WHAT IS CLAIMED IS:

1. A crystalline form of 5-cholesten-3β-25-diol-3-sulphate (25HC3S) sodium, selected from:

form I characterized by an X-ray powder diffraction pattern comprising one or more peaks selected from 2.1° ± 0.2°, 5.4° ± 0.2°, 6.5° ± 0.2°, 10.8° ± 0.2°, 9.9° ± 0.2°, 15.0° ± 0.2°, and 15.6° ± 0.2° 2θ;

form II characterized by an X-ray powder diffraction pattern comprising one or more peaks selected from 2.3° ± 0.2°, 4.5° ± 0.2°, 5.0° ± 0.2°, 5.1° ± 0.2°, 5.9° ± 0.2°, 6.1° ± 0.2°, 9.1° ± 0.2°, 14.8° ± 0.2°, and 15.1° ± 0.2° 2θ,

form III characterized by an X-ray powder diffraction pattern comprising one or more peaks selected from 4.9° ± 0.2°, 6.3° ± 0.2°, 7.8° ± 0.2°, 9.8° ± 0.2°, 13.3° ± 0.2°, and 15.5° ± 0.2° 2θ,

form V characterized by an X-ray powder diffraction pattern comprising one or more peaks selected from 2.2° ± 0.2°, 4.0° ± 0.2°, 4.4° ± 0.2°, 6.0° ± 0.2°, 6.6° ± 0.2°, 8.8° ± 0.2°, 9.9° ± 0.2°, and 14.9° ± 0.2° 2θ,

form XI characterized by an X-ray powder diffraction pattern comprising one or more peaks selected from 2.6° ± 0.2°, 3.1° ± 0.2°, 3.5° ± 0.2°, and 14.5° ± 0.2° 2θ,

form XIII characterized by an X-ray powder diffraction pattern comprising one or more peaks selected from 2.3° ± 0.2°, 4.6° ± 0.2°, 5.4° ± 0.2°, 9.3° ± 0.2°, 11.6° ± 0.2°, 14.3° ± 0.2°, and 15.0° ± 0.2° 2θ, and

form IX characterized by an X-ray powder diffraction pattern comprising one or more peaks selected from 2.2° ± 0.2°, 4.9° ± 0.2°, 7.9° ± 0.2°, 11.2° ± 0.2°, 14.1° ± 0.2°, 16.1° ± 0.2°, and 16.6° ± 0.2° 2θ.

2. The crystalline form of 25HC3S sodium of claim 1, wherein the crystalline form is form I of crystalline 25HC3S sodium characterized by an X-ray powder diffraction pattern comprising one or more peaks selected from 2.1° ± 0.2°, 5.4° ± 0.2°, 6.5° ± 0.2°, 10.8° ± 0.2°, 9.9° ± 0.2°, 15.0° ± 0.2°, and 15.6° ± 0.2° 2θ.

3. The crystalline form of 25HC3S sodium of claim 1, wherein the crystalline form is form II of crystalline 25HC3S sodium characterized by an X-ray powder diffraction pattern comprising one or more peaks selected from 2.3° ± 0.2°, 4.5° ± 0.2°, 5.0° ± 0.2°, 5.1° ± 0.2°, 5.9° ± 0.2°, 6.1° ± 0.2°, 9.1° ± 0.2°, 14.8° ± 0.2°, and 15.1° ± 0.2° 2θ.

4. The crystalline form of 25HC3S sodium of claim 1, wherein the crystalline form is form III of crystalline 25HC3S sodium characterized by an X-ray powder diffraction pattern comprising one or more peaks selected from 4.9° ± 0.2°, 6.3° ± 0.2°, 7.8° ± 0.2°, 9.8° ± 0.2°, 13.3° ± 0.2°, and 15.5° ± 0.2° 2θ.

5. The crystalline form of 25HC3S sodium of claim 1, wherein the crystalline form is form V of crystalline 25HC3S sodium characterized by an X-ray powder diffraction pattern comprising one or more peaks selected from 2.2° ± 0.2°, 4.0° ± 0.2°, 4.4° ± 0.2°, 6.0° ± 0.2°, 6.6° ± 0.2°, 8.8° ± 0.2°, 9.9° ± 0.2°, and 14.9° ± 0.2° 2θ

6. The crystalline form of 25HC3S sodium of claim 1, wherein the crystalline form is form XI of crystalline 25HC3S sodium characterized by an X-ray powder diffraction pattern comprising one or more peaks selected from 2.6° ± 0.2°, 3.1° ± 0.2°, 3.5° ± 0.2°, and 14.5° ± 0.2° 2θ.

7. The crystalline form of 25HC3S sodium of claim 1, wherein the crystalline form is form XIII crystalline 25HC3S sodium characterized by an X-ray powder diffraction pattern comprising one or more peaks selected from 2.3° ± 0.2°, 4.6° ± 0.2°, 9.3° ± 0.2°, 14.3° ± 0.2°, and 15.0° ± 0.2° 2θ.

8. The crystalline form of 25HC3S sodium of claim 1, wherein the crystalline form is form IX crystalline 25HC3S sodium characterized by an X-ray powder diffraction pattern comprising one or more peaks selected from 2.2° ± 0.2°, 4.9° ± 0.2°, 7.9° ± 0.2°, 11.2° ± 0.2°, 14.1° ± 0.2°, 16.1° ± 0.2°, and 16.6° ± 0.2° 2θ.

9. A crystalline form of 25HC3S sodium, which is a crystalline hydrate.

10. A crystalline form of 25HC3S sodium, which is a crystalline anhydrate.

11. Use of the crystalline form of 25HC3S sodium of any one of claims 1-10, in the manufacture of a medicament for treating one or more of hypercholesterolemia, hypertriglyceridemia, non-alcoholic fatty liver disease (NAFLD), non-alcoholic steatohepatitis (NASH), alcoholic hepatitis, acute kidney injury (AKI), psoriasis, and atherosclerosis.

12. The crystalline form of 25HC3S sodium of any one of claims 1-10, for use in treating one or more of hypercholesterolemia, hypertriglyceridemia, non-alcoholic fatty liver disease (NAFLD), non-alcoholic steatohepatitis (NASH), alcoholic hepatitis, acute kidney injury (AKI), psoriasis, and atherosclerosis.

13. A pharmaceutical composition comprising the crystalline form of 25HC3S sodium of any one of claims 1-10, and at least one pharmaceutically acceptable excipient.

14. Use of a pharmaceutical composition of claim 13, in the manufacture of a medicament for treating one or more of hypercholesterolemia, hypertriglyceridemia, non-alcoholic fatty liver disease (NAFLD), non-alcoholic steatohepatitis (NASH), alcoholic hepatitis, acute kidney injury (AKI), psoriasis, and atherosclerosis.

15. The pharmaceutical composition of claim 13, for use in treating one or more of hypercholesterolemia, hypertriglyceridemia, non-alcoholic fatty liver disease (NAFLD), non-alcoholic steatohepatitis (NASH), alcoholic hepatitis, acute kidney injury (AKI), psoriasis, and atherosclerosis.

16. A composition comprising two or more of the crystalline Form I 25HC3S sodium, Form II of 25HC3S sodium, Form III of 25HC3S sodium, Form V of 25HC3S sodium, Form IX of 25HC3S sodium, Form XI of 25HC3S sodium, or Form XIII of 25HC3S sodium of claim 1.

17. A method of producing a 5-cholesten-3β,25-diol-3-sulfate metal salt, the method comprising:

contacting 25-hydroxy-(3β)-cholest-5-en-3-ol with at least one sulfating agent in at least one solvent to produce a precipitate of a 25-hydroxy-(3β)-cholest-5-en-3-sulfate organic cationic salt, wherein the 25-hydroxy-(3β)-cholest-5-en-3-sulfate organic cationic salt has low solubility in the at least one solvent such that the 25-hydroxy-(3β)-cholest-5-en-3-sulfate organic cationic salt precipitates after formation; and

contacting the 25-hydroxy-(3β)-cholest-5-en-3-sulfate organic cationic salt with at least one metal salt to produce the 5-cholesten-3β,25-diol 3-sulfate metal salt.

18. The method of claim 17, wherein the at least one sulfating agent is selected from sulfur trioxide complexes, sulfuric acid compounds, sulfonic acid compounds, and sulfonate compounds.

19. The method of claim 17 or 18, wherein the at least one solvent is chosen from chloroform, methylene chloride, acetone, acetonitrile, toluene, tetrahydrofuran, and methyltetrahydrofuran.

20. The method of any one of claims 17 to 19, wherein the at least one metal salt is at least one sodium salt.

21. The method according to claim 20, wherein the at least one sodium salt is at least one of sodium acetate, sodium iodide, sodium chloride, and sodium methoxide.

22. The method according to any one of claims 17 to 21, wherein the at least one sulfating agent is contacted with acetic anhydride prior to contacting with 25-hydroxy-(3β)-cholest-5-en-3-ol.

23. A method of producing a 5-cholesten-3β,25-diol 3-sulfate sodium salt, the method comprising:

contacting 25-hydroxy-(3β)-cholest-5-en-3-ol with a sulfur trioxide-pyridine complex in at least one solvent to produce a precipitate of a 25-hydroxy-(3β)-cholest-5-en-3-sulfate pyridinium salt, wherein the 25-hydroxy-(3β)-cholest-5-en-3-sulfate pyridinium salt has low solubility in the at least one solvent such that the 25-hydroxy-(3β)-cholest-5-en-3-sulfate pyridinium salt precipitates after formation; and

contacting the 25-hydroxy-(3β)-cholest-5-en-3-sulfate pyridinium salt with a sodium salt to produce the 5-cholesten-3β,25-diol 3-sulfate sodium salt.