What is Claimed is:

1. A cocrystal of fasoracetam and a coformer wherein the coformer is not tartaric acid, optionally wherein the fasoracetam is R-fasoracetam.

2. The cocrystal of claim 1, wherein the coformer is an organic compound and contains at least one moiety selected from -NH_2, -NO_2, alkyl, or a carbonyl-containing moiety, or

wherein the coformer is an aromatic compound, optionally wherein the aromatic compound has at least one substituent, has two substituents, has three substituents, or has four substituents;

optionally wherein the at least one substituent is chosen from -OH,-NH_2, alkyl, -NO_2, ester, C_1-C_5 esters, and carbonyl-containing moieties, optionally wherein the carbonyl-containing moiety is an organic acid moiety, optionally wherein the organic acid moiety is chosen from C_1-C_4 organic acids and –COOH;

optionally wherein there are two substituents and each substituent is independently chosen from -OH, -NH_2, alkyl, organic acid, ester, and -NO_2 moieties, optionally wherein a first substituent is an organic acid and a second substituent is chosen from -OH, -NH_2, alkyl, organic acid, ester, and -NO_2 moieties, optionally wherein the -OH, -NH_2, alkyl, organic acid, ester, or -NO_2 moiety and the organic acid moiety are ortho, para, or meta to one another;

optionally wherein there are three substituents and each substituent is independently chosen from -OH, -NH_2, alkyl, organic acid, ester, and -NO_2 moieties, optionally wherein a first substituent is an -OH moiety, optionally wherein a second and third substituents are -OH moieties, optionally wherein a first substituent is an organic acid moiety, optionally wherein a second and third substituents are organic acid moieties, optionally wherein the organic acid moiety is –COOH;

optionally wherein there are four substituents and each substituent is independently chosen from -OH, -NH_2, alkyl, organic acid, ester, and -NO_2 moieties, optionally wherein a first substituent is an ester, optionally wherein the ester is a methyl ester or an ethyl ester, optionally wherein a second substituent is an -OH moiety, optionally wherein a second, a third and a fourth substituent are each an -OH moiety;

optionally wherein the aromatic compound is polycyclic, optionally wherein the polycyclic aromatic compound is two six-member rings, optionally wherein the polycyclic aromatic compound is a six-member ring and a five-member ring, optionally wherein there is one substituent on the polycyclic aromatic compound, optionally wherein the substituent is chosen from C_1-C_4 organic acid moieties, optionally wherein the organic acid moiety is a C_2 acid moiety;

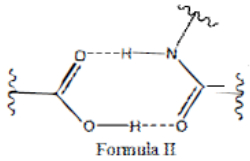
optionally wherein the ring atoms of the aromatic compound are all carbon;

optionally wherein at least one ring atom of the aromatic compound is not carbon, optionally wherein at least one ring atom is nitrogen;

optionally wherein the coformer is non-aromatic and contains at least one moiety selected from $-NH_2$, $-NO_2$, organic acids such as -COOH, -C(=O)-X, C(=O)-OR_1, wherein R_1 is alkyl and X is a nitrogen containing moiety, optionally wherein R_1 is a C_1 to C_{12} alkyl, optionally wherein the non-aromatic coformer contains at least one NH_2, optionally wherein the non-aromatic coformer contains two NH_2 moieties, optionally wherein the coformer is non-aromatic and contains at least one $-C(O)NR_2R_3$ moiety where R_2 and R_3 are independently selected from H, alkyl, substituted alkyl, and a C_1 to C_5 alcohol, optionally wherein the coformer contains one $-C(O)NR_2R_3$ moiety, optionally wherein the alkyl and the substituted alkyl each contain independently 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, or 12 carbons, optionally wherein the substituted alkyl is substituted with at least one of halogen or nitrile, optionally wherein the halogen is bromine, optionally wherein the alcohol is a C_2 alcohol, optionally wherein the alkyl is a C_{11} alkyl, optionally wherein the coformer is non-aromatic and contains at least one -C(O)NX moiety where X is =N-R_4 where R_4 a carbonyl containing moiety, optionally wherein the carbonyl-containing moiety is an amide;

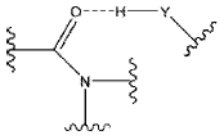
optionally wherein the coformer contains at least one carboxylic acid functionality, optionally wherein the fasoracetam forms a synthon of Formula II

with a carboxylic acid functionality of the coformer



Formula II

optionally wherein the coformer contains at least one functionality chosen from oxygen, nitrogen, -NH, alkyl, and $-(O)COR_5$ where R_5 is selected from hydrogen or alkyl, such as a C_1 to C_5 alkyl, optionally wherein the fasoracetam forms a synthon of Formula III



Formula III

with the coformer

optionally wherein Y is selected from oxygen, nitrogen, -NH, and $-(O)COR_5$ where R_5 is selected from substituted or unsubstituted alkyl, and substituted or unsubstituted aryl, optionally wherein Y is $-(O)COR_5$ where R_5 is selected from substituted or unsubstituted alkyl, and substituted or unsubstituted aryl;

optionally wherein the aromatic compound contains an aromatic ring fused to a non-aromatic cyclic moiety, optionally wherein the at least one non-aromatic cyclic moiety is partially saturated,

optionally wherein there are at least two non-aromatic cyclic moieties, optionally wherein at least one non-aromatic cyclic moiety does not share ring atoms with the aromatic moiety.

3. A crystalline compound, optionally wherein the crystalline compound is a cocrystal comprising fasoracetam, optionally wherein the fasoracetam is R-fasoracetam, and a coformer wherein the coformer is an aromatic compound,

optionally wherein the aromatic compound has at least one substituent, has two substituents, has three substituents, or has four substituents;

optionally wherein the at least one substituent is chosen from -OH,-NH_2, alkyl, -NO_2, ester, C_1-C_5 esters, and carbonyl-containing moieties, optionally wherein the carbonyl-containing moiety is an organic acid moiety, optionally wherein the organic acid moiety is chosen from C1-C4 organic acids and –COOH;

optionally wherein there are two substituents and each substituent is independently chosen from -OH, -NH_2, alkyl, organic acid, ester, and -NO_2 moieties, optionally wherein a first substituent is an organic acid and a second substituent is chosen from -OH, -NH_2, alkyl, organic acid, ester, and -NO_2 moieties, optionally wherein the -OH, -NH_2, alkyl, organic acid, ester, or -NO_2 moiety and the organic acid moiety are ortho, para, or meta to one another;

optionally wherein there are three substituents and each substituent is independently chosen from -OH, -NH_2, alkyl, organic acid, ester, and -NO_2 moieties, optionally wherein a first substituent is an -OH moiety, optionally wherein a second and third substituents are -OH moieties, optionally wherein a first substituent is an organic acid moiety, optionally wherein a second and third substituents are organic acid moieties, optionally wherein the organic acid moiety is –COOH;

optionally wherein there are four substituents and each substituent is independently chosen from -OH, -NH_2, alkyl, organic acid, ester, and -NO_2 moieties, optionally wherein a first substituent is an ester, optionally wherein the ester is a methyl ester or an ethyl ester, optionally wherein a second substituent is an -OH moiety, optionally wherein a second, a third and a fourth substituent are each an -OH moiety;

optionally wherein the aromatic compound is polycyclic, optionally wherein the polycyclic aromatic compound is two six-member rings, optionally wherein the polycyclic aromatic compound is a six-member ring and a five-member ring, optionally wherein there is one substituent on the polycyclic aromatic compound, optionally wherein the substituent is chosen from C_1-C_4 organic acid moieties, optionally wherein the organic acid moeity is a C_2 acid moiety;

optionally wherein the ring atoms of the aromatic compound are all carbon;

optionally wherein at least one ring atom of the aromatic compound is not carbon, optionally wherein at least one ring atom is nitrogen.

4. A crystalline compound or cocrystal comprising fasoracetam and 4-aminobenzoic acid, optionally wherein the fasoracetam is R-fasoracetam or S-fasoracetam,

optionally wherein the stoichiometric ratio of fasoracetam to 4-aminobenzoic acid is about 1: 1, the molar ratio of fasoracetam to 4-aminobenzoic acid in a unit cell of the cocrystal is 1: 1, the stoichiometric ratio of R-fasoracetam to 4-aminobenzoic acid is about 1: 1, or the molar ratio of R-fasoracetam to 4-aminobenzoic acid in a unit cell of the cocrystal is 1: 1;

optionally wherein the cocrystal has an x-ray powder diffraction pattern comprising one or more peaks chosen from peaks at about 6.5°2θ, about 10.5°2θ, about 11.3°2θ, about 12.0°2θ, about 13.4°2θ, about 13.7°2θ, about 17.4°2θ, about 18.1 °2θ, about 18.7°2θ, about 19.6°2θ, about 20.6°2θ, about 21.1 °2θ, about 21.4°2θ, about 22.8°2θ, about 23.2°2θ, and about 23.7°2θ;

optionally wherein the cocrystal has a melting temperature of about 114°C, optionally wherein the onset melting temperature is measured by differential scanning calorimetry;

optionally wherein the cocrystal has an x-ray powder diffractogram substantially the same as that of Figure 1;

optionally wherein the differential scanning calorimetry thermogram is substantially the same as that of Figure 4.

5. A crystalline compound or cocrystal comprising fasoracetam and trimesic acid, optionally wherein the fasoracetam is R-fasoracetam,

optionally wherein the stoichiometric ratio of fasoracetam to trimesic acid is about 1: 1, the molar ratio of fasoracetam to trimesic acid in a unit cell of the cocrystal is 1: 1, the stoichiometric ratio of R-fasoracetam to trimesic acid is about 1: 1, or the molar ratio of R-fasoracetam to trimesic acid in a unit cell of the cocrystal is 1: 1;

optionally wherein the cocrystal has an x-ray powder diffraction pattern comprising one or more peaks chosen from peaks at about 9.7°2θ, about 10.9°2θ, about 11.4°2θ, about 14.6°2θ, about 16.5°2θ, about 17.5°2θ, about 18.6°2θ, about 19.4°2θ, about 19.8°2θ, about 21.8°2θ, about 23.5°2θ, about 26.7°2θ, and about 27.3°2θ;

optionally wherein the cocrystal has an onset melting temperature of about 96°C;

optionally wherein the cocrystal has substantially the same x-ray powder diffraction pattern as Figure 51;

optionally wherein the cocrystal has substantially the same DSC thermogram as Figure 54.

6. A crystalline compound or cocrystal comprising R-fasoracetam and R-ibuprofen,

optionally wherein the stoichiometric ratio of R-fasoracetam to R-ibuprofen is about 1: 1 or the molar ratio of R-fasoracetam to R-ibuprofen in a unit cell of the cocrystal is 1: 1;

optionally wherein the cocrystal has an x-ray powder diffraction pattern comprising one or more peaks chosen from peaks at about 5.6°2θ, about 10.5°2θ, about 11.2°2θ, about 12.3°2θ, about 17.4°2θ, about 20.1 °2θ, and about 20.6°2θ;

optionally wherein the cocrystal has an onset melting temperature of about 115°C;

optionally having substantially the same x-ray powder diffraction pattern as Figure 57;

optionally having substantially the same DSC thermogram as Figure 61.

7. A crystalline compound or monohydrate cocrystal comprising fasoracetam and phloroglucinol, optionally wherein the fasoracetam is R-fasoracetam,

optionally wherein the stoichiometric ratio of fasoracetam to phloroglucinol to water is about 1: 1: 1, the molar ratio of fasoracetam to phloroglucinol to water in a unit cell of the cocrystal is 1: 1: 1, the stoichiometric ratio of R-fasoracetam to phloroglucinol is about 1: 1, or the molar ratio of R-fasoracetam to phloroglucinol in a unit cell of the cocrystal is 1: 1;

optionally wherein the cocrystal has an x-ray powder diffraction pattern comprising one or more peaks chosen from peaks at about 6.9°2θ, about 10.3°2θ, about 15.3°2θ, about 16.2°2θ, about 17.3°2θ, about 21.6°2θ, about 22.6°2θ, and about 25.3°2θ;

optionally having an onset melting temperature of about 58°C;

optionally having substantially the same x-ray powder diffraction pattern as Figure 72.

8. A crystalline compound or monohydrate cocrystal comprising fasoracetam and methyl-3,4,5-trihydroxybenzoate, optionally wherein the fasoracetam is R-fasoracetam,

optionally wherein the stoichiometric ratio of fasoracetam to methyl-3,4,5-trihydroxybenzoate is about 1: 1, the molar ratio of fasoracetam to methyl-3,4,5-trihydroxybenzoate in a unit cell of the cocrystal is 1: 1, the stoichiometric ratio of R-fasoracetam to methyl-3,4,5-trihydroxybenzoate is about 1: 1, or the molar ratio of R-fasoracetam to methyl-3,4,5-trihydroxybenzoate in a unit cell of the cocrystal is 1: 1;

optionally wherein the cocrystal has an x-ray powder diffraction pattern comprising one or more peaks chosen from peaks at about 5.7°2θ, about 10.6°2θ, about 11.3°2θ, about 12.7°2θ, about 16.6°2θ, about 18.9°2θ, about 20.6°2θ, about 24.3°2θ, and about 25.0°2θ;

optionally wherein the cocrystal has substantially the same x-ray powder diffraction pattern as Figure 75.

9. A crystalline compound or cocrystal comprising fasoracetam and ethyl gallate, optionally wherein the fasoracetam is R-fasoracetam,

optionally wherein the stoichiometric ratio of fasoracetam to ethyl gallate is about 1: 1 or about 1 :2, the molar ratio of fasoracetam to ethyl gallate in a unit cell of the cocrystal is 1: 1 or 1:2, the stoichiometric ratio of R-fasoracetam to ethyl gallate is about 1: 1 or about 1 :2, or the molar ratio of R-fasoracetam to ethyl gallate in a unit cell of the cocrystal is 1: 1 or 1:2;

optionally wherein the cocrystal has an x-ray powder diffraction pattern comprising one or more peaks chosen from peaks at about 5.8°2θ, about 11.3°2θ, about 12.4°2θ, about 15.5°2θ, about 15.8°2θ, about 18.2°2θ, about 19.4°2θ, about 22.0°2θ, and about 24.8°2θ and wherein the molar ratio of R-fasoracetam to ethyl gallate in a unit cell is 1: 1 or wherein the stoichiometric ratio of R-fasoracetam to ethyl gallate is about 1: 1;

optionally wherein the cocrystal has an onset melting temperature of about 112°C;

optionally wherein the cocrystal has an x-ray powder diffraction pattern comprising one or more peaks chosen from peaks at about 5.8°2θ, about 7.2°2θ, about 14.8°2θ, about 20.4°2θ, about 21.9°2θ, and about 23.5°2θ wherein the molar ratio of R-fasoracetam to ethyl gallate in a unit cell of the cocrystal is 1:2 or wherein the stoichiometric ratio of R-fasoracetam to ethyl gallate is about 1:2;

optionally wherein the cocrystal is a dihydrate cocrystal wherein the stoichiometric ratio of fasoracetam to ethyl gallate is about 1:2 or the molar ratio of fasoracetam to ethyl gallate in a unit cell of the cocrystal is 1:2, optionally wherein the cocrystal has an x-ray powder diffraction pattern comprising one or more peaks chosen from peaks at about 8.8°2θ, about 11.2°2θ, about 19.4°2θ, about 19.9°2θ, and about 24.1 °2θ, optionally wherein the cocrystal has an onset melting temperature of about 106°C as measured by DSC;

optionally wherein the cocrystal has substantially the same x-ray powder diffraction pattern as Figure 79;

optionally wherein the cocrystal has substantially the same x-ray powder diffraction pattern as Figure 86;

optionally wherein the cocrystal has substantially the same x-ray powder diffraction pattern as Figure 88.

10. A crystalline compound or cocrystal comprising fasoracetam and phthalic acid, optionally wherein the fasoracetam is R-fasoracetam,

optionally wherein the stoichiometric ratio of fasoracetam to phthalic acid is about 1: 1, the molar ratio of fasoracetam to phthalic acid in a unit cell of the cocrystal is 1: 1, the stoichiometric ratio of R-fasoracetam to phthalic acid is about 1: 1, or the molar ratio of R-fasoracetam to phthalic acid in a unit cell of the cocrystal is 1: 1;

optionally wherein the cocrystal has an x-ray powder diffraction pattern comprising one or more peaks chosen from peaks at about 6.1°2θ, about 12.4°2θ, about 15.1°2θ, about 15.8°2θ, about 18.1°2θ, about 19.9°2θ, and about 23.3°2θ;

optionally wherein the cocrystal has an x-ray powder diffraction pattern substantially the same as that of Figure 64.

11. A crystalline compound or cocrystal comprising fasoracetam and 6-hydroxy-2-napthoic acid, optionally wherein the fasoracetam is R-fasoracetam,

optionally wherein the cocrystal has an x-ray powder diffraction pattern comprising one or more peaks chosen from peaks at about 11.2°2θ, about 14.9°2θ, about 15.7°2θ, about 20.1 °2θ, about 21.1 °2θ, about 23.6°2θ, about 24.1 °2θ, about 25.0°2θ, and about 25.5°2θ;

optionally wherein the cocrystal has an onset melting temperature of about 120°C;

optionally wherein the cocrystal has substantially the same x-ray powder diffraction pattern as Figure 93;

optionally wherein the cocrystal has substantially the same DSC thermogram as Figure 97.

12. A crystalline compound or cocrystal comprising fasoracetam and 4-nitrobenzoic acid, optionally wherein the fasoracetam is R-fasoracetam,

optionally wherein the stoichiometric ratio of fasoracetam to 4-nitrobenzoic acid is about 1 :2, the molar ratio of fasoracetam to 4-nitrobenzoic acid in a unit cell of the cocrystal is 1:2, the stoichiometric ratio of R-fasoracetam to 4-nitrobenzoic acid is about 1 :2, or wherein the molar ratio of R-fasoracetam to 4-nitrobenzoic acid in a unit cell of the cocrystal is 1:2;

optionally wherein the cocrystal has an x-ray powder diffraction pattern comprising one or more peaks chosen from peaks at about 6.5°2θ, about 6.7°2θ, about 8.9°2θ, about 14.5°2θ, about 15.6°2θ, about 17.9°2θ, about 18.6°2θ, about 19.8°2θ, about 23.4°2θ, and about 26.4°2θ;

optionally wherein the cocrystal has an x-ray powder diffraction pattern substantially the same as Figure 100;

optionally wherein the cocrystal has an onset melting temperature of about 146°C;

optionally wherein the cocrystal has a DSC thermogram substantially the same as Figure 105.

13. A crystalline compound or cocrystal comprising fasoracetam and 2-indole-3-acetic acid, optionally wherein the fasoracetam is R-fasoracetam,

optionally wherein the cocrystal has an x-ray powder diffraction pattern comprising one or more peaks chosen from peaks at about 5.3°2θ, about 7.9°2θ, about 10.7°2θ, about 11.8°2θ, about 14.7°2θ, about 15.8°2θ, about 18.0°2θ, about 21.9°2θ, about 23.1 °2θ, and about 23.5°2θ;

optionally wherein the cocrystal has an onset melting temperature of about 69°C;

optionally wherein the cocrystal has an x-ray powder diffraction pattern substantially the same as Figure 107;

optionally wherein the cocrystal has a DSC thermogram substantially the same as Figure 111.

14. A crystalline compound or cocrystal comprising fasoracetam and urea, optionally wherein the fasoracetam is R-fasoracetam or S-fasoracetam,

optionally wherein the stoichiometric ratio of fasoracetam to urea is about 1: 1, the molar ratio of fasoracetam to urea in a unit cell of the cocrystal is 1: 1, the stoichiometric ratio of R-fasoracetam to urea is about 1: 1, or the molar ratio of R-fasoracetam to urea in a unit cell of the cocrystal is 1: 1;

optionally wherein the cocrystal has an x-ray powder diffraction pattern comprising a peak at about 10.4°2θ, the cocrystal has an x-ray powder diffraction pattern comprising a peak at about 14.0°2θ or about 14.1 °2θ, or the cocrystal has an x-ray powder diffraction pattern comprising a peak at about 10.8°2θ;

optionally wherein the cocrystal is Form A of a cocrystal of R-fasoracetam and urea;

optionally wherein the cocrystal has an x-ray powder diffraction pattern comprising a peak at about 12.2°θ or about 16.1 °2θ, and one or more peaks chosen from peaks at about 10.4°2θ, about 10.8°2θ, about 12.2°2θ, about 14.1 °2θ, about 18.9°2θ, about 22.3°2θ, and about 22.9°2θ;

optionally having an x-ray powder diffraction pattern substantially the same as that of Figure 44

optionally wherein the cocrystal has a melting onset temperature of about 91 °C, optionally wherein the melting temperature is measured with DSC;

optionally wherein the DSC thermogram of the cocrystal is substantially the same as that of Figure 47;

optionally wherein the cocrystal is Form B of a cocrystal of R-fasoracetam and urea;

optionally wherein the stoichiometry of R-fasoracetam to urea is about 1: 1;

optionally wherein the molar ratio of R-fasoracetam to urea in a unit cell of the cocrystal is 1: 1;

optionally wherein the cocrystal has an x-ray powder diffraction pattern comprising a peak at about 11.4°2θ, an x-ray powder diffraction pattern comprising a peak at about 17.5°2θ, an x-ray powder diffraction pattern comprising at least two peaks chosen from the peaks at about 14.0°2θ, about 14.5°2θ, and about 14.9°2θ, an x-ray powder diffraction pattern comprising peaks at about 14.5°2θ and about 14.9°2θ, an x-ray powder diffraction pattern comprising a peak at about 14.5°2θ, an x-ray powder diffraction pattern comprising a peak at about 14.9°2θ, an x-ray powder diffraction pattern comprising one or more peaks chosen from the peaks at about 11.4°2θ, about 14.0°2θ, about 14.5°2θ, about 14.9°2θ, and about 17.5°2θ, or an x-ray powder diffraction pattern comprising a peak at about 11. 4 °2θ and one or more peaks chosen from the peaks at about 10.4°2θ, about 14.0°2θ, about 14.5°2θ, about

14.9°2θ, about 17.5°2θ, about 18.4°2θ, about 18.7°2θ, about 19.4°2θ, about 20.1 °2θ, and about 21.1 °2θ;

optionally wherein the cocrystal has an onset melting point of about 102°C;

optionally wherein the onset melting point is determined by DSC;

optionally wherein the cocrystal has an x-ray powder diffraction pattern substantially the same as that of Figure 37;

optionally wherein the cocrystal has a differential scanning calorimetry thermogram substantially the same as that of Figure 40.

15. A pharmaceutical composition comprising a crystalline compound of any one of claims 1-14, or a cocrystal of any one of claims 1-14, and one or more pharmaceutically acceptable excipients.

16. Use of a crystalline compound of any of claims 1-14, a cocrystal of any of claims 1-14, or a pharmaceutical composition of claim 15, in the manufacture of a medicament for the treatment of attention-deficit hyperactive disorder in a human subject in need thereof, optionally wherein the subject has at least one copy number variation (CNV) in a metabotropic glutamate receptor (mGluR) network gene.

17. A process for preparing a R-fasoracetam:urea cocrystal Form B comprising:

combining R-fasoracetam in a suitable solvent with urea to form a solution wherein the molar amount of urea to R-fasoracetam ranges from about 0.7 to about 1.2;

cooling the solution to form cocrystals of R-fasoracetam:urea cocrystal Form B,

optionally wherein the R-fasoracetam is selected from the group consisting of R-fasoracetam Form I, R-fasoracetam Form II, he amorphous form of R-fasoracetam, anhydrate R-fasoracetam, and the Forms Mixture of R-fasoracetam;

optionally wherein the suitable solvent is selected from ethyl acetate and isopropyl acetate;

optionally wherein the ratio of suitable solvent to each gram of R-fasoracetam Form I ranges from about 2.5 ml to about 6 ml or the ratio of suitable solvent to each gram of R-fasoracetam Form I ranges from about 3.0 ml to about 5.0 ml;

optionally wherein the ratio of suitable solvent to each gram of R-fasoracetam Form Ii ranges from about 3.8 ml to about 4.6 ml;

optionally wherein the temperature of the solution ranges from about 10°C-15°C, from about 15°C-20°C, from about 20°C-25°C, from about 25°C-30°C, from about 30°C-35°C, from about 35°C-40°C, from about 40°C-45°C, from about 45°C-50°C, from about 50°C-55°C, from about 55°C-60°C, from about 60°C-65°C, or from about 65°C-70°C;

optionally wherein the urea is added stepwise or all at once;

optionally wherein the molar amount of urea to R-fasoracetam is about 0.70, about 0.71, about 0.72, about 0.73, about 0.74, about 0.75, about 0.76, about 0.77, about 0.78, about 0.79, about 0.80, about 0.81, about 0.82, about 0.83, about 0.84, about 0.85, about 0.86, about 0.87, about 0.88, about 0.89, about 0.90, about 0.91, about 0.92, about 0.93, about 0.94, about 0.95, about 0.96, about 0.97, about 0.98, about 0.99, about 1.0, about 1.1, or about 1.2;

optionally wherein the molar amount of urea to R-fasoracetam ranges from about 0.95 to about 1.0;

optionally wherein seeds of a cocrystal of R-fasoracetam:urea cocrystal Form B is added to the solution;

optionally wherein resulting cocrystal of R-fasoracetam:urea cocrystal Form B is washed after cooling;

optionally wherein the resulting cocrystal of R-fasoracetam:urea cocrystal Form B is dried.