CLAIMS

1. A cancer therapy composition comprising an alkyl-triphenylphosphonium (A-TPP) compound having a saturated, linear alkyl chain with from 9 to 18 carbon atoms.

2. The composition of claim 1, wherein the A-TPP compound comprises dodecyl-TPP (d-TPP).

3. The composition of claim 2, further comprising a second inhibitor compound selected from one of a glycolysis inhibitor compound and an OXPHOS inhibitor compound.

4. The composition of claim 3, wherein the second inhibitor compound comprises Vitamin C.

5. The composition of claim 3, wherein the second inhibitor compound comprises 2-deoxy-glucose.

6. The composition of claim 4, wherein the second inhibitor compound comprises Doxycycline.

7. The composition of claim 5, wherein the second inhibitor compound comprises Niclosamide.

8. The composition of claim 6, wherein the second inhibitor compound comprises Berberine chloride.

9. A pharmaceutical composition comprising a pharmaceutically effective amount of a d-TPP or a pharmaceutically acceptable salt thereof.

10. The pharmaceutical composition of claim 9, further comprising a pharmaceutically effective amount of a second inhibitor compound selected from one of a glycolysis inhibitor compound and an OXPHOS inhibitor compound.

11. The pharmaceutical composition of claim 10, wherein the second inhibitor compound comprises one of Vitamin C and 2-deoxy-glucose.

12. The pharmaceutical composition of claim 10, wherein the second inhibitor compound comprises one of Doxycycline, Tetracycline, Chlortetracycline, Minocycline, and Tigecycline.

13. The pharmaceutical composition of claim 10, wherein the second inhibitor compound comprises one of Azithromycin, Erythromycin, Telithromycin, Clarithromycin, and Roxithromycin.

14. The pharmaceutical composition of claim 10, wherein the second inhibitor compound comprises Niclosamide.

15. The pharmaceutical composition of claim 10, wherein the second inhibitor compound comprises Berberine chloride.

16. The pharmaceutical composition of any of claims 9-15, characterized in that the pharmaceutical composition is used for at least one of treating cancer, eradicating cancer stem cells, eradicating circulating tumor cells, preventing or reducing the likelihood of tumor recurrence, preventing or reducing the likelihood of metastasis, and sensitizing a cancer to one of a chemotherapy, radiotherapy, and phototherapy.

17. Use of a d-TPP compound, or a pharmaceutically acceptable salt thereof, in the manufacture of a medicament for treating or preventing cancer.

18. The use of claim 17, wherein the cancer is breast cancer.

19. The use of claim 17, wherein the medicament further comprises a second inhibitor compound selected from a glycolysis inhibitor and an OXPHOS inhibitor.

20. The use of claim 19, wherein the second inhibitor compound is one of Vitamin C, 2-deoxy-glucose, Doxycycline, Niclosamide, and Berberine chloride.

21. Use of a d-TPP compound, or a pharmaceutically acceptable salt thereof, in the manufacture of a medicament for treating or preventing one of tumor recurrence and metastasis of a cancer.

22. The use of claim 21, wherein the cancer is breast cancer.

23. The use of claim 21, wherein the medicament further comprises a second inhibitor compound selected from a glycolysis inhibitor and an OXPHOS inhibitor.

24. The use of claim 23, wherein the second inhibitor compound is one of Vitamin C, 2-deoxy-glucose, Doxycycline, Niclosamide, and Berberine chloride.

25. A use of a d-TPP compound, or a pharmaceutically acceptable salt thereof in the manufacture of a medicament for shifting a cancer to a glycolytic state.

26. A use of d-TPP or a pharmaceutically acceptable salt thereof in the manufacture of a medicament for increasing the effectiveness of a cancer therapy.

27. The use of claim 26, wherein the cancer therapy comprises chemotherapy.

28. A use of:

a pharmaceutically effective amount of a d-TPP compound, or a pharmaceutically acceptable salt thereof, and

a pharmaceutically effective amount of a second inhibitor compound selected from a glycolysis inhibitor and an OXPHOS inhibitor,

in the manufacture of a medicament for eradicating CSCs and circulating tumor cells in a subject.