personality disorder; schizoid personality disorder; schizotypal personality disorder; anxiety disorder; social anxiety disorder; substance-induced anxiety disorder; selective mutism; panic disorder; panic attacks; agoraphobia; attention deficit syndrome; post-traumatic stress disorder (PTSD); premenstrual dysphoric disorder (PMDD); and premenstrual syndrome (PMS).

[0046] 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide of the disclosure may be used to prevent and/or treat a brain disorder. The disclosure provides a method for preventing and/or treating a brain disorder (e.g., Huntington's disease, Alzheimer's disease, dementia, and Parkinson's disease) by administering to a subject in need thereof a therapeutically effective amount of 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide.

[0047] 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide of the disclosure may be used to prevent and/or treat developmental disorders, delirium, dementia, amnestic disorders and other cognitive disorders, psychiatric disorders due to a somatic condition, drug-related disorders, schizophrenia and other psychotic disorders, mood disorders, anxiety disorders, somatoform disorders, factitious disorders, dissociative disorders, eating disorders, sleep disorders, impulse control disorders, adjustment disorders, or personality disorders. The disclosure provides a method for preventing and/or treating these disorders by administering to a subject in need thereof a therapeutically effective amount of 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide including the exemplary embodiments discussed above.

[0048] 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide of the disclosure may be used to prevent and/or treat inflammation and/or pain, such as for example inflammation and/or pain associated with inflammatory skeletal or muscular diseases or conditions. The disclosure provides a method for preventing and/or treating an inflammation and/or pain by administering to a subject in need thereof a therapeutically effective amount of 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET

iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide of the disclosure, including the exemplary embodiments discussed herein. Generally speaking, treatable "pain" includes nociceptive, neuropathic, and mix-type. A method of the disclosure may reduce or alleviate the symptoms associated with inflammation, including but not limited to treating localized manifestation of inflammation characterized by acute or chronic swelling, pain, redness, increased temperature, or loss of function in some cases. A method of the disclosure may reduce or alleviate the symptoms of pain regardless of the cause of the pain, including but not limited to reducing pain of varying severity, i.e., mild, moderate and severe pain, acute pain and chronic pain. A method of the disclosure is effective in treating joint pain, muscle pain, tendon pain, burn pain, and pain caused by inflammation such as rheumatoid arthritis. Skeletal or muscular diseases or conditions which may be treated include but are not limited to musculoskeletal sprains, musculoskeletal strains, tendinopathy, peripheral radiculopathy, osteoarthritis, joint degenerative disease, polymyalgia rheumatica, juvenile arthritis, gout, ankylosing spondylitis, psoriatic arthritis, systemic lupus erythematosus, costochondritis, tendonitis, bursitis, such as the common lateral epicondylitis (tennis elbow), medial epicondylitis (pitchers elbow) and trochanteric bursitis, temporomandibular joint syndrome, and fibromyalgia.

[0049] 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide of the disclosure may be used to modulate activity of a mitogen-activated protein kinase (MAPK), comprising administering a composition of the invention. MAPKs provide a wide-ranging signaling cascade that allow cells to quickly respond to biotic and abiotic stimuli. Exemplary MAPKs include, but are not limited to, Tropomyosin Receptor Kinase A (TrkA), P38-alpha, and c-Jun N-Terminal Kinase 3 (JNK3). TrkA is a high affinity catalytic receptor of nerve growth factor (NGF) protein. TrkA regulates NGF response, influencing neuronal differentiation and outgrowth as well as programmed cell death. p38-alpha is involved with the regulation of pro-inflammatory cytokines, including TNF-α. In the central nervous system, p38-alpha regulates neuronal death and neurite degeneration, and it is a common target of Alzheimer's disease therapies. JNK3 is a neuronal-specific protein isoform of the JNKs. It is involved with the regulation of apoptosis. JNK3 also plays a role in modulating the response of cytokines, growth factors, and oxidative stress.

[0050] As used herein, the term "modulating activity of a mitogen-activated protein kinase" refers to changing, manipulating, and/or adjusting the activity of a mitogen-activated protein kinase. In one embodiment, modulating the activity of a MAPK can influence neural health, neurogenesis, neural growth and differentiation, and neurodegenerative diseases.

[0051] 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide of the disclosure may be used to modulate neurogenesis, comprising administering a composition of the invention. As used herein, the term "modulating neurogenesis" refers to changing, manipulating, and/or adjusting the growth and development of neural tissue. In one embodiment, neurogenesis comprises adult neurogenesis, in which new neural stem cells are generated from neural stem cells in an adult animal. In one embodiment, modulating neurogenesis comprises increasing and/or enhancing the rate at which new neural tissue is developed.

[0052] 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide of the disclosure may be used to modulate neurite outgrowth, comprising administering a composition of the invention. As used herein, the term "modulating neurite outgrowth" refers to changing, manipulating, and/or adjusting the growth and development of neural projections, or "neurites." In one embodiment, neurogenesis comprises modulating the growth of new neurites, the number of neurites per neuron, and/or neurite length. In one embodiment, modulating neurite outgrowth comprises increasing and/or enhancing the rate and/or length at which neurites develop.

[0053] 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide of the disclosure may be used to prevent and/or treat sexual health disorders including, but not limited to, hypoactive sexual desire disorder, hyperactive sexual desire disorder, orgasmic disorder, arousal disorder, vaginismus, and dyspareunia. In some embodiments, the disorder is a male sexual dysfunction disorder. In some embodiments, the disorder is a female sexual dysfunction disorder.

[0054] 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide of the disclosure may be used to prevent and/or treat women's health disorders including, but not limited to, menstrual cramping, dysmenorrhea, post-hyster-

ectomy pain, vaginal or vulvar vestibule mucosa disorder, menopausal-related disorders, vaginal atrophy, or vulvar vestibulitis.

Compositions

[0055] The disclosure also relates to compositions comprising an effective amount of 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide and an excipient (e.g., a pharmaceutically-acceptable excipient). In another embodiment, the disclosure also relates to pharmaceutical compositions comprising a therapeutically effective amount of 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide and a pharmaceutically acceptable excipient (also known as a pharmaceutically acceptable carrier). As discussed above, 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide of the disclosure may be, for example, therapeutically useful to prevent and/or treat the psychological disorders, brain disorders, pain, and inflammation as well as the other disorders described herein.

[0056] A composition or a pharmaceutical composition of the disclosure may be in any form which contains 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide. The composition may be, for example, a tablet, capsule, liquid suspension, injectable, topical, or transdermal. The compositions generally contain, for example, about 1% to about 99% by weight of 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide of the disclosure and, for example, 99% to 1% by weight of at least one suitable pharmaceutically acceptable excipient. In one embodiment, the composition may be between about 5% and about 75% by weight of 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide of the disclosure, with the rest being at least one suitable pharmaceutically acceptable excipient or at least one other adjuvant, as discussed below.

[0057] Published US applications US 2018/0221396 A1 and US 2019/0142851 A1 disclose compositions comprising a combination of a first purified psilocybin derivative with a second purified psilocybin derivative, with one or two purified cannabinoids or with a purified terpene. Various ratios of these components in the composition are also disclosed. The disclosures of US 2018/0221396 A1 and US 2019/0142851 A1 are incorporated herein by reference. According to this disclosure, 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide of the disclosure may be used as the "first purified psilocybin derivative" in the compositions described in US 2018/0221396 A1 and US 2019/0142851 A1. Accordingly, this disclosure provides a composition comprising: a first component comprising 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide of the disclosure; at least one second component selected from at least one of (a) a serotonergic drug, (b) a purified psilocybin derivative, (c) a purified cannabinoid, and (d) a purified terpene; and at least one pharmaceutically-acceptable excipient or at least one other adjuvant. Such a composition may be a pharmaceutical composition wherein the components are present individually in therapeutically effective amounts or by combination in a therapeutically effective amount to treat a disease, disorder, or condition as described herein.

[0058] When used in such compositions as a first component comprising 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific

crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide of the disclosure with a second component selected from at least one of (a) a serotonergic drug, (b) a purified psilocybin derivative, (c) a purified cannabinoid, and (d) a purified terpene, the compositions represent particular embodiments of the invention. Compositions having as a first component 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide of the disclosure with a second component selected from at least one of (e) an adrenergic drug, (f) a dopaminergic drug, (g) a monoamine oxidase inhibitor, (h) a purified erinacine, and (i) a purified hericenone represent additional particular embodiments of the invention represented by the compositions having 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide according to the disclosure. In some embodiments, the first and second components can be administered at the same time (e.g., together in the same composition), or at separate times over the course of treating a patient in need thereof. Such a composition may be a pharmaceutical composition wherein the components are present individually in therapeutically effective amounts or by combination in a therapeutically effective amount to treat a disease, disorder, or condition as described herein.

[0059] Within the context of this disclosure, the term "purified" means separated from other materials, such as plant or fungal material, e.g., protein, chitin, cellulose, or water. In one embodiment, the term "purified" refers to a compound substantially free of other materials. In one embodiment, the term "purified" refers to a compound that is substantially free from a second tryptamine compound. In one embodiment, the term "purified" refers to a compound substantially free from histidine. In one embodiment, the term "purified" refers to a compound substantially free from a biological material, such as mold, fungus, plant matter, or bacteria. In one embodiment, the term "purified" refers to a compound substantially free from a paralytic.

[0060] In one embodiment, the term "purified" refers to a compound which has been separated from other compounds that are typically co-extracted when the purified compound is extracted from a naturally occurring organism. In one embodiment, a "purified" psilocybin derivative is partially or completely isolated from other psilocybin derivatives present in a source material, such as a psilocybin-containing mushroom. In one example, "purified" baeocystin is substantially free from psilocybin and/or psilocin. By contrast, traditional psilocybin mushroom extracts (aka crude extracts or fruit body extracts) would be expected to contain an unpredictable and varying amount of psilocybin, psilocin, baeocystin, norbaeocystin, salts thereof, or combinations thereof. Other examples of unpurified psilocybin derivatives would include mycelium containing psilocybin derivatives and/or naturally occurring fungal material such as biological material and/or structural material such as chitin. Similarly, the term "*cannabis* extracts" or "cannabinoid extracts" traditionally refers to whole plants (aka crude or full spectrum extracts) which have not been subjected to further purification to eliminate unwanted molecules that naturally occur in the *cannabis* plant. For example, a "*cannabis* extract comprising cannabidiol" could be expected to include cannabidiol (aka "CBD") and also varying amounts of other compounds, including cannabinoids, terpenes, and other biological material.

[0061] In one embodiment, the term "purified" refers to a compound or composition that has been crystallized.

[0062] In one embodiment, the term "purified" refers to a compound or composition that has been chromatographed, for example by gas chromatography, liquid chromatography (e.g., LC, HPLC, etc.), etc.

[0063] In one embodiment, the term "purified" refers to a compound or composition that has been distilled.

[0064] In one embodiment, the term "purified" refers to a compound or composition that has been sublimed.

[0065] In one embodiment, the term "purified" refers to a compound or composition that has been subject to two or more steps chosen from crystallization, chromatography, distillation, or sublimation.

[0066] In one embodiment, the term "purified" refers to a compound that is between 80-100% pure.

[0067] In one embodiment, the term "purified" refers to a compound that is between 90-100% pure.

[0068] In one embodiment, the term "purified" refers to a compound that is between 95-100% pure.

[0069] In one embodiment, the term "purified" refers to a compound that is between 99-100% pure.

[0070] In one embodiment, the term "purified" refers to a compound that is between 99.9-100% pure.

[0071] A serotonergic drug refers to a compound that binds to, blocks, or otherwise influences (e.g., via an allosteric reaction) activity at a serotonin receptor as described in paragraphs [0245]-[0253] of US 2018/0221396 A1 and [0305]-[0311] US 2019/0142851 A1 as well as the disclosed exemplary embodiments. Exemplary psilocybin derivatives include but are not limited to psilocybin itself and the psilocybin derivatives described in paragraphs [0081]-[0109] of US 2018/0221396 A1 and [0082]-[0110] US 2019/0142851 A1 as well as the disclosed exemplary embodiments. Exemplary cannabinoids include but are not limited to the cannabinoids described in paragraphs [0111]-[0145] of US 2018/0221396 A1 and [0112]-[0146] US 2019/0142851 A1 as well as the disclosed exemplary embodiments. Exemplary terpenes include but are not limited to the terpenes described in paragraphs [0160]-[0238] of US 2018/0221396 A1 and [0161]-[0300] US 2019/0142851 A1 as well as the disclosed exemplary embodiments.

[0072] A pharmaceutical formulation of the disclosure may comprise, consist essentially of, or consist of (a) 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide

acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide of the disclosure and (b) at least one second active compound selected from a serotonergic drug, a purified psilocybin derivative, a purified cannabinoid, a purified terpene, an adrenergic drug, a dopaminergic drug, a monoamine oxidase inhibitor, a purified erinacine, and a purified hericenone, and (c) a pharmaceutically acceptable excipient. In some embodiments, 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide and the second active compound(s) are each present in a therapeutically effective amount using purposefully engineered and unnaturally occurring molar ratios. Exemplary molar ratios of 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide of the disclosure to the second active compound in a composition of the disclosure include but are not limited to from about 0.1:100 to about 100:0.1, from about 1:100 to about 100:1, from about 1:50 to about 50:1, from about 1:25 to about 25:1, from about 1:20 to about 20:1, from about 1:10 to about 10:1, from about 1:5 to about 5:1, from about 1:2 to about 2:1 or may be about 1:1.

[0073] A pharmaceutical formulation of the disclosure may comprise a composition containing 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide of the disclosure and a serotonergic drug, a purified psilocybin derivative, a purified cannabinoid, or a purified terpene, each present in a therapeutically effective amount using purposefully engineered and unnaturally occurring molar ratios. Published US applications US 2018/0221396 A1 and US 2019/0142851 A1 disclose compositions comprising a combination of a purified psilocybin derivative with a second purified psilocybin derivative, with one or two purified cannabinoids or with a purified terpene. According to this disclosure composition containing 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide of the disclosure may be used in place of a "purified psilocybin derivative" in the compositions described in US 2018/0221396 A1 and US 2019/0142851 A1. Accordingly, the disclosure provides a pharmaceutical formulation comprising as (a) 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide of the disclosure and at least one second component selected from (a) a purified psilocybin derivative, (b) a purified cannabinoid, and (c) a purified terpene; and at least one pharmaceutically-acceptable excipient or at least one other adjuvant, as described herein. Such a composition may be a pharmaceutical composition wherein the components are present individually in therapeutically effective amounts or by combination in a therapeutically effective amount to treat a disease, disorder, or condition as described herein.

[0074] A serotonergic drug refers to a compound that binds to, blocks, or otherwise influences (e.g., via an allosteric reaction) activity at a serotonin receptor as described in paragraphs [0245]-[0253] of US 2018/0221396 A1 and [0305]-[0311] US 2019/0142851 A1 as well as the disclosed exemplary embodiments. Some exemplary serotonergic drugs include SSRIs and SNRIs. Some examples of specific serotonergic drugs include the following molecules, including any salts, solvates, or polymorphs thereof: 6-allyl-N, N-diethyl-NL; N, N-dibutyl-T; N,N-diethyl-T; N,N-diisopropyl-T; 5-methyoxy-alpha-methyl-T; N,N-dimethyl-T; 2,alpha-dimethyl-T; alpha, N-dimethyl-T; N,N-dipropyl-T; N-ethyl-N-isopropyl-T; alpha-ethyl-T; 6-N,N-Triethyl-NL; 3,4-dihydro-7-methoxy-1-methyl-C; 7-methyoxy-1-methyl-C; N,N-dibutyl-4-hydroxy-T; N,N-diethyl-4-hydroxy-T; N,N-diisopropyl-4-hydroxy-T; N, N-dimethyl-4-hydroxy-T; N, N-dimethyl-5-hydroxy-T; N, N-dipropyl-4-hydroxy-T; N-ethyl-4-hydroxy-N-methyl-T; 4-hydroxy-N-isopropyl-N-methyl-T; 4-hydroxy-N-methyl-N-propyl-T; 4-hydroxy-N,N-tetramethylene-T; ibogaine; N,N-diethyl-L; N-butyl-N-methyl-T; N,N-diisopropyl-4,5-methylenedioxy-T; N,N-diisopropyl-5,6-methylenedioxy-T; N,N-dimethyl-4,5-methylenedioxy-T; N, N-dimethyl-5,6-methylenedioxy-T; N-isopropyl-N-methyl-5,6-methylenedioxy-T; N, N-diethyl-2-methyl-T; 2-N,N-trimethyl-T; N-acetyl-5-methoxy-T; N,N-diethyl-5-methoxy-T; N, N-diisopropyl-5-methoxy-T; 5-methoxy-N,N-dimethyl-T; N-isopropyl-4-methoxy-N-methyl-T; N-isopropyl-5-methoxy-N-methyl-T; 5,6-dimethoxy-N-isopropyl-N-methyl-T; 5-methoxy-N-methyl-T; 5-methoxy-N,N-tetramethylene-T; 6-methoxy-1-methyl-1,2,3,4-tetrahydro-C; 5-methoxy-2-N,N-trimethyl-T; N,N-dimethyl-5-methylthio-T; N-isopropyl-N-methyl-T; alpha-methyl-T; N-ethyl-T; N-methyl-T; 6-propyl-N L; N,N-tetramethylene-T; tryptamine; 7-methoxy-1-methyl-1,2,3,4-tetrahydro-C; and alpha, N-dimethyl-5-methoxy-T. For

additional information regarding these compounds see Shulgin, A. T., & Shulgin, A. (2016). Tihkal: The Continuation. Berkeley, Calif.: Transform Press. In one embodiment, a serotonergic drug is chosen from alprazolam, amphetamine, aripiprazole, azapirone, a barbiturate, bromazepam, bupropion, buspirone, a cannabinoid, chlordiazepoxide, citalopram, clonazepam, clorazepate, dextromethorphan, diazepam, duloxetine, escitalopram, fluoxetine, flurazepam, fluvoxamine, lorazepam, lysergic acid diethylamide, lysergamide, 3,4-methylenedioxymethamphetamine, milnacipran, mirtazapine, naratriptan, paroxetine, pethidine, phenethylamine, psicaine, oxazepam, reboxetine, serenic, serotonin, sertraline, temazepam, tramadol, triazolam, a tryptamine, venlafaxine, vortioxetine, and/or derivatives thereof. In an exemplary embodiment, the serotonergic drug is 3,4-methylenedioxymethamphetamine.

[0075] Exemplary psilocybin derivatives include but are not limited to psilocybin itself and the psilocybin derivatives described in paragraphs [0081]-[0109] of US 2018/0221396 A1 and [0082]-[0110] US 2019/0142851 A1 as well as the disclosed exemplary embodiments, incorporated here by reference. In one embodiment, the compositions disclosed herein comprise one or more purified psilocybin derivatives chosen from: [3-(2-dimethylaminoethyl)-1H-indol-4-yl]dihydrogen phosphate; 4-hydroxytryptamine; 4-hydroxy-N,N-dimethyltryptamine; [3-(2-methylaminoethyl)-1H-indol-4-yl]dihydrogen phosphate; 4-hydroxy-N-methyltryptamine; [3-(aminoethyl)-1H-indol-4-yl] dihydrogen phosphate; [3-(2-trimethylaminoethyl)-1H-indol-4-yl] dihydrogen phosphate; and 4-hydroxy-N,N,N-trimethyltryptamine.

[0076] Exemplary cannabinoids include but are not limited to the cannabinoids described in paragraphs [0111]-[0145] of US 2018/0221396 A1 and [0112]-[0146] US 2019/0142851 A1 as well as the disclosed exemplary embodiments. Examples of cannabinoids within the context of this disclosure include the following molecules: cannabichromene (CBC); cannabichromenic acid (CBCA); cannabichromevarin (CBCV); cannabichromevarinic acid (CBCVA); cannabicyclol (CBL); cannabicyclolic acid (CBLA); cannabicyclovarin (CBLV); cannabidiol (CBD); cannabidiol monomethylether (CBDM); cannabidiolic acid (CBDA); cannabidiorcol (CBD-C1); cannabidivarin (CBDV); cannabidivarinic acid (CBDVA); cannabielsoic acid B (CBEA-B); cannabielsoin (CBE); cannabielsoin acid A (CBEA-A); cannabigerol (CBG); cannabigerol monomethylether (CBGM); cannabigerolic acid (CBGA); cannabigerolic acid monomethylether (CBGAM); cannabigerovarin (CBGV); cannabigerovarinic acid (CBGVA); cannabinodiol (CBND); cannabinodivarin (CBVD); cannabinol (CBN); cannabinol methylether (CBNM); cannabinol-C2 (CBN-C2); cannabinol-C4 (CBN-C4); cannabinolic acid (CBNA); cannabiorcol (CBN-C1); cannabivarin (CBV); cannabitriol (CBT); cannabitriolvarin (CBTV); 10-ethoxy-9-hydroxy-delta-6a-tetrahydrocannabinol; cannabicitran (CBTC); cannabiripsol (CBR); 8,9-dihydroxy-delta-6a-tetrahydrocannabinol; delta-8-tetrahydrocannabinol (48-THC); delta-8-tetrahydrocannabinolic acid (A8-THCA); delta-9-tetrahydrocannabinol (THC); delta-9-tetrahydrocannabinol-C4 (THC-C4); delta-9-tetrahydrocannabinolic acid A (THCA-A); delta-9-tetrahydrocannabinolic acid B (THCA-B); delta-9-tetrahydrocannabinolic acid-C4 (THCA-C4); delta-9-tetrahydrocannabiorcol (THC-C1); delta-9-tetrahydrocannabiorcolic acid (THCA-C1); delta-9-tetrahydrocannabivarin (THCV); delta-9-tetrahydrocannabivarinic acid (THCVA); 10-oxo-delta-6a-tetrahydrocannabinol (OTHC); cannabichromanon (CBCF); cannabifuran (CBF); cannabiglendol; delta-9-cis-tetrahydrocannabinol (cis-THC); trihydroxy-delta-9-tetrahydrocannabinol (triOH-THC); dehydrocannabifuran (DCBF); and 3,4,5,6-tetrahydro-7-hydroxy-alpha-alpha-2-trimethyl-9-n-propyl-2,6-methano-2H-1-benzoxocin-5-methanol. In one embodiment, the purified cannabinoid is chosen from THC, THCA, THCV, THCVA, CBC, CBCA, CBCV, CBCVA, CBD, CBDA, CBDV, CBVD, CBDVA, CBG, CBGA, CBGV, or CBGVA.

[0077] Exemplary terpenes include but are not limited to the terpenes described in paragraphs [0160]-[0238] of US 2018/0221396 A1 and [0161]-[0300] US 2019/0142851 A1 as well as the disclosed exemplary embodiments. In one embodiment, a purified terpene is chosen from acetanisole, acetyl cedrene, anethole, anisole, benzaldehyde, bornyl acetate, borneol, cadinene, cafestol, caffeic acid, camphene, camphor, capsaicin, carene, carotene, carvacrol, carvone, caryophyllene, caryophyllene, caryophyllene oxide, cedrene, cedrene epoxide, cecanal, cedrol, cembrene, cinnamaldehyde, cinnamic acid, citronellal, citronellol, cymene, eicosane, elemene, estragole, ethyl acetate, ethyl cinnamate, ethyl maltol, eucalyptol/1,8-cineole, eudesmol, eugenol, euphol, farnesene, farnesol, fenchone, geraniol, geranyl acetate, guaia-1 (10), 11-diene, guaiacol, guaiol, guaiene, gurjunene, herniarin, hexanaldehyde, hexanoic acid, humulene, ionone, ipsdienol, isoamyl acetate, isoamyl alcohol, isoamyl formate, isoborneol, isomyrcenol, isoprene, isopulegol, isovaleric acid, lavandulol, limonene, gamma-linolenic acid, linalool, longifolene, lycopene, menthol, methyl butyrate, 3-mercapto-2-methylpentanal, beta-mercaptoethanol, mercaptoacetic acid, methyl salicylate, methylbutenol, methyl-2-methylvalerate, methyl thiobutyrate, myrcene, gamma-muurolene, nepetalactone, nerol, nerolidol, neryl acetate, nonanaldehyde, nonanoic acid, ocimene, octanal, octanoic acid, pentyl butyrate, phellandrene, phenylacetaldehyde, phenylacetic acid, phenylethanethiol, phytol, pinene, propanethiol, pristimerin, pulegone, retinol, rutin, sabinene, squalene, taxadiene, terpineol, terpine-4-ol, terpinolene, thujone, thymol, umbelliferone, undecanal, verdoxan, or vanillin. In one embodiment, a purified terpene is chosen from bornyl acetate, alpha-bisabolol, borneol, camphene, camphor, carene, caryophyllene, cedrene, cymene, elemene, eucalyptol, eudesmol, farnesene, fenchol, geraniol, guaiacol, humulene, isoborneol, limonene, linalool, menthol, myrcene, nerolidol, ocimene, phellandrene, phytol, pinene, pulegone, sabinene, terpineol, terpinolene, or valencene.

[0078] As used herein, the term "adrenergic drug" refers to a compound that binds, blocks, or otherwise influences (e.g., via an allosteric reaction) activity at an adrenergic receptor. In one embodiment, an adrenergic drug binds to an adrenergic receptor. In one embodiment, an adrenergic drug indirectly affects an adrenergic receptor, e.g., via interactions affecting the reactivity of other molecules at the adrenergic receptor. In one embodiment, an adrenergic drug is an agonist, e.g., a compound activating an adrenergic receptor. In one embodiment, an adrenergic drug is an antagonist, e.g., a compound binding but not activating an adrenergic receptor, e.g., blocking a receptor. In one embodiment, an adrenergic drug is an effector molecule, e.g., a

compound binding to an enzyme for allosteric regulation. In one embodiment, an adrenergic drug acts (either directly or indirectly) at more than one type of receptor (e.g., 5HT, dopamine, adrenergic, acetylcholine, etc.).

[0079] In one embodiment, an adrenergic drug is an antidepressant. In one embodiment, an adrenergic drug is a norepinephrine transporter inhibitor. In one embodiment, an adrenergic drug is a vesicular monoamine transporter inhibitor. In one embodiment, an adrenergic drug is chosen from adrenaline, agmatine, amoxapine, aptazapine, atomoxetine, bupropion, clonidine, doxepin, duloxetine, esmirtazpine, mianserin, ketanserin, mirabegron, mirtazapine, norepinephrine, phentolamine, phenylephrine, piperoxan, reserpine, ritodrine, setiptiline, tesofensine, timolol, trazodone, trimipramine, or xylazine.

[0080] As used herein, the term "dopaminergic drug" refers to a compound that binds, blocks, or otherwise influences (e.g., via an allosteric reaction) activity at a dopamine receptor. In one embodiment, a dopaminergic drug binds to a dopamine receptor. In one embodiment, a dopaminergic drug indirectly affects a dopamine receptor, e.g., via interactions affecting the reactivity of other molecules at the dopamine receptor. In one embodiment, a dopaminergic drug is an agonist, e.g., a compound activating a dopamine receptor. In one embodiment, a dopaminergic drug is an antagonist, e.g., a compound binding but not activating a dopamine receptor, e.g., blocking a receptor. In one embodiment, a dopaminergic drug is an effector molecule, e.g., a compound binding to an enzyme for allosteric regulation. In one embodiment, a dopaminergic drug acts (either directly or indirectly) at more than one type of receptor (e.g., 5HT, dopamine, adrenergic, acetylcholine, etc.).

[0081] In one embodiment, a dopaminergic drug is a dopamine transporter inhibitor. In one embodiment, a dopaminergic drug is a vesicular monoamine transporter inhibitor. In one embodiment, a dopaminergic drug is chosen from amineptine, apomorphine, benzylpiperazine, bromocriptine, cabergoline, chlorpromazine, clozapine, dihydrexidine, domperidone, dopamine, fluphenazine, haloperidol, ketamine, loxapine, methamphetamine, olanzapine, pemoline, perphenazine, pergolide, phencyclidine, phenethylamine, phenmetrazine, pimozide, piribedil, a psychostimulant, reserpine, risperidone, ropinirole, tetrabenazine, or thioridazine.

[0082] As used herein, the term "monoamine oxidase inhibitor" (MAOI) refers to a compound that blocks the actions of monoamine oxidase enzymes. In one embodiment, a MAOI inhibits the activity of one or both monoamine oxidase A and monoamine oxidase B. In one embodiment a MAOI is a reversible inhibitor of monoamine oxidase A. In one embodiment a MAOI is a drug chosen from isocarboxazid, phenelzine, or tranylcypromine. In one embodiment, a MAOI is β-carboline, pinoline, harmane, harmine, harmaline, harmalol, tetrahydroharmine, 9-methyl-β-carboline, or 3-carboxy-tetrahydrononharman.

[0083] In one embodiment, the compositions and methods disclosed herein include one or more purified erinacine molecules. In one embodiment, the compositions and methods disclosed herein comprise purified erinacine A. In one embodiment, the compositions and methods disclosed herein comprise erinacine B. In one embodiment, the compositions and methods disclosed herein comprise erinacine C. In one embodiment, the compositions and methods disclosed herein comprise erinacine D. In one embodiment, the compositions and methods disclosed herein comprise erinacine E. In one embodiment, the compositions and methods disclosed herein comprise erinacine F. In one embodiment, the compositions and methods disclosed herein comprise erinacine G. In one embodiment, the compositions and methods disclosed herein comprise erinacine H. In one embodiment, the compositions and methods disclosed herein comprise erinacine I. In one embodiment, the compositions and methods disclosed herein comprise erinacine J. In one embodiment, the compositions and methods disclosed herein comprise erinacine K In one embodiment, the compositions and methods disclosed herein comprise erinacine P. In one embodiment, the compositions and methods disclosed herein comprise erinacine Q. In one embodiment, the compositions and methods disclosed herein comprise erinacine R. In one embodiment, the compositions and methods disclosed herein comprise erinacine S.

[0084] In one embodiment, the compositions and methods disclosed herein include one or more purified hericenone molecules. In one embodiment, the compositions and methods disclosed herein comprise purified hericenone A. In one embodiment, the compositions and methods disclosed herein comprise purified hericenone B. In one embodiment, the compositions and methods disclosed herein comprise purified hericenone C. In one embodiment, the compositions and methods disclosed herein comprise purified hericenone D. In one embodiment, the compositions and methods disclosed herein comprise purified hericenone E. In one embodiment, the compositions and methods disclosed herein comprise purified hericenone F. In one embodiment, the compositions and methods disclosed herein comprise purified hericenone G. In one embodiment, the compositions and methods disclosed herein comprise purified hericenone H.

[0085] Exemplary compositions of 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide of the disclosure and a second compound selected from a serotonergic drug, a purified psilocybin derivative, a purified cannabinoid, a purified terpene, an adrenergic drug, a dopaminergic drug, a monoamine oxidase inhibitor, a purified erinacine, and a purified hericenone in exemplary molar ratios are shown in Table 1. 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide of the disclosure may be any one of the exemplary embodiments described above including the crystalline forms as disclosed herein.

TABLE 1

Second Compound	Molar ratio of 5-Me-TMT iodide or crystalline 5-Me-TMT iodide, such as crystalline form 1 of 5-Me-TMT iodide:second compound	Molar ratio of 5-Me-TET iodide or crystalline 5-Me-TET iodide, such as crystalline form 1 of 5-Me-TET iodide:second compound	Molar ratio of 1-Me-TET iodide or crystalline 1-Me-TET iodide, such as crystalline form 1 of 1-Me-TET iodide:second compound	Molar ratio of 5-Me-TPT iodide acetonitrile or crystalline 5-Me-TPT iodide acetonitrile, such as crystalline form 1 of 5-Me-TPT iodide acetonitrile:second compound	Molar ratio of 7-Me-TPT iodide or crystalline 7-Me-TPT iodide, such as crystalline form 1 of 7-Me-TPT iodide:second compound
3,4-methylenedioxy-methamphetamine	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
Citalopram	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
Escitalopram	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
Fluoxetine	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
Paroxetine	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
Sertraline	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
Duloxetine	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
[3-(2-dimethylaminoethyl)-1H-indol-4-yl] dihydrogen phosphate	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
4-hydroxytryptamine	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
4-hydroxy-N,N-dimethyltryptamine	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1

TABLE 1-continued

Second Compound	Molar ratio of 5-Me-TMT iodide or crystalline 5-Me-TMT iodide, such as crystalline form 1 of 5-Me-TMT iodide:second compound	Molar ratio of 5-Me-TET iodide or crystalline 5-Me-TET iodide, such as crystalline form 1 of 5-Me-TET iodide:second compound	Molar ratio of 1-Me-TET iodide or crystalline 1-Me-TET iodide, such as crystalline form 1 of 1-Me-TET iodide:second compound	Molar ratio of 5-Me-TPT iodide acetonitrile or crystalline 5-Me-TPT iodide acetonitrile, such as crystalline form 1 of 5-Me-TPT iodide acetonitrile:second compound	Molar ratio of 7-Me-TPT iodide or crystalline 7-Me-TPT iodide, such as crystalline form 1 of 7-Me-TPT iodide:second compound
[3-(2-methylaminoethyl)-1H-indol-4-yl] dihydrogen phosphate	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
4-hydroxy-N-methyltryptamine	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
[3-(aminoethyl)-1H-indol-4-yl] dihydrogen phosphate	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
[3-(2-trimethylaminoethyl)-1H-indol-4-yl] dihydrogen phosphate	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
4-hydroxy-N,N,N-trimethyltryptamine	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
THC	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
CBC	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
CBD	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
CBG	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
Myrcene	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1

TABLE 1-continued

Second Compound	Molar ratio of 5-Me-TMT iodide or crystalline 5-Me-TMT iodide, such as crystalline form 1 of 5-Me-TMT iodide:second compound	Molar ratio of 5-Me-TET iodide or crystalline 5-Me-TET iodide, such as crystalline form 1 of 5-Me-TET iodide:second compound	Molar ratio of 1-Me-TET iodide or crystalline 1-Me-TET iodide, such as crystalline form 1 of 1-Me-TET iodide:second compound	Molar ratio of 5-Me-TPT iodide acetonitrile or crystalline 5-Me-TPT iodide acetonitrile, such as crystalline form 1 of 5-Me-TPT iodide acetonitrile:second compound	Molar ratio of 7-Me-TPT iodide or crystalline 7-Me-TPT iodide, such as crystalline form 1 of 7-Me-TPT iodide:second compound
Pinene	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
Caryophyllene	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
Limonene	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
Humulene	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
Linalool	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
Adrenaline	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
Amineptine	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
Erinacine A	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
Hericenone A	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
Phenelzine	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1

[0086] Exemplary pharmaceutical compositions of 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide of the disclosure and a second compound selected from a serotonergic drug, a purified psilocybin derivative, a purified cannabinoid, a purified terpene, an adrenergic drug, a dopaminergic drug, a monoamine oxidase inhibitor, a purified erinacine, and a purified hericenone and an excipient with exemplary molar ratios of 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide to the second compound are shown in Table 2. 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide of the disclosure may be any one of the exemplary embodiments described above including the crystalline forms as disclosed herein.

TABLE 2

Second Compound	Molar ratio of 5-Me-TMT iodide or crystalline 5-Me-TMT iodide, such as crystalline form 1 of 5-Me-TMT iodide:second compound	Molar ratio of 5-Me-TET iodide or crystalline 5-Me-TET iodide, such as crystalline form 1 of 5-Me-TET iodide:second compound	Molar ratio of 1-Me-TET iodide or crystalline 1-Me-TET iodide, such as crystalline form 1 of 1-Me-TET iodide:second compound	Molar ratio of 5-Me-TPT iodide acetonitrile or crystalline 5-Me-TPT iodide acetonitrile, such as crystalline form 1 of 5-Me-TPT iodide acetonitrile:second compound	Molar ratio of 7-Me-TPT iodide or crystalline 7-Me-TPT iodide, such as crystalline form 1 of 7-Me-TPT iodide:second compound
3,4-methylenedioxy-methamphetamine	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
Citalopram	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
Escitalopram	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
Fluoxetine	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
Paroxetine	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
Sertraline	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1

TABLE 2-continued

Second Compound	Molar ratio of 5-Me-TMT iodide or crystalline 5-Me-TMT iodide, such as crystalline form 1 of 5-Me-TMT iodide:second compound	Molar ratio of 5-Me-TET iodide or crystalline 5-Me-TET iodide, such as crystalline form 1 of 5-Me-TET iodide:second compound	Molar ratio of 1-Me-TET iodide or crystalline 1-Me-TET iodide, such as crystalline form 1 of 1-Me-TET iodide:second compound	Molar ratio of 5-Me-TPT iodide acetonitrile or crystalline 5-Me-TPT iodide acetonitrile, such as crystalline form 1 of 5-Me-TPT iodide acetonitrile:second compound	Molar ratio of 7-Me-TPT iodide or crystalline 7-Me-TPT iodide, such as crystalline form 1 of 7-Me-TPT iodide:second compound
Duloxetine	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
[3-(2-dimethylaminoethyl)-1H-indol-4-yl] dihydrogen phosphate	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
4-hydroxytryptamine	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
4-hydroxy-N,N-dimethyltryptamine	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
[3-(2-methylaminoethyl)-1H-indol-4-yl] dihydrogen phosphate	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
4-hydroxy-N-methyltryptamine	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
[3-(aminoethyl)-1H-indol-4-yl] dihydrogen phosphate	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
[3-(2-trimethylaminoethyl)-1H-indol-4-yl] dihydrogen phosphate	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
4-hydroxy-N,N,N-trimethyltryptamine	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
THC	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1

TABLE 2-continued

Second Compound	Molar ratio of 5-Me-TMT iodide or crystalline 5-Me-TMT iodide, such as crystalline form 1 of 5-Me-TMT iodide:second compound	Molar ratio of 5-Me-TET iodide or crystalline 5-Me-TET iodide, such as crystalline form 1 of 5-Me-TET iodide:second compound	Molar ratio of 1-Me-TET iodide or crystalline 1-Me-TET iodide, such as crystalline form 1 of 1-Me-TET iodide:second compound	Molar ratio of 5-Me-TPT iodide acetonitrile or crystalline 5-Me-TPT iodide acetonitrile, such as crystalline form 1 of 5-Me-TPT iodide acetonitrile:second compound	Molar ratio of 7-Me-TPT iodide or crystalline 7-Me-TPT iodide, such as crystalline form 1 of 7-Me-TPT iodide:second compound
CBC	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
CBD	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
CBG	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
Myrcene	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
Pinene	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
Caryophyllene	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
Limonene	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
Humulene	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
Linalool	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
Adrenaline	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1

TABLE 2-continued

Second Compound	Molar ratio of 5-Me-TMT iodide or crystalline 5-Me-TMT iodide, such as crystalline form 1 of 5-Me-TMT iodide:second compound	Molar ratio of 5-Me-TET iodide or crystalline 5-Me-TET iodide, such as crystalline form 1 of 5-Me-TET iodide:second compound	Molar ratio of 1-Me-TET iodide or crystalline 1-Me-TET iodide, such as crystalline form 1 of 1-Me-TET iodide:second compound	Molar ratio of 5-Me-TPT iodide acetonitrile or crystalline 5-Me-TPT iodide acetonitrile, such as crystalline form 1 of 5-Me-TPT iodide acetonitrile:second compound	Molar ratio of 7-Me-TPT iodide or crystalline 7-Me-TPT iodide, such as crystalline form 1 of 7-Me-TPT iodide:second compound
Amineptine	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
Erinacine A	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
Hericenone A	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1
Phenelzine	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1	About 1:100 to about 100:1 About 1:25 to about 25:1 About 1:5 to about 5:1

[0087] An "effective amount" or a "therapeutically effective amount" of 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide of the disclosure is generally in the range of about 0.1 to about 100 mg daily (oral dose), of about 0.1 to about 50 mg daily (oral dose), of about 0.25 to about 25 mg daily (oral dose), of about 0.1 to about 5 mg daily (oral dose), or of about 0.5 to about 2.5 mg daily (oral dose). The actual amount required for treatment of any particular patient may depend upon a variety of factors including, for example, the disease being treated and its severity; the specific pharmaceutical composition employed; the age, body weight, general health, sex, and diet of the patient; the mode of administration; the time of administration; the route of administration; and the rate of excretion; the duration of the treatment; any drugs used in combination or coincidental with the specific compound employed; and other such factors well known in the medical arts. These factors are discussed in Goodman and Gilman's "The Pharmacological Basis of Therapeutics," Tenth Edition, A. Gilman, J. Hardman and L. Limbird, eds., McGraw-Hill Press, 155-173 (2001), which is incorporated herein by reference. 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide of the disclosure and pharmaceutical compositions containing it may be used in combination with other agents that are generally administered to a patient being treated for psychological and other disorders discussed above. They may also be co-formulated with one or more of such agents in a single pharmaceutical composition.

[0088] Depending on the type of pharmaceutical composition, the pharmaceutically acceptable carrier may be chosen from any one or a combination of carriers known in the art. The choice of the pharmaceutically acceptable carrier depends upon the pharmaceutical form and the desired method of administration to be used. Exemplary carriers include those that do not substantially alter the structure or activity of 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of

7-Me-TPT iodide of the disclosure, or produce undesirable biological effects or otherwise interact in a deleterious manner with any other component(s) of the pharmaceutical composition.

[0089] The pharmaceutical compositions of the disclosure may be prepared by methods know in the pharmaceutical formulation art, for example, see Remington's Pharmaceutical Sciences, 18th Ed., (Mack Publishing Company, Easton, Pa., 1990), which is incorporated herein by reference. In a solid dosage form, 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide of the disclosure may be admixed with at least one pharmaceutically acceptable excipient such as, for example, sodium citrate or dicalcium phosphate or (a) fillers or extenders, such as, for example, starches, lactose, sucrose, glucose, mannitol, and silicic acid, (b) binders, such as, for example, cellulose derivatives, starch, alginates, gelatin, polyvinylpyrrolidone, sucrose, and gum acacia, (c) humectants, such as, for example, glycerol, (d) disintegrating agents, such as, for example, agar-agar, calcium carbonate, potato or tapioca starch, alginic acid, croscarmellose sodium, complex silicates, and sodium carbonate, (e) solution retarders, such as, for example, paraffin, (f) absorption accelerators, such as, for example, quaternary ammonium compounds, (g) wetting agents, such as, for example, cetyl alcohol, and glycerol monostearate, magnesium stearate and the like, (h) adsorbents, such as, for example, kaolin and bentonite, and (i) lubricants, such as, for example, talc, calcium stearate, magnesium stearate, solid polyethylene glycols, sodium lauryl sulfate, or mixtures thereof. In the case of capsules, tablets, and pills, the dosage forms may also comprise buffering agents. In some embodiments, the excipient is not water. In some embodiments, the excipient is not a solvent (e.g., EtOH, diethyl ether, ethyl acetate, or hydrocarbon-based solvents (e.g., hexanes). In some embodiments, the dosage form is substantially free of water and/or solvents, for example less than about 5% water by mass, less than 2% water by mass, less than 1% water by mass, less than 0.5% water by mass, or less than 0.1% water by mass.

[0090] Excipients or pharmaceutically acceptable adjuvants known in the pharmaceutical formulation art may also be used in the pharmaceutical compositions of the disclosure. These include, but are not limited to, preserving, wetting, suspending, sweetening, flavoring, perfuming, emulsifying, and dispensing agents. Prevention of the action of microorganisms may be ensured by inclusion of various antibacterial and antifungal agents, for example, parabens, chlorobutanol, phenol, sorbic acid, and the like. It may also be desirable to include isotonic agents, for example, sugars, sodium chloride, and the like. If desired, a pharmaceutical composition of the disclosure may also contain minor amounts of auxiliary substances such as wetting or emulsifying agents, pH buffering agents, antioxidants, and the like, such as, for example, citric acid, sorbitan monolaurate, triethanolamine oleate, butylated hydroxytoluene, etc.

[0091] Solid dosage forms as described above may be prepared with coatings and shells, such as enteric coatings and others well known in the art. They may contain pacifying agents and can also be of such composition that they release the active compound or compounds in a certain part of the intestinal tract in a delayed manner. Non-limiting examples of embedded compositions that may be used are polymeric substances and waxes. The active compounds may also be in microencapsulated form, if appropriate, with one or more of the above-mentioned excipients.

[0092] Suspensions, in addition to the active compounds, may contain suspending agents, such as, for example, ethoxylated isostearyl alcohols, polyoxyethylene sorbitol and sorbitan esters, microcrystalline cellulose, aluminum metahydroxide, bentonite, agar-agar and tragacanth, or mixtures of these substances, and the like.

[0093] Solid dosage forms for oral administration, which includes capsules, tablets, pills, powders, and granules, may be used. In such solid dosage forms, the active compound may be mixed with at least one inert, pharmaceutically acceptable excipient (also known as a pharmaceutically acceptable carrier).

[0094] Administration of 5-Me-TMT iodide, crystalline 5-Me-TMT iodide, 5-Me-TET iodide, crystalline 5-Me-TET iodide, 1-Me-TET iodide, crystalline 1-Me-TET iodide, 5-Me-TPT iodide acetonitrile, crystalline 5-Me-TPT iodide acetonitrile, 7-Me-TPT iodide, crystalline 7-Me-TPT iodide, or specific crystalline forms thereof, such as crystalline form 1 of 5-Me-TMT iodide, crystalline form 1 of 5-Me-TET iodide, crystalline form 1 of 1-Me-TET iodide, crystalline form 1 of 5-Me-TPT iodide acetonitrile, and crystalline form 1 of 7-Me-TPT iodide of the disclosure in pure form or in an appropriate pharmaceutical composition may be carried out via any of the accepted modes of administration or agents for serving similar utilities. Thus, administration may be, for example, orally, buccally, nasally, parenterally (intravenous, intramuscular, or subcutaneous), topically, transdermally, intravaginally, intravesically, or intrasystemically, in the form of solid, semi-solid, lyophilized powder, or liquid dosage forms, such as, for example, tablets, suppositories, pills, soft elastic and hard gelatin capsules, powders, solutions, suspensions, or aerosols, or the like, such as, for example, in unit dosage forms suitable for simple administration of precise dosages. One route of administration may be oral administration, using a convenient daily dosage regimen that can be adjusted according to the degree of severity of the disease-state to be treated.

Exemplary Embodiments

[0095] E1. Crystalline trimethyl[2-(5-methyl-1H-indol-3-yl)ethyl]azanium iodide (5-methyl-N,N,N-trimethyltryptammonium iodide).

[0096] E2. Crystalline form 1 of trimethyl[2-(5-methyl-1H-indol-3-yl)ethyl]azanium iodide (5-methyl-N,N,N-trimethyltryptammonium iodide).

[0097] E3. Crystalline form 1 of 5-methyl-N, N,N-trimethyltryptammonium iodide according to E2, characterized by at least one of:

[0098] an orthorhombic crystal system at a temperature of about 297 K;

[0099] a $P2_12_12_1$ space group at a temperature of about 297 K;

[0100] unit cell dimensions a=6.7329 (5) Å, b=13.2942 (9) Å, c=16.8123 (13) Å, α=90°, β=90°, and γ=90°;

[0101] an X-ray powder diffraction pattern substantially similar to FIG. **11**; or

[0102] an X-ray powder diffraction pattern characterized by at least two peaks selected from 14.3, 15.7, and 19.5° 2θ±0.2° 2θ.

[0103] E4. A composition comprising crystalline 5-methyl-N,N,N-trimethyltryptammonium iodide according to any one of E1-E3 and an excipient.

[0104] E5. A composition comprising crystalline 5-methyl-N,N,N-trimethyltryptammonium iodide according to any one of E1-E3 as a first component and a second component selected from at least one of (a) a serotonergic drug, (b) a purified psilocybin derivative, (c) a purified cannabinoid, (d) a purified terpene, (e) an adrenergic drug, (f) a dopaminergic drug, (g) a monoamine oxidase inhibitor, (h) a purified erinacine, and (i) a purified hericenone.

[0105] E6. A method of preventing or treating a psychological disorder comprising the step of:

[0106] administering to a subject in need thereof a therapeutically effective amount of crystalline 5-methyl-N,N,N-trimethyltryptammonium iodide according to any one of E1-E3.

[0107] E7. A method of preventing or treating a psychological disorder comprising the step of:

[0108] administering to a subject in need thereof a composition according to E4 or E5.

[0109] E8. A method of preventing or treating inflammation and/or pain comprising the step of:

[0110] administering to a subject in need thereof a therapeutically effective amount of crystalline 5-methyl-N,N,N-trimethyltryptammonium iodide according to any one of E1-E3.

[0111] E9. A method of preventing or treating inflammation and/or pain comprising the step of:

[0112] administering to a subject in need thereof a composition according to E4 or E5.

[0113] E10. Triethyl[2-(5-methyl-1H-indol-3-yl)ethyl] azanium iodide (5-methyl-N,N,N-triethyltryptammonium iodide).

[0114] E11. Crystalline triethyl[2-(5-methyl-1H-indol-3-yl)ethyl]azanium iodide (5-methyl-N,N,N-triethyltryptammonium iodide).

[0115] E12. Crystalline form 1 of triethyl[2-(5-methyl-1H-indol-3-yl)ethyl]azanium iodide (5-methyl-N,N,N-triethyltryptammonium iodide).

[0116] E13. Crystalline form 1 of 5-methyl-N,N,N-triethyltryptammonium iodide according to E12, characterized by at least one of:

[0117] a monoclinic crystal system at a temperature of about 297 K;

[0118] a $P2_{1/n}$ space group at a temperature of about 297 K;

[0119] unit cell dimensions a=9.6263 (4) Å, b=15.4887 (7) Å, c=12.2881 (5) Å, α=90°, β=92.496 (2)', and γ=90°;

[0120] an X-ray powder diffraction pattern substantially similar to FIG. **12**; or an X-ray powder diffraction pattern characterized by at least two peaks selected from 15.5, 16.2, and 17.7° 2θ±0.2° 2θ.

[0121] E14. A composition comprising 5-methyl-N, N,N-triethyltryptammonium iodide according to E10 and an excipient.

[0122] E15. A composition comprising crystalline 5-methyl-N,N,N-triethyltryptammonium iodide according to any one of E11-E13 and an excipient.

[0123] E16. A composition comprising 5-methyl-N, N,N-triethyltryptammonium iodide according to E10 as a first component and a second component selected from at least one of (a) a serotonergic drug, (b) a purified psilocybin derivative, (c) a purified cannabinoid, (d) a purified terpene, (e) an adrenergic drug, (f) a dopaminergic drug, (g) a monoamine oxidase inhibitor, (h) a purified erinacine, and (i) a purified hericenone.

[0124] E17. A composition comprising crystalline 5-methyl-N,N,N-triethyltryptammonium iodide according to any one of E11-E13 as a first component and a second component selected from at least one of (a) a serotonergic drug, (b) a purified psilocybin derivative, (c) a purified cannabinoid, (d) a purified terpene, (e) an adrenergic drug, (f) a dopaminergic drug, (g) a monoamine oxidase inhibitor, (h) a purified erinacine, and (i) a purified hericenone.

[0125] E18. A method of preventing or treating a psychological disorder comprising the step of:

[0126] administering to a subject in need thereof a therapeutically effective amount of 5-methyl-N,N,N-triethyltryptammonium iodide according to E10.

[0127] E19. A method of preventing or treating a psychological disorder comprising the step of:

[0128] administering to a subject in need thereof a therapeutically effective amount of crystalline 5-methyl-N,N,N-triethyltryptammonium iodide according to any one of E11-E13.

[0129] E20. A method of preventing or treating a psychological disorder comprising the step of:

[0130] administering to a subject in need thereof a composition according to E14 or E16.

[0131] $E2_1$. A method of preventing or treating a psychological disorder comprising the step of:

[0132] administering to a subject in need thereof a composition according to E15 or E17.

[0133] E22. A method of preventing or treating inflammation and/or pain comprising the step of:

[0134] administering to a subject in need thereof a therapeutically effective amount of 5-methyl-N,N,N-triethyltryptammonium iodide according to E10.

[0135] E23. A method of preventing or treating inflammation and/or pain comprising the step of:

[0136] administering to a subject in need thereof a therapeutically effective amount of crystalline 5-methyl-N,N,N-triethyltryptammonium iodide according to any one of E11-E13.

[0137] E24. A method of preventing or treating inflammation and/or pain comprising the step of:

[0138] administering to a subject in need thereof a composition according to E14 or E16.

[0139] E25. A method of preventing or treating inflammation and/or pain comprising the step of:

[0140] administering to a subject in need thereof a composition according to E15 or E17.

[0141] E26. Triethyl[2-(1-methyl-1H-indol-3-yl)ethyl] azanium iodide (1-methyl-N,N,N-triethyltryptammonium iodide).

[0142] E27. Crystalline triethyl[2-(1-methyl-1H-indol-3-yl)ethyl]azanium iodide (1-methyl-N,N,N-triethyltryptammonium iodide).

[0143] E28. Crystalline form 1 of triethyl[2-(1-methyl-1H-indol-3-yl)ethyl]azanium iodide (1-methyl-N,N,N-triethyltryptammonium iodide).

[0144] E29. Crystalline form 1 of 1-methyl-N,N,N-triethyltryptammonium iodide according to E28, characterized by at least one of:

[0145] a monoclinic crystal system at a temperature of about 297 K;

[0146] a $P2_{1/C}$ space group at a temperature of about 297 K;

[0147] unit cell dimensions a=15.1283 (9) Å, b=8.6596 (5) Å, c=14.3462 (7) Å, α=90°, β=104.516 (2)°, and γ=90°;

[0148] an X-ray powder diffraction pattern substantially similar to FIG. **13**; or an X-ray powder diffraction pattern characterized by at least two peaks selected from 12.0, 12.7, and 14.2° 2θ±0.2° 2θ.

[0149] E30. A composition comprising 1-methyl-N, N,N-triethyltryptammonium iodide according to E26 and an excipient.

[0150] E31. A composition comprising crystalline 1-methyl-N,N,N-triethyltryptammonium iodide according to any one of E27-E29 and an excipient.

[0151] E32. A composition comprising 1-methyl-N, N, N-triethyltryptammonium iodide according to E26 as a first component and a second component selected from at least one of (a) a serotonergic drug, (b) a purified psilocybin derivative, (c) a purified cannabinoid, (d) a purified terpene, (e) an adrenergic drug, (f) a dopaminergic drug, (g) a monoamine oxidase inhibitor, (h) a purified erinacine, and (i) a purified hericenone.

[0152] E33. A composition comprising crystalline 1-methyl-N,N,N-triethyltryptammonium iodide according to any one of E27-E29 as a first component and a second component selected from at least one of (a) a serotonergic drug, (b) a purified psilocybin derivative, (c) a purified cannabinoid, (d) a purified terpene, (e) an adrenergic drug, (f) a dopaminergic drug, (g) a monoamine oxidase inhibitor, (h) a purified erinacine, and (i) a purified hericenone.

[0153] E34. A method of preventing or treating a psychological disorder comprising the step of:

[0154] administering to a subject in need thereof a therapeutically effective amount of 1-methyl-N,N,N-triethyltryptammonium iodide according to E26.

[0155] E35. A method of preventing or treating a psychological disorder comprising the step of:

[0156] administering to a subject in need thereof a therapeutically effective amount of crystalline 1-methyl-N,N,N-triethyltryptammonium iodide according to any one of E27-E29.

[0157] E36. A method of preventing or treating a psychological disorder comprising the step of:

[0158] administering to a subject in need thereof a composition according to E30 or E32.

[0159] E37. A method of preventing or treating a psychological disorder comprising the step of:

[0160] administering to a subject in need thereof a composition according to E31 or E33.

[0161] E38. A method of preventing or treating inflammation and/or pain comprising the step of:

[0162] administering to a subject in need thereof a therapeutically effective amount of 1-methyl-N,N,N-triethyltryptammonium iodide according to E26.

[0163] E39. A method of preventing or treating inflammation and/or pain comprising the step of:

[0164] administering to a subject in need thereof a therapeutically effective amount of crystalline 1-methyl-N,N,N-triethyltryptammonium iodide according to any one of E27-E29.

[0165] E40. A method of preventing or treating inflammation and/or pain comprising the step of:

[0166] administering to a subject in need thereof a composition according to E30 or E32.

[0167] E41. A method of preventing or treating inflammation and/or pain comprising the step of:

[0168] administering to a subject in need thereof a composition according to E31 or E33.

[0169] E42. Crystalline [2-(5-methyl-1H-indol-3-yl)ethyl] tripropylazanium acetonitrile iodide (5-methyl-N, N,N-tri-n-propyltryptammonium iodide acetonitrile).

[0170] E43. Crystalline form 1 of [2-(5-methyl-1H-indol-3-yl)ethyl]tripropylazanium acetonitrile iodide (5-methyl-N,N,N-tri-n-propyltryptammonium iodide acetonitrile).

[0171] E44. Crystalline form 1 of 5-methyl-N,N,N-tri-n-propyltryptammonium iodide acetonitrile according to E43, characterized by at least one of:

[0172] a monoclinic crystal system at a temperature of about 297 K;

[0173] a $P2_{1/C}$ space group at a temperature of about 297 K;

[0174] unit cell dimensions a=11.4680 (5) Å, b=14.8441 (7) Å, c=14.9340 (6) Å, α=90°, β=108.347 (2)°, and γ=90°;

[0175] an X-ray powder diffraction pattern substantially similar to FIG. **14**; or

[0176] an X-ray powder diffraction pattern characterized by at least two peaks selected from 8.1, 10.1, and 13.1° 2θ±0.2° 2θ.

[0177] E45. A composition comprising crystalline 5-methyl-N,N,N-tri-n-propyltryptammonium iodide acetonitrile according to any one of E42-E44 and an excipient.

[0178] E46. A composition comprising crystalline 5-methyl-N,N,N-tri-n-propyltryptammonium iodide acetonitrile according to any one of E42-E44 as a first component and a second component selected from at least one of (a) a serotonergic drug, (b) a purified psilocybin derivative, (c) a purified cannabinoid, (d) a purified terpene, (e) an adrenergic drug, (f) a dopaminergic drug, (g) a monoamine oxidase inhibitor, (h) a purified erinacine, and (i) a purified hericenone.

[0179] E47. A method of preventing or treating a psychological disorder comprising the step of:

[0180] administering to a subject in need thereof a therapeutically effective amount of crystalline 5-methyl-N,N,N-tri-n-propyltryptammonium iodide acetonitrile according to any one of E42-E44.

[0181] E48. A method of preventing or treating a psychological disorder comprising the step of:

[0182] administering to a subject in need thereof a composition according to E45 or E46.

[0183] E49. A method of preventing or treating inflammation and/or pain comprising the step of:

[0184] administering to a subject in need thereof a therapeutically effective amount of crystalline 5-methyl-N, N,N-tri-n-propyltryptammonium iodide acetonitrile according to any one of E42-E44.

[0185] E50. A method of preventing or treating inflammation and/or pain comprising the step of:

[0186] administering to a subject in need thereof a composition according to E45 or E46.

[0187] E51. [2-(7-methyl-1H-indol-3-yl)ethyl]tripropylazanium iodide (7-methyl-N,N,N-tri-n-propyltryptammonium iodide).

[0188] E52. Crystalline [2-(7-methyl-1H-indol-3-yl)ethyl] tripropylazanium iodide (7-methyl-N,N,N-tri-n-propyltryptammonium iodide).

[0189] E53. Crystalline form 1 of [2-(7-methyl-1H-indol-3-yl)ethyl]tripropylazanium iodide (7-methyl-N,N,N-tri-n-propyltryptammonium iodide).

[0190] E54. Crystalline form 1 of 7-methyl-N,N,N-tri-n-propyltryptammonium iodide according to E53, characterized by at least one of:

[0191] a monoclinic crystal system at a temperature of about 297 K;

[0192] a Pn space group at a temperature of about 297 K;

[0193] unit cell dimensions a=7.9123 (3) Å, b=10.5779 (5) Å, c=12.4517 (5) Å, α=90°, β=93.0590 (10)°, and γ=90°;

[0194] an X-ray powder diffraction pattern substantially similar to FIG. **15**; or

[0195] an X-ray powder diffraction pattern characterized by at least two peaks selected from 11.0, 12.9, 18.2, and 19.6° 2θ±0.2° 2θ.

[0196] E55. A composition comprising 7-methyl-N, N, N-tri-n-propyltryptammonium iodide according to E51 and an excipient.

[0197] E56. A composition comprising crystalline 7-methyl-N,N,N-tri-n-propyltryptammonium iodide according to any one of E52-E54 and an excipient.

[0198] E57. A composition comprising 7-methyl-N, N, N-tri-n-propyltryptammonium iodide according to E51 as a first component and a second component selected from at least one of (a) a serotonergic drug, (b) a purified psilocybin derivative, (c) a purified cannabinoid, (d) a purified terpene, (e) an adrenergic drug, (f) a dopaminergic drug, (g) a monoamine oxidase inhibitor, (h) a purified erinacine, and (i) a purified hericenone.

[0199] E58. A composition comprising crystalline 7-methyl-N,N,N-tri-n-propyltryptammonium iodide according to any one of E52-E54 as a first component and a second component selected from at least one of (a) a serotonergic drug, (b) a purified psilocybin derivative, (c) a purified cannabinoid, (d) a purified terpene, (e) an adrenergic drug, (f) a dopaminergic drug, (g) a monoamine oxidase inhibitor, (h) a purified erinacine, and (i) a purified hericenone.

[0200] E59. A method of preventing or treating a psychological disorder comprising the step of:

[0201] administering to a subject in need thereof a therapeutically effective amount of 7-methyl-N,N,N-tri-n-propyltryptammonium iodide according to E51.

[0202] E60. A method of preventing or treating a psychological disorder comprising the step of:

[0203] administering to a subject in need thereof a therapeutically effective amount of crystalline 7-methyl-N,N,N-tri-n-propyltryptammonium iodide according to any one of E52-E54.

[0204] E61. A method of preventing or treating a psychological disorder comprising the step of:

[0205] administering to a subject in need thereof a composition according to E55 or E57.

[0206] E62. A method of preventing or treating a psychological disorder comprising the step of:

[0207] administering to a subject in need thereof a composition according to E56 or E58.

[0208] E63. A method of preventing or treating inflammation and/or pain comprising the step of:

[0209] administering to a subject in need thereof a therapeutically effective amount of 7-methyl-N,N,N-tri-n-propyltryptammonium iodide according to E51.

[0210] E64. A method of preventing or treating inflammation and/or pain comprising the step of:

[0211] administering to a subject in need thereof a therapeutically effective amount of crystalline 7-methyl-N,N,N-tri-n-propyltryptammonium iodide according to any one of E52-E54.

[0212] E65. A method of preventing or treating inflammation and/or pain comprising the step of:

[0213] administering to a subject in need thereof a composition according to E55 or E57.

[0214] E66. A method of preventing or treating inflammation and/or pain comprising the step of:

[0215] administering to a subject in need thereof a composition according to E56 or E58.

EXAMPLES

[0216] The preparation and characterization of each of crystalline form 1 of trimethyl[2-(5-methyl-1H-indol-3-yl) ethyl]azanium iodide (5-methyl-N,N,N-trimethyltryptammonium iodide or 5-Me-TMT iodide), crystalline form 1 of triethyl[2-(5-methyl-1H-indol-3-yl)ethyl]azanium iodide (5-methyl-N,N,N-triethyltryptammonium iodide or 5-Me-TET iodide), crystalline form 1 of triethyl[2-(1-methyl-1H-indol-3-yl)ethyl]azanium iodide (1-methyl-N,N,N-triethyltryptammonium iodide or 1-Me-TET iodide), crystalline form 1 of [2-(5-methyl-1H-indol-3-yl)ethyl]tripropylazanium acetonitrile iodide (5-methyl-N,N,N-tri-n-propyltryptammonium iodide acetonitrile or 5-Me-TPT iodide acetonitrile), and crystalline form 1 of [2-(7-methyl-1H-indol-3-yl) ethyl]tripropylazanium iodide (7-methyl-N,N,N-tri-n-propyltryptammonium iodide or 7-Me-TPT iodide) are described below.

[0217] Single Crystal X-Ray Diffraction (SCXRD) Characterization: Data were collected on a Bruker D8 Venture CMOS Diffractometer equipped with an Oxford Cryosystems Cryostream cooling device and using Mo Kα radiation. Structures were solved using the Bruker SHELXTL program and refined with the SHELXTL program as part of the Bruker SHELXTL suite, or OLEX2 software. Unless otherwise stated, hydrogen atoms attached to carbon were

placed geometrically and allowed to refine with a riding isotropic displacement parameter. Hydrogen atoms attached to a heteroatom were located in a difference Fourier synthesis and were allowed to refine freely with an isotropic displacement parameter.

Preparation and Characterization of Crystalline Form 1 of 5-Me-TMT Iodide

Synthesis

[0218] 105 mg of 5-methyltryptamine hydrochloride, 158 mg of sodium carbonate and 0.217 mL of iodomethane were dissolved in 10 ml of isopropanol. The mixture was heated at reflux for twelve hours. Solvent was removed in vacuo. The resulting solid was triturated with tetrahydrofuran to yield pure material as a white powder.

Crystallization

[0219] Single crystals suitable for X-ray diffraction studies were grown from the slow evaporation of an acetone solution.

Single Crystal Characterization

[0220] The single crystal data and structure refinement parameters for the crystalline form 1 structure of 5-Me-TMT iodide are reported in Table 3, below.

Preparation and Characterization of Crystalline Form 1 of 5-Me-TET Iodide

Synthesis

[0221] 107 mg of 5-methyltryptamine hydrochloride, 161 mg of sodium carbonate and 0.3 mL of iodoethane were dissolved in 10 ml of isopropanol. The mixture was refluxed under an atmosphere of nitrogen for three days. Solvent was removed in vacuo, and the resulting powder was triturated with tetrahydrofuran to yield the pure material.

Crystallization

[0222] Single crystals suitable for X-ray diffraction studies were grown from the slow evaporation of an acetonitrile solution.

Single Crystal Characterization

[0223] The single crystal data and structure refinement parameters for the crystalline form 1 structure of 5-Me-TET iodide are reported in Table 3, below.

Preparation and Characterization of Crystalline Form 1 of 1-Me-TET Iodide

Synthesis

[0224] 102 mg of 1-methyltryptamine hydrochloride, 131 mg of sodium carbonate and 0.3 mL of iodoethane were dissolved in 10 ml of isopropanol. The solution was refluxed for six days. Solvent was removed in vacuo, and the resulting solid was triturated with tetrahydrofuran to yield an off-white powder.

Crystallization

[0225] Single crystals suitable for X-ray diffraction studies were grown from the slow evaporation of an acetone/isopropanol solution.

Single Crystal Characterization

[0226] The single crystal data and structure refinement parameters for the crystalline form 1 structure of 1-Me-TET iodide are reported in Table 3, below.

Preparation and Characterization of Crystalline Form 1 of 5-Me-TPT Iodide Acetonitrile

Synthesis

[0227] 105 mg of 5-methyltryptamine hydrochloride, 158 mg of sodium carbonate and 0.7 mL of iodopropane were dissolved in 10 ml of isopropanol. The solution was refluxed under nitrogen for 7 days. Solvent was removed in vacuo and the resulting powder was triturated with tetrahydrofuran.

Crystallization

[0228] Single crystals suitable for X-ray diffraction studies were grown from the slow evaporation of an isopropanol solution.

Single Crystal Characterization

[0229] The single crystal data and structure refinement parameters for the crystalline form 1 structure of 5-Me-TPT iodide acetonitrile are reported in Table 3, below.

Preparation and Characterization of Crystalline Form 1 of 7-Me-TPT Iodide

Synthesis

[0230] 103 mg of 7-methyltryptamine hydrochloride, 188 mg of sodium carbonate and 2.0 mL of 1-iodopropane were dissolved in 10 mL of isopropanol. The mixture was refluxed under nitrogen for 5 days. Solvent was removed in vacuo to yield a brown powder. This powder was triturated with tetrahydrofuran to yield a yellow powder.

Crystallization

[0231] Single crystals suitable for X-ray diffraction studies were grown from the slow evaporation of an acetonitrile solution.

Single Crystal Characterization

[0232] The single crystal data and structure refinement parameters for the crystalline form 1 structure of 7-Me-TPT iodide are reported in Table 3, below.

TABLE 3

	Crystalline form 1 of 5-Me-TMT iodide	Crystalline form 1 of 5-Me-TET iodide	Crystalline form 1 of 1-Me-TET iodide	Crystalline form 1 of 5-Me-TPT iodide acetonitrile	Crystalline form 1 of 7-Me-TPT iodide
Crystal data					
Chemical formula	I—$C_{14}H_{21}N_2$	I—$C_{17}H_{27}N_2$	I—$C_{17}H_{27}N_2$	I—$C_{20}H_{33}N_2$•C_2H_3N	I—$C_{20}H_{33}N_2$
M_r	344.23	386.30	386.30	469.44	428.38
Crystal system, space group	orthorhombic, $P2_12_12_1$	monoclinic, $P2_{1/n}$	monoclinic, $P2_{1/C}$	monoclinic, $P2_{1/C}$	monoclinic, Pn
Temperature (K)	297(2)	297(2)	297(2)	297(2)	297(2)
a, b, c (Å)	6.7329(5), 13.2942(9), 16.8123(13)	9.6263(4), 15.4887(7), 12.2881(5)	15.1283(9), 8.6596(5), 14.3462(7)	11.4680(5), 14.8441(7), 14.9340(6)	7.9123(3), 10.5779(5), 12.4517(5)
α (°)	90	90	90	90	90
β (°)	90	92.496(2)	104.516(2)	108.347(2)	93.0590(10)
γ (°)	90	90	90	90	90
V (Å^3)	1504.84(19)	1830.40(13)	1819.43(18)	2413.02(18)	1040.67(8)
Z	4	4	4	4	2
F(000)	688	784	784	968	440
D_x (Mg m^{-3})	1.519	1.402	1.410	1.292	1.367
Radiation type	Mo Kα	Mo Kα	Mo Kα	Mo Kα	Mo Kα
λ (Å)	0.71073	0.71073	0.71073	0.71073	0.71073
θ (°)	2.87-26.40	2.63-26.39	2.73-26.08	3.02-26.24	3.13-26.39
μ (mm^{-1})	2.111	1.744	1.755	1.337	1.541
Crystal size (mm)	0.28 × 0.19 × 0.09	0.3 × 0.18 × 0.14	0.24 × 0.2 × 0.1	0.22 × 0.21 × 0.2	0.26 × 0.22 × 0.11
Crystal description	BLOCK	BLOCK	block	BLOCK	BLOCK
Crystal color	colourless	yellow	colourless	colourless	yellow
Data collection					
Diffractometer	Bruker APEX-II CCD	Bruker APEX-II CCD	Bruker APEX-II CCD	Bruker APEX-II CCD	Bruker APEX-III photon 200
Absorption correction	Multi-scan SADABS (Bruker, 2016) was used. wR2(int) was 0.0730 before and 0.0464 after correction. The Ratio of minimum to maximum transmission is 0.8354. The λ/2 correction factor is not present.	Multi-scan SADABS (Bruker, 2016) was used. wR2(int) was 0.0552 before and 0.0476 after correction. The Ratio of minimum to maximum transmission is 0.9080. The λ/2 correction factor is not present.	Multi-scan SADABS (Bruker, 2016) was used. wR2(int) was 0.0670 before and 0.0476 after correction. The Ratio of minimum to maximum transmission is 0.8786. The λ/2 correction factor is not present.	Multi-scan SADABS (Bruker, 2016) was used. wR2(int) was 0.0560 before and 0.0503 after correction. The Ratio of minimum to maximum transmission is 0.9302. The λ/2 correction factor is not present.	Multi-scan SADABS (Bruker, 2016) was used. wR2(int) was 0.0588 before and 0.0479 after correction. The Ratio of minimum to maximum transmission is 0.9320. The λ/2 correction factor is not present.
T_{min}, T_{max}	0.6227, 0.7454	0.5870, 0.6465	0.6549, 0.7454	0.6934, 0.7454	0.695, 0.745
No. of measured, independent, and observed [I > 2σ(I)] reflections	28002, 3052, 2955	43500, 3708, 3352	53106, 3702, 3217	73018, 4934, 4041	31071, 3957, 3824
R_{int}	0.0265	0.0322	0.0321	0.0410	0.0220
θ_{max}, θ_{min} (°)	26.403, 2.867	26.416, 2.630	26.472, 2.733	26.427, 2.744	26.398, 3.128
h, k, l	−8 → 8, −16 → 16, −21 → 21	−12 → 12, −19 → 19, −15 → 15	−18 → 18, −10 → 10, −17 → 17	−14 → 14, −18 → 18, −18 → 18	−9 → 9, −13 → 13, −15 → 15

TABLE 3-continued

	Crystalline form 1 of 5-Me-TMT iodide	Crystalline form 1 of 5-Me-TET iodide	Crystalline form 1 of 1-Me-TET iodide	Crystalline form 1 of 5-Me-TPT iodide acetonitrile	Crystalline form 1 of 7-Me-TPT iodide
			Refinement		
$R[F^2 > 2\sigma(F^2)]$, $wR(F^2)$, S	0.0387, 0.1110, 1.108	0.0254, 0.0599, 1.041	0.0265, 0.0629, 1.058	0.0276, 0.0590, 1.038	0.0179, 0.0405, 1.051
No. of reflections	3052	3708	3702	4934	3957
No. of parameters	162	189	185	244	216
No. of restraints	1	1	0	0	3
Absolute structure	Refined as an inversion twin.	—	—	—	Flack x determined using 1760 quotients [(I+) − (I−)]/[(I+) + (I−)] (Parsons, Flack and Wagner, Acta Cryst. B69 (2013) 249-259).
Absolute structure parameter	0.51(6)	—	—	—	−0.018(5)
H-atom treatment	H atoms treated by a mixture of independent and constrained refinement	H atoms treated by a mixture of independent and constrained refinement	H atoms treated by a mixture of independent and constrained refinement	H atoms treated by a mixture of independent and constrained refinement	H atoms treated by a mixture of independent and constrained refinement
W	$w = 1/[\sigma^2(F_o^2) + (0.0625P)^2 + 2.3599P]$ where $P = (F_o^2 + 2F_c^2)/3$	$w = 1/[\sigma^2(F_o^2) + (0.0206P)^2 + 1.5501P]$ where $P = (F_o^2 + 2F_c^2)/3$	$w = 1/[\sigma^2(F_o^2) + (0.0208P)2+1.6354P]$ where $P = (F_o^2 + 2F_c^2)/3$	$w = 1/[\sigma^2(F_o^2) + (0.0174P)2+1.4938P]$ where $P = (F_o^2 + 2F_c^2)/3$	$w = 1/[\sigma^2(F_o^2) + (0.0082P)2+0.3654P]$ where $P = (F_o^2 + 2F_c^2)/3$
$(\Delta/\sigma)_{max}$	0.000	0.001	0.000	0.001	0.000
$\Delta\rho_{max}$, $\Delta\rho_{min}$ (e Å^{-3})	1.269, −0.434	0.699, −0.707	0.661, −0.652	0.508, −0.476	0.459, −0.480
			Software		
Data collection	Bruker APEX3	Bruker APEX3	Bruker APEX3	Bruker APEX3	Bruker APEX3
Cell refinement	Bruker SAINT	Bruker SAINT	Bruker SAINT	Bruker SAINT	Bruker SAINT
Data reduction	Bruker SAINT	Bruker SAINT	Bruker SAINT	Bruker SAINT	Bruker SAINT
Structure solution	SHELXS-97 (Sheldrick, 2008)	SHELXS-97 (Sheldrick, 2008)	SHELXS-97 (Sheldrick, 2008)	SHELXS-97 (Sheldrick, 2008)	SHELXS-97 (Sheldrick, 2008)
Structure refinement	SHELXL 2018/3 (Sheldrick, 2015)	SHELXL 2018/3 (Sheldrick, 2015)	SHELXL 2018/3 (Sheldrick, 2015)	SHELXL 2018/3 (Sheldrick, 2015)	SHELXL 2018/3 (Sheldrick, 2015)
Molecular graphics	Olex2 1.3 (Dolomanov et al., 2009)	Olex2 1.3 (Dolomanov et al., 2009)	Olex2 1.3 (Dolomanov et al., 2009)	Olex2 1.3 (Dolomanov et al., 2009)	Olex2 1.3 (Dolomanov et al., 2009)
Publication material preparation	Olex2 1.3 (Dolomanov et al., 2009)	Olex2 1.3 (Dolomanov et al., 2009)	Olex2 1.3 (Dolomanov et al., 2009)	Olex2 1.3 (Dolomanov et al., 2009)	Olex2 1.3 (Dolomanov et al., 2009)

[0233] FIG. **1** shows the molecular structure of crystalline form 1 of 5-Me-TMT iodide, showing the atomic labeling.

[0234] FIG. **2** shows the molecular structure of crystalline form 1 of 5-Me-TET iodide, showing the atomic labeling.

[0235] FIG. **3** shows the molecular structure of crystalline form 1 of 1-Me-TET iodide, showing the atomic labeling.

[0236] FIG. **4** shows the molecular structure of crystalline form 1 of 5-Me-TPT iodide acetonitrile, showing the atomic labeling.

[0237] FIG. **5** shows the molecular structure of crystalline form 1 of 7-Me-TPT iodide, showing the atomic labeling.

[0238] FIG. **6** shows the unit cell of crystalline form 1 of 5-Me-TMT iodide along the a-axis.

[0239] FIG. **7** shows the unit cell of crystalline form 1 of 5-Me-TET iodide along the c-axis.

[0240] FIG. **8** shows the unit cell of crystalline form 1 of 1-Me-TET iodide along the b-axis.

[0241] FIG. **9** shows the unit cell of crystalline form 1 of 5-Me-TPT iodide acetonitrile along the a-axis.

[0242] FIG. **10** shows the unit cell of crystalline form 1 of 7-Me-TPT iodide along the a-axis.

Simulated Powder X-Ray Diffraction (PXRD) Pattern

[0243] FIG. **11** shows a simulated X-ray powder diffraction pattern (XRPD) for crystalline form 1 of 5-Me-TMT

iodide generated from its single crystal data. Table 4 lists the angles, °2θ±0.2° 2θ, and d-spacing of the peaks identified in the experimental XRPD pattern of FIG. **11**. The entire list of peaks, or a subset thereof, may be sufficient to characterize the cocrystal. For example, the cocrystal may be characterized by at least two peaks selected from the peaks at 14.3, 15.7, and 19.5 °2θ±0.2° 2θ or their corresponding d-spacing as well as by an XRPD pattern substantially similar to FIG. **11**.

Simulated Powder X-Ray Diffraction (PXRD) Pattern

[0244] FIG. **12** shows a simulated X-ray powder diffraction pattern (XRPD) for crystalline form 1 of 5-Me-TET iodide generated from its single crystal data. Table 5 lists the angles, °2θ±0.2° 2θ, and d-spacing of the peaks identified in the experimental XRPD pattern of FIG. **12**. The entire list of peaks, or a subset thereof, may be sufficient to characterize the cocrystal. For example, the cocrystal may be characterized by at least two peaks selected from the peaks at 15.5, 16.2, and 17.7 °2θ±0.2° 2θ or their corresponding d-spacing as well as by an XRPD pattern substantially similar to FIG. **12**.

Simulated Powder X-Ray Diffraction (PXRD) Pattern

[0245] FIG. **13** shows a simulated X-ray powder diffraction pattern (XRPD) for crystalline form 1 of 1-Me-TET iodide generated from its single crystal data. Table 6 lists the angles, °2θ±0.2°2θ, and d-spacing of the peaks identified in the experimental XRPD pattern of FIG. **13**. The entire list of peaks, or a subset thereof, may be sufficient to characterize the cocrystal. For example, the cocrystal may be characterized by at least two peaks selected from the peaks at 12.0, 12.7, and 14.2 °2θ±0.2° 2θ or their corresponding d-spacing as well as by an XRPD pattern substantially similar to FIG. **13**.

Simulated Powder X-Ray Diffraction (PXRD) Pattern

[0246] FIG. **14** shows a simulated X-ray powder diffraction pattern (XRPD) for crystalline form 1 of 5-Me-TPT iodide acetonitrile generated from its single crystal data. Table 7 lists the angles, °2θ±0.2° 2θ, and d-spacing of the peaks identified in the experimental XRPD pattern of FIG. **14**. The entire list of peaks, or a subset thereof, may be sufficient to characterize the cocrystal. For example, the cocrystal may be characterized by at least two peaks selected from the peaks at 8.1, 10.1, and 13.1° 2θ±0.2° 2θ or their corresponding d-spacing as well as by an XRPD pattern substantially similar to FIG. **14**.

Simulated Powder X-Ray Diffraction (PXRD) Pattern

[0247] FIG. **15** shows a simulated X-ray powder diffraction pattern (XRPD) for crystalline form 1 of 7-Me-TPT iodide generated from its single crystal data. Table 8 lists the angles, 2θ±0.2° 2θ, and d-spacing of the peaks identified in the experimental XRPD pattern of FIG. **15**. The entire list of peaks, or a subset thereof, may be sufficient to characterize the cocrystal. For example, the cocrystal may be characterized by at least two peaks selected from the peaks at 11.0, 12.9, 18.2, and 19.6° 2θ±0.2° 2θ or their corresponding d-spacing as well as by an XRPD pattern substantially similar to FIG. **15**.

TABLE 4

Crystalline form 1 of 5-Me-TMT iodide

d-spacing (Å)	°2θ ± 0.2°2θ	Intensity
10.43	8.47	3627
8.41	10.52	468
7.10	12.45	319
6.65	13.31	342
6.25	14.16	6
6.18	14.32	62701
6.01	14.74	19074
5.66	15.65	35505
5.26	16.86	37119
5.21	16.99	170
5.16	17.16	91920
4.89	18.14	40243
4.73	18.74	26310
4.55	19.48	328707
4.31	20.60	1302
4.29	20.71	3154
4.28	20.71	3372
4.20	21.12	63627
4.12	21.54	1227
4.10	21.67	15654
4.01	22.16	52277
3.92	22.66	36449
3.70	24.02	89055
3.62	24.61	87318
3.61	24.61	404194
3.57	24.95	109689
3.55	25.05	1406
3.48	25.61	20104
3.44	25.85	33340
3.39	26.29	44807
3.37	26.45	82642
3.32	26.80	158758
3.30	26.99	2641
3.26	27.31	1341
3.26	27.33	1999
3.26	27.34	3920
3.20	27.82	62933
3.14	28.38	7075
3.13	28.54	46192
3.09	28.86	14210
3.09	28.88	588
3.05	29.26	38860
3.04	29.33	96703
3.01	29.67	183
3.00	29.72	3957
3.00	29.75	112183
2.98	29.96	15863

TABLE 5

Crystalline form 1 of 5-Me-TET iodide

d-spacing (Å)	°2θ ± 0.2°2θ	Intensity
9.62	9.18	4086
8.17	10.82	5498
7.74	11.42	397
7.74	11.43	2038
7.42	11.92	494
6.92	12.78	10392
6.69	13.23	37675
6.55	13.51	39057
6.14	14.42	8923
6.03	14.67	127060
5.71	15.52	41658
5.47	16.18	58209
5.36	16.54	1387
5.00	17.73	110169
4.82	18.38	5005
4.81	18.43	2067

TABLE 5-continued

Crystalline form 1 of 5-Me-TET iodide		
d-spacing (Å)	°2θ ± 0.2°2θ	Intensity
4.81	18.44	6403
4.76	18.63	80260
4.59	19.31	54427
4.55	19.50	107
4.36	20.34	1471
4.36	20.35	52092
4.29	20.67	15003
4.24	20.91	184400
4.24	20.92	47906
4.24	20.95	17712
4.09	21.74	24375
3.96	22.45	81401
3.95	22.48	3629
3.92	22.67	89194
3.87	22.95	107474
3.87	22.97	15933
3.83	23.18	35479
3.83	23.23	24164
3.75	23.69	17611
3.71	23.94	102978
3.71	23.98	74817
3.71	23.98	40463
3.69	24.08	21590
3.69	24.09	41531
3.62	24.58	6590
3.62	24.58	44064
3.61	24.67	43127
3.61	24.67	7854
3.59	24.77	30358
3.52	25.29	17027
3.46	25.71	3722
3.46	25.72	463
3.43	25.94	115598
3.43	25.95	1242
3.41	26.10	257820
3.35	26.55	100141
3.34	26.63	7427
3.34	26.63	301
3.27	27.21	52962
3.21	27.80	46124
3.14	28.41	48489
3.14	28.44	40651
3.12	28.56	8009
3.12	28.58	16403
3.10	28.82	49124
3.08	28.98	12326
3.07	29.02	31052
3.07	29.03	12910
3.07	29.07	2887
3.07	29.07	212
3.02	29.60	855
3.01	29.64	42343
3.01	29.64	5827
3.01	29.65	49386
3.01	29.65	67501
3.00	29.72	4260
2.99	29.82	57

TABLE 6

Crystalline form 1 of 1-Me-TET iodide		
d-spacing (Å)	°2θ ± 0.2°2θ	Intensity
14.65	6.03	923
7.45	11.86	1324
7.35	12.03	15133
7.32	12.08	3480
6.99	12.65	73852
6.95	12.73	18677

TABLE 6-continued

Crystalline form 1 of 1-Me-TET iodide		
d-spacing (Å)	°2θ ± 0.2°2θ	Intensity
6.94	12.74	10273
6.24	14.17	101603
5.82	15.21	1889
5.74	15.42	10095
5.59	15.84	3382
5.57	15.90	31833
5.44	16.28	28076
5.42	16.35	4555
4.88	18.16	157179
4.87	18.19	15678
4.83	18.35	2532
4.79	18.53	5845
4.57	19.41	4754
4.51	19.68	61241
4.34	20.45	55163
4.33	20.50	97569
4.25	20.87	1
4.18	21.24	218457
4.15	21.38	27341
4.13	21.48	38628
4.08	21.75	15038
4.06	21.88	674
4.04	21.98	4404
4.00	22.22	439
3.96	22.45	690
3.90	22.77	15689
3.84	23.15	94282
3.73	23.86	76306
3.73	23.87	966
3.72	23.90	1977
3.68	24.16	66438
3.67	24.20	75858
3.66	24.29	38007
3.64	24.46	82194
3.59	24.76	792
3.59	24.81	14028
3.54	25.13	162179
3.49	25.47	28071
3.49	25.50	13526
3.47	25.62	145497
3.47	25.64	84762
3.47	25.68	31885
3.46	25.75	213406
3.37	26.41	1042
3.35	26.56	428
3.32	26.85	6949
3.31	26.89	4360
3.28	27.19	74
3.27	27.24	119250
3.24	27.50	2308
3.24	27.51	101452
3.24	27.52	28788
3.22	27.66	7493
3.21	27.80	29748
3.20	27.83	28168
3.16	28.20	18128
3.14	28.38	2434
3.12	28.57	73042
3.12	28.62	73504
3.10	28.75	69
3.09	28.91	71788
3.04	29.31	8705
3.03	29.42	710
3.00	29.71	6559
2.99	29.89	6378
2.98	29.97	20815

TABLE 7

Crystalline form 1 of 5-Me-TPT iodide acetonitrile

d-spacing (Å)	°2θ ± 0.2°2θ	Intensity
10.89	8.12	74430
10.25	8.62	2049
8.78	10.07	40947
8.49	10.41	49
7.42	11.91	5658
7.09	12.48	3044
7.04	12.57	120
6.74	13.13	50157
6.58	13.46	38117
6.40	13.83	574
6.36	13.91	1704
6.13	14.43	523
6.03	14.67	11018
5.44	16.27	17034
5.34	16.60	19668
5.30	16.73	74595
5.23	16.93	29349
5.17	17.12	5557
5.13	17.29	22299
5.11	17.34	37081
5.11	17.35	56438
4.94	17.96	19264
4.89	18.14	3902
4.69	18.92	145062
4.67	18.98	49864
4.53	19.58	113846
4.50	19.69	12883
4.50	19.70	15375
4.46	19.87	33846
4.41	20.12	1914
4.39	20.22	12844
4.28	20.75	96861
4.24	20.91	1280
4.14	21.45	2747
4.13	21.49	167315
4.11	21.59	354
4.06	21.89	96779
4.05	21.94	53291
3.99	22.29	33842
3.92	22.66	62744
3.78	23.52	83681
3.78	23.52	106640
3.74	23.75	19
3.74	23.76	53244
3.73	23.81	40625
3.72	23.89	8201
3.71	23.96	6395
3.70	24.06	75061
3.66	24.28	106950
3.66	24.29	17472
3.63	24.51	52205
3.63	24.51	39273
3.62	24.57	48624
3.60	24.74	237594
3.59	24.78	130744
3.58	24.88	132984
3.54	25.11	9529
3.52	25.25	11034
3.52	25.29	124924
3.51	25.34	172405
3.50	25.46	27316
3.49	25.48	19246
3.46	25.74	17075
3.45	25.83	338
3.42	26.00	30875
3.42	26.05	229661
3.39	26.24	62523
3.38	26.38	5638
3.37	26.44	767
3.36	26.50	41896
3.34	26.65	15970
3.34	26.71	2242
3.33	26.74	5

TABLE 7-continued

Crystalline form 1 of 5-Me-TPT iodide acetonitrile

d-spacing (Å)	°2θ ± 0.2°2θ	Intensity
3.29	27.10	38116
3.28	27.14	6492
3.26	27.34	12056
3.25	27.46	29937
3.20	27.87	733
3.20	27.88	22122
3.18	28.04	16139
3.13	28.51	32439
3.11	28.65	2073
3.10	28.82	2373
3.07	29.09	27433
3.07	29.10	69224
3.06	29.14	47281
3.05	29.27	8437
3.03	29.46	86686
3.03	29.48	6596
3.02	29.54	9365
3.02	29.60	2109
3.00	29.72	200
3.00	29.76	17897
3.00	29.79	38246
2.99	29.91	84160
2.98	29.96	46767

TABLE 8

Crystalline form 1 of 7-Me-TPT iodide

d-spacing (Å)	°2θ ± 0.2°2θ	Intensity
10.58	8.35	1203
8.06	10.97	4172
6.84	12.94	5568
6.51	13.58	206
6.33	13.98	38356
6.22	14.23	3946
5.74	15.42	7861
5.55	15.97	15042
5.36	16.53	37726
5.29	16.75	3295
4.87	18.21	18089
4.53	19.57	23677
4.40	20.19	46431
4.34	20.43	33926
4.18	21.22	425
4.11	21.63	10606
4.03	22.05	15655
3.95	22.49	27696
3.86	23.03	10547
3.75	23.68	29280
3.70	24.03	40932
3.64	24.43	60495
3.60	24.73	17579
3.59	24.76	45171
3.54	25.14	74702
3.54	25.15	11400
3.53	25.24	1545
3.50	25.43	13300
3.42	26.05	18202
3.40	26.18	18984
3.39	26.25	16651
3.26	27.31	55512
3.26	27.36	13771
3.25	27.40	11203
3.22	27.68	11711
3.17	28.17	876
3.13	28.46	16477
3.11	28.66	14544
3.11	28.69	20352
3.10	28.77	17057

TABLE 8-continued

Crystalline form 1 of 7-Me-TPT iodide

d-spacing (Å)	°2θ ± 0.2°2θ	Intensity
3.10	28.78	8795
3.07	29.09	13467
3.06	29.15	2732
3.04	29.39	28608
2.98	29.94	8056

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1. (canceled)

2. Crystalline form 1 of trimethyl[2-(5-methyl-1H-indol-3-yl)ethyl]azanium iodide (5-methyl-N,N,N-trimethyltryptammonium iodide).

3. Crystalline form 1 of 5-methyl-N,N,N-trimethyltryptammonium iodide according to claim **2**, characterized by at least one of:

an orthorhombic crystal system at a temperature of about 297 K;

a $P2_12_12_1$ space group at a temperature of about 297 K;

unit cell dimensions a=6.7329 (5) Å, b=13.2942 (9) Å, c=16.8123 (13) Å, α=90°, β=90°, and γ=90°;

an X-ray powder diffraction pattern substantially similar to FIG. **11**; or

an X-ray powder diffraction pattern characterized by at least two peaks selected from 14.3, 15.7, and 19.5° 2θ±0.2° 2θ.

4-13. (canceled)

14. Crystalline form 1 of triethyl[2-(5-methyl-1H-indol-3-yl)ethyl]azanium iodide (5-methyl-N,N,N-triethyltryptammonium iodide).

15. Crystalline form 1 of 5-methyl-N,N,N-triethyltryptammonium iodide according to claim **14**, characterized by at least one of:

a monoclinic crystal system at a temperature of about 297 K;

a $P2_{1/n}$ space group at a temperature of about 297 K;

unit cell dimensions a=9.6263 (4) Å, b=15.4887 (7) Å, c=12.2881 (5) Å, α=90°, β=92.496 (2)°, and γ=90°;

an X-ray powder diffraction pattern substantially similar to FIG. **12**; or

an X-ray powder diffraction pattern characterized by at least two peaks selected from 15.5, 16.2, and 17.7° 2θ±0.2° 2θ.

16. (canceled)

17. A composition comprising crystalline 5-methyl-N,N,N-triethyltryptammonium iodide according to claim **14** and an excipient.

18. (canceled)

19. A composition comprising crystalline 5-methyl-N,N,N-triethyltryptammonium iodide according to claim **14** as a first component and a second component selected from at least one of (a) a serotonergic drug, (b) a purified psilocybin derivative, (c) a purified cannabinoid, (d) a purified terpene, (e) an adrenergic drug, (f) a dopaminergic drug, (g) a monoamine oxidase inhibitor, (h) a purified erinacine, and (i) a purified hericenone.

20-21. (canceled)

22. Crystalline form 1 of triethyl[2-(1-methyl-1H-indol-3-yl)ethyl]azanium iodide (1-methyl-N,N,N-triethyltryptammonium iodide).

23. Crystalline form 1 of 1-methyl-N,N,N-triethyltryptammonium iodide according to claim **22**, characterized by at least one of:

a monoclinic crystal system at a temperature of about 297 K;

a $P2_{1/C}$ space group at a temperature of about 297 K;

unit cell dimensions a=15.1283 (9) Å, b=8.6596 (5) Å, c=14.3462 (7) Å, α=90°, β=104.516 (2)°, and γ=90°;

an X-ray powder diffraction pattern substantially similar to FIG. **13**; or

an X-ray powder diffraction pattern characterized by at least two peaks selected from 12.0, 12.7, and 14.2° 2θ±0.2° 2θ.

24. (canceled)

25. A composition comprising crystalline 1-methyl-N,N,N-triethyltryptammonium iodide according to claim **22** and an excipient.

26. (canceled)

27. A composition comprising crystalline 1-methyl-N,N,N-triethyltryptammonium iodide according to claim **22** as a first component and a second component selected from at least one of (a) a serotonergic drug, (b) a purified psilocybin derivative, (c) a purified cannabinoid, (d) a purified terpene, (e) an adrenergic drug, (f) a dopaminergic drug, (g) a monoamine oxidase inhibitor, (h) a purified erinacine, and (i) a purified hericenone.

28. (canceled)

29. Crystalline form 1 of [2-(5-methyl-1H-indol-3-yl)ethyl]tripropylazanium acetonitrile iodide (5-methyl-N,N,N-tri-n-propyltryptammonium iodide acetonitrile).

30. Crystalline form 1 of 5-methyl-N,N,N-tri-n-propyltryptammonium iodide acetonitrile according to claim **29**, characterized by at least one of:

a monoclinic crystal system at a temperature of about 297 K;

a $P2_{1/C}$ space group at a temperature of about 297 K;

unit cell dimensions a=11.4680 (5) Å, b=14.8441 (7) Å, c=14.9340 (6) Å, α=90°, β=108.347 (2)°, and γ=90°;

an X-ray powder diffraction pattern substantially similar to FIG. **14**; or

an X-ray powder diffraction pattern characterized by at least two peaks selected from 8.1, 10.1, and 13.1° 2θ±0.2° 2θ.

31. A composition comprising crystalline 5-methyl-N,N,N-tri-n-propyltryptammonium iodide acetonitrile according to claim **29** and an excipient.

32. A composition comprising crystalline 5-methyl-N,N,N-tri-n-propyltryptammonium iodide acetonitrile according to claim **29** as a first component and a second component selected from at least one of (a) a serotonergic drug, (b) a purified psilocybin derivative, (c) a purified cannabinoid, (d) a purified terpene, (e) an adrenergic drug, (f) a dopaminergic drug, (g) a monoamine oxidase inhibitor, (h) a purified erinacine, and (i) a purified hericenone.

33-34. (canceled)

35. Crystalline form 1 of [2-(7-methyl-1H-indol-3-yl)ethyl]tripropylazanium iodide (7-methyl-N,N,N-tri-n-propyltryptammonium iodide).

36. Crystalline form 1 of 7-methyl-N,N,N-tri-n-propyltryptammonium iodide according to claim **35**, characterized by at least one of:

a monoclinic crystal system at a temperature of about 297 K;

a Pn space group at a temperature of about 297 K;

unit cell dimensions a=7.9123 (3) Å, b=10.5779 (5) Å, c=12.4517 (5) Å, α=90°, β=93.0590 (10)°, and γ=90°;

an X-ray powder diffraction pattern substantially similar to FIG. **15**; or

an X-ray powder diffraction pattern characterized by at least two peaks selected from 11.0, 12.9, 18.2, and 19.6° 2θ±0.2° 2θ.

37. (canceled)

38. A composition comprising crystalline 7-methyl-N,N,N-tri-n-propyltryptammonium iodide according to claim **35** and an excipient.

39. (canceled)

40. A composition comprising crystalline 7-methyl-N,N,N-tri-n-propyltryptammonium iodide according to claim **35** as a first component and a second component selected from at least one of (a) a serotonergic drug, (b) a purified psilocybin derivative, (c) a purified cannabinoid, (d) a purified terpene, (e) an adrenergic drug, (f) a dopaminergic drug, (g) a monoamine oxidase inhibitor, (h) a purified erinacine, and (i) a purified hericenone.

41. A composition comprising crystalline 5-methyl-N,N,N-triethyltryptammonium iodide according to claim **15** and an excipient.

42. A composition comprising crystalline 5-methyl-N,N,N-triethyltryptammonium iodide according to claim **15** as a first component and a second component selected from at least one of (a) a serotonergic drug, (b) a purified psilocybin derivative, (c) a purified cannabinoid, (d) a purified terpene, (e) an adrenergic drug, (f) a dopaminergic drug, (g) a monoamine oxidase inhibitor, (h) a purified erinacine, and (i) a purified hericenone.

43. A composition comprising crystalline 1-methyl-N,N,N-triethyltryptammonium iodide according to claim **23** and an excipient.

44. A composition comprising crystalline 1-methyl-N,N,N-triethyltryptammonium iodide according claim **23** as a first component and a second component selected from at least one of (a) a serotonergic drug, (b) a purified psilocybin derivative, (c) a purified cannabinoid, (d) a purified terpene, (e) an adrenergic drug, (f) a dopaminergic drug, (g) a monoamine oxidase inhibitor, (h) a purified erinacine, and (i) a purified hericenone.

45. A composition comprising crystalline 5-methyl-N,N,N-tri-n-propyltryptammonium iodide acetonitrile according to claim **30** and an excipient.

46. A composition comprising crystalline 5-methyl-N,N,N-tri-n-propyltryptammonium iodide acetonitrile according to claim **30** as a first component and a second component selected from at least one of (a) a serotonergic drug, (b) a purified psilocybin derivative, (c) a purified cannabinoid, (d) a purified terpene, (e) an adrenergic drug, (f) a dopaminergic drug, (g) a monoamine oxidase inhibitor, (h) a purified erinacine, and (i) a purified hericenone.

47. A composition comprising crystalline 7-methyl-N,N,N-tri-n-propyltryptammonium iodide according to claim **36** and an excipient.

48. A composition comprising crystalline 7-methyl-N,N,N-tri-n-propyltryptammonium iodide according to claim **36** as a first component and a second component selected from at least one of (a) a serotonergic drug, (b) a purified psilocybin derivative, (c) a purified cannabinoid, (d) a purified terpene, (e) an adrenergic drug, (f) a dopaminergic drug, (g) a monoamine oxidase inhibitor, (h) a purified erinacine, and (i) a purified hericenone.

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