CLAIMS

1. An ultrapure preparation of thiostrepton having a purity of at least 99% (w/w); wherein the preparation comprises less than or equal to:

a. 300 ppm methanol;

b. 600 ppm dichloromethane, preferably less than or equal to 60 ppm dichloromethane;

c. 60 ppm chloroform; and

d. 410 ppm acetonitrile, preferably less than or equal to 200 ppm acetonitrile.

2. The ultrapure preparation of thiostrepton of claim 1, wherein the preparation comprises less than or equal to:

a. 300 ppm methanol;

b. 60 ppm dichloromethane;

c. 60 ppm chloroform; and

d. 200 ppm acetonitrile.

3. A method of purifying thiostrepton comprising the steps of:

(1) dissolving thiostrepton in a first solvent to generate a first thiostrepton solution;

(2) distilling solvent impurities from the first thiostrepton solution to generate a second thiostrepton solution;

(3) combining a second solvent with the second thiostrepton solution to precipitate thiostrepton and thus generate a first thiostrepton solid and a third solution; wherein the second solvent comprises acetonitrile;

(4) washing the first thiostrepton solid with a third solvent to remove impurities and thus generate a second thiostrepton solid; and

(5) drying the second thiostrepton solid to remove residual solvent; thereby producing an ultrapure preparation of thiostrepton according to claim 1.

4. The method of claim 3, wherein the first solvent comprises chloroform, and optionally from 0.5 to 1.0% (v/v) ethanol.

5. The method of claim 3 or claim 4, wherein:

- step (1) further comprises cooling the first thiostrepton solution to a temperature of from 15 to 30 °C; and/or

- step (2) reduces the volume of the second thiostrepton solution to at least 50% less than the volume of the first thiostrepton solution and optionally comprises cooling the second thiostrepton solution to a temperature of from 15 °C to 25 °C; and/or

- the second solvent in step (3) comprises acetonitrile at a volume equal to the volume of the second thiostrepton solution and wherein step (3) optionally further comprises separating the first thiostrepton solid from the third solution and drying the first thiostrepton solid; and/or

- the third solvent in step (4) comprises water, or is a mixture of water and acetonitrile, preferably a 4:1 v/v mixture of water and acetonitrile, and wherein the washing of the first thiostrepton solid with a third solvent of step (4) optionally comprises soaking the first thiostrepton solid with a third solvent.

6. The method of any one of claims 3 to 5, wherein the method comprises the additional step of washing the second thiostrepton solid with at least one further portion of the third solvent following the step of washing the first solid with a third solvent to generate the second solid.

7. The method of any one of claims 3 to 6, wherein the method comprises the additional step of washing the second thiostrepton solid with a fourth solvent, preferably soaking the second thiostrepton solid with the fourth solvent, following the step of washing the first thiostrepton solid with a third solvent to generate the second thiostrepton solid, and wherein said fourth solvent optionally comprises water.

8. The method of any one of claims 3 to 7, wherein step (1) is performed on a thiostrepton scale of from 100 milligrams to 100 kilograms, preferably from 1.0 gram to 10 kilograms.

9. An ultrapure preparation of thiostrepton prepared according to the method of any one of claims 3 to 8.

10. A pharmaceutical composition, comprising the ultrapure preparation of thiostrepton of any one of claims 1, 2 or 9; and one or more pharmaceutically acceptable excipients or carriers.

11. The pharmaceutical composition of claim 10, wherein the pharmaceutical composition is an aqueous composition, preferably comprising from 1 to 5 mg of ultrapure thiostrepton per mL of water.

12. The pharmaceutical composition of claim 10 or claim 11, further comprising Vitamin E-TPGS, preferably at an amount of from 0.05 to 0.1 g of Vitamin E-TPGS per mL of water.

13. The pharmaceutical composition of claim 10 or claim 11, further comprising dimethyl sulfoxide (DMSO), preferably at an amount of from 0.01 to 0.03 g of DMSO per mL of water.

14. A pharmaceutical composition according to any one of claims 10 to 13 for use in treating cancer.

15. Use of the ultrapure preparation of thiostrepton according to claim 1 or claim 2 or the pharmaceutical composition according to any one of claims 10 to 13 in the manufacture of a medicament for the treatment of cancer.