CLAIMS

1. Use of an effective amount of ^{131}I-labeled 18-(p-iodo-phenyl)octadecyl phosphocholine or a salt thereof, in the manufacture of a medicament for treating a cancer in a subject in need thereof, wherein the ^{131}I-labeled 18-(p-iodo-phenyl)octadecyl phosphocholine or a salt thereof is to be administered as a fractionated dose pursuant to a single dosing cycle comprising or consisting of:

a first single dose to be administered on day 1;

a second single dose to be administered on day 13, day 14, day 15, day 16, day 17, or day 18;

a third single dose to be administered on day 55, day 56, day 57, day 58, day 59, day 60, day 61, day 62, day 63, day 64, or day 65; and

an optional fourth single dose to be administered after the third single dose.

2. The use of claim 1, wherein the single dosing cycle is a first single dose to be administered once on day 1 and a second single dose to be administered once on day 15 (14 days after day 1) and a third single dose to be administered once on day 60 (59 days after day 1) and optionally a fourth single dose to be administered once on day 75 (74 days after day 1).

3. The use of claim 1, wherein the ^{131}I-labeled 18-(p-iodo-phenyl)octadecyl phosphocholine or a salt thereof is to be administered pursuant to:

a first dosing cycle, which comprises or consists of a first single dose to be administered on day 1 and a second single dose to be administered on day 13, day 14, day 15, day 16, day 17, or day 18; and

a second dosing cycle, which comprises or consists of a third single dose to be administered on any one of days 55-190 and an optional fourth single dose to be administered after the third single dose.

4. The use of claim 3, wherein the second single dose is to be administered on day 15 (14 days after day 1), and the third single dose is to be administered on any one of days 57-180 (56-179 days after day 1).

5. The use of claim 4, wherein the third single dose is to be administered on any one of days 70-180.

6. The use of any one of claims 3-5, wherein the fourth single dose is to be administered 7-14 days after the third single dose.

7. The use of any one of claims 1-6, wherein the subject is a human.

8. The use of any one of claims 1-7, wherein the ^{131}I-labeled 18-(p-iodo-phenyl)octadecyl phosphocholine or a salt thereof is selective for cancer cells in the subject.

9. The use of any one of claims 1-8, wherein the ^{131}I-labeled 18-(p-iodo-phenyl)octadecyl phosphocholine or a salt thereof is to be administered at a dose range of from 1 mCi to 100 mCi per meter^2 (m^2).

10. The use of any one of claims 1-8, wherein the dose is 1 mCi to 100 mCi per kg body weight of the subject.

11. The use of any one of claims 1-10, wherein the cancer is a multiple myeloma, lymphoma, neuroblastoma, sarcoma, leukemia, metastatic tumor, a liver cancer, a lung cancer, a brain cancer, a pancreas cancer, a melanoma cancer, adenocarcinoma, diffuse intrinsic pontine glioma (DIPG), pediatric lymphoma, or a breast cancer.

12. The use of any one of claims 1-11, wherein the cancer is amenable to fractionated dose radiation.

13. The use of any one of claims 1-12, wherein the medicament is to be administered with another cancer therapy selected from the group consisting of chemotherapy, immunotherapy, cell therapy, radiosensitizing therapy, radioprotective therapy, external beam radiation, tumor resection, ablative therapy, and local physical treatment on the basis of cold (cryo), heat (thermal), radiofrequency, and microwave.

14. The use of claim 9, wherein the ^{131}I-labeled 18-(p-iodo-phenyl)octadecyl phosphocholine or a salt thereof is to be administered at a dose range of from 1 mCi to 100 mCi per meter^2 (m^2) on day 1 as the first single dose and day 15 as the second single dose (14 days after day 1) and day 60 as the third single dose (59 days after day 1) and optionally day 75 as the fourth single dose (74 days after day 1).

15. The use of claim 9, wherein the ^{131}I-labeled 18-(p-iodo-phenyl)octadecyl phosphocholine or a salt thereof is to be administered at a dose range of from 1 mCi to 100 mCi per meter^2 (m^2) on day 1 as the first single dose and day 15 as the second single dose (14 days after day 1) and any one of days 57-180 as the third single dose (56-179 days after day 1) and optionally as the fourth single dose after the third single dose.

16. The use of claim 15, wherein the third single dose is to be administered on any one of days 70-180.

17. The use of claim 10, wherein the dose is 1 mCi to 100 mCi per kg body weight of the subject and is to be administered on day 1 as the first single dose and day 15 as the second single dose (14 days after day 1) and day 60 as the third single dose (59 days after day 1) and optionally day 75 as the fourth single dose (74 days after day 1).

18. The use of claim 10, wherein the dose is 1 mCi to 100 mCi per kg body weight of the subject and is to be administered on day 1 as the first single dose and day 15 as the second single dose (14 days after day 1) and any one of days 57-180 as the third single dose (56-179 days after day 1) and optionally the fourth single dose after the third single dose.

19. The use of claim 18, wherein the third single dose is to be administered on any one of days 70-180.