Claims:

1. A microbubble-chemotherapeutic agent complex for use in sonodynamic therapy, wherein said sonodynamic therapy comprises simultaneous or sequential use of a microbubble-sonosensitiser complex.

2. A microbubble-chemotherapeutic agent complex for use in sonodynamic therapy, wherein said complex is additionally attached to or associated with at least one sonosensitiser, preferably via a non-covalent linkage, e.g. via a biotin-avidin interaction.

3. A complex for use as claimed in claim 1 which comprises a microbubble attached to or associated with at least one chemotherapeutic agent, preferably via a non-covalent linkage, e.g. via a biotin-avidin interaction.

4. A complex for use as claimed in any one of claims 1 to 3, wherein the microbubble-chemotherapeutic agent complex comprises a microbubble having a shell which retains a gas, preferably oxygen.

5. A complex for use as claimed in any one of claims 1, 3 and 4, wherein the microbubble-sonosensitiser complex comprises a microbubble having a shell which retains a gas, preferably oxygen.

6. A complex for use as claimed in any preceding claim, wherein said microbubble-chemotherapeutic agent complex and/or said microbubble-sonosensitiser complex comprises a microbubble having a diameter in the range 0.5 to 100μm.

7. A complex for use as claimed in any preceding claim, wherein said microbubble-chemotherapeutic agent complex and/or said microbubble-sonosensitiser complex comprises a phospholipid monolayer shell having linked thereto one or more polymers, e.g. polyethylene glycol.

8. A complex for use as claimed in any one of the preceding claims, wherein the sonosensitiser is selected from phenothiazine dyes such as methylene blue, toluidine blue, Rose Bengal, porphyrins such as Photofrin®, chlorins, benzochlorins, phthalocyanines, napthalocyanines, porphycenes, cyanines and cyanine analogues such as Merocyanine 540 and indocyanine green, azodipyromethines such as BODIPY and halogenated derivatives thereof, acridine dyes, purpurins, pheophorbides, verdins, psoralens, hematoporphyrins, protoporphyrins and curcumins, preferably wherein the sonosensitiser is Rose Bengal, methylene blue, indocyanine green or an analogue of indocyanine green.

9. A pharmaceutical composition comprising a microbubble-chemotherapeutic agent complex as defined in any one of claims 2 and 4 to 8 (e.g. a microbubble having non-covalently bound thereto at least one chemotherapeutic agent and at least one sonosensitiser), together with at least one pharmaceutical carrier or excipient.

10. A pharmaceutical composition comprising a microbubble-chemotherapeutic agent complex as defined in any one of claims 1 and 3 to 8, and a microbubble-sonosensitiser complex as defined in any one of claims 1 and 3 to 8, together with at least one pharmaceutical carrier or excipient.

11. A pharmaceutical composition as claimed in claim 9 or claim 10 for use in a method of sonodynamic therapy and/or diagnosis, preferably for use in a method of sonodynamic therapy and simultaneous diagnostic imaging.

12. A pharmaceutical composition for use as claimed in claim 11 in which said composition is contacted with cells or tissues of a patient and, either simultaneously or sequentially, said cells or tissues are subjected to irradiation with ultrasound and/or light.

13. A pharmaceutical composition as claimed in any one of claims 9 to 12 for use in the treatment and/or diagnosis of cancer, preferably in the treatment and/or diagnosis of deep-sited tumours.

14. A pharmaceutical composition for use as claimed in claim 13 wherein said cancer is selected from the group consisting of sarcomas, including osteogenic and soft tissue sarcomas, carcinomas, e.g. breast, lung, cerebral, bladder, thyroid, prostate, colon, rectum, pancreas, stomach, liver, uterine, hepatic, renal, prostate, cervical and ovarian carcinoma, lymphomas, including Hodgkin and non-Hodgkin lymphomas, neuroblastoma, melanoma, myeloma, Wilm's tumour, and leukemias, including acute lymphoblastic leukaemia and acute myeloblastic leukaemia, astrocytomas, gliomas and retinoblastomas.

15. A pharmaceutical composition for use as claimed in claim 14, wherein said cancer is pancreatic cancer.

16. A product comprising a microbubble-chemotherapeutic agent complex as defined in any one of claims 1 and 3 to 8, and a microbubble-sonosensitiser complex as defined in any one of claims 1 and 3 to 8 for simultaneous or sequential use in a method of sonodynamic therapy and/or sonodynamic diagnosis.

17. A kit comprising the following components: (i) a microbubble-chemotherapeutic agent complex as defined in any one of claims 1 and 3 to 8; and separately (ii) a microbubble-sonosensitiser complex as defined in any one of claims 1 and 3 to 8; optionally together with (iii) instructions for the use of said components in a method of sonodynamic therapy and/or diagnosis.

18. Use of a microbubble-chemotherapeutic agent complex as defined in any one of claims 1 and 3 to 8 in the manufacture of a medicament for use in combination therapy with a microbubble-sonosensitiser complex as defined in any one of claims 1 and 3 to 8, e.g. in a method of sonodynamic therapy and/or diagnosis.

19. Use of a microbubble-sonosensitiser complex as defined in any one of claims 1 and 3 to 8 in the manufacture of a medicament for use in combination therapy with a microbubble-chemotherapeutic agent complex as defined in any one of claims 1 and 3 to 8, e.g. in a method of sonodynamic therapy and/or diagnosis.

20. Use as claimed in claim 18 or claim 19 in a method of sonodynamic therapy and simultaneous diagnostic imaging.

21. A method of sonodynamic treatment of cells or tissues of a patient, which method comprises:

(a) administering to the affected cells or tissues an effective amount of a pharmaceutical composition as claimed in claim 9 or claim 10; and

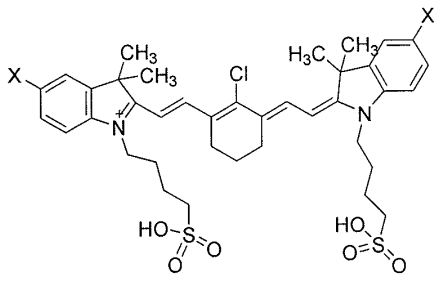
(b) subjecting said cells or tissues to ultrasound irradiation and/or light.

22. A microbubble-chemotherapeutic agent complex as defined in any one of claims 1 and 3 to 8.

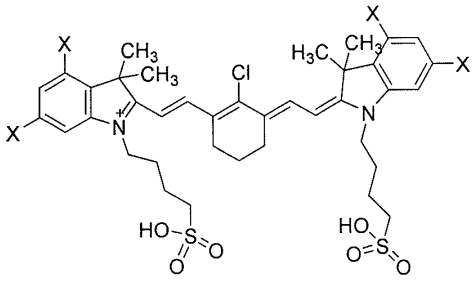
23. A microbubble having linked thereto at least one chemotherapeutic agent and at least one sonosensitiser, preferably wherein said microbubble contains oxygen gas.

24. A microbubble-sonosensitiser complex, wherein the sonosensitiser is halogenated (e.g. brominated or iodinated), preferably wherein the sonosensitiser is a halogenated cyanine dye, e.g. a halogenated analogue of IR783.

25. A microbubble-sonosensitiser complex as claimed in claim 24, wherein said sonosensitiser is a compound of formula I or formula II, or a pharmaceutically acceptable salt thereof:



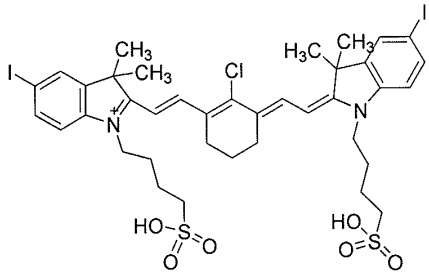
(I)

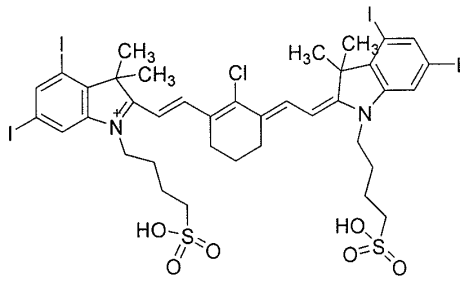


(II)

(wherein in formula I and formula II each X is independently selected from a bromine and iodine atom, preferably wherein each X is iodine).

26. A complex as claimed in claim 25, wherein the sonosensitiser is selected from:



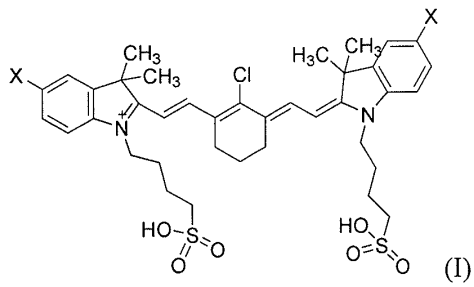


and their pharmaceutically acceptable salts.

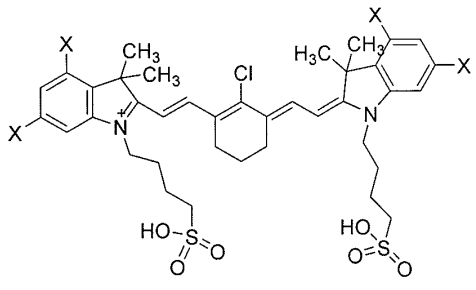
27. A microbubble-sonosensitiser complex as claimed in any one of claims 24 to 26 for use in therapy, e.g. for use in a method of sonodynamic therapy and/or diagnosis.

28. A microbubble-sonosensitiser complex as claimed in any one of claims 24 to 26 for use in a method of near-infrared imaging (e.g. NIR fluorescence imaging).

29. A compound which is selected from a compound of formula I, a compound of formula II, or a pharmaceutically acceptable salt thereof:



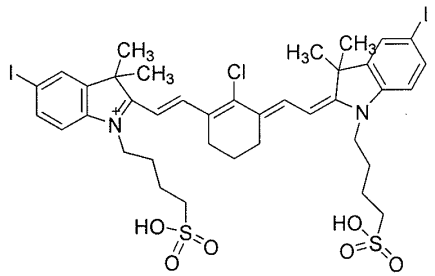
(I)

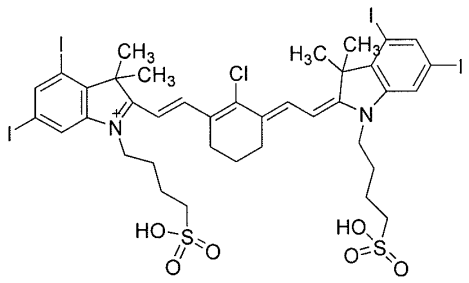


(II)

(wherein in formula I and formula II each X is independently selected from a bromine and iodine atom, preferably wherein each X is iodine).

30. A compound as claimed in claim 29 which is selected from:

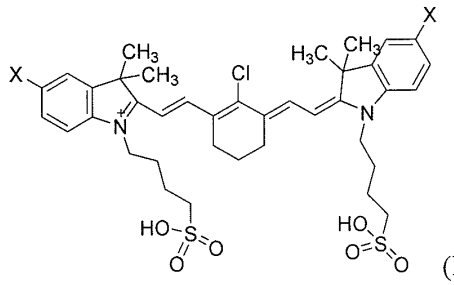




and their pharmaceutically acceptable salts.

31. A compound as claimed in claim 29 or claim 30 for use in therapy, e.g. for use in a method of sonodynamic therapy and/or diagnosis.

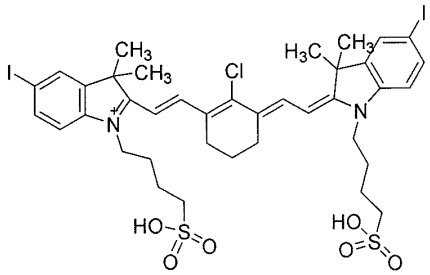
32. A compound of formula I, or a pharmaceutically acceptable salt thereof:



(I)

(wherein each X is independently selected from a bromine and iodine atom, preferably wherein each X is iodine) for use as a near-infrared imaging agent.

33. A compound for use as claimed in claim 32 which is:



or a pharmaceutically acceptable salt thereof.

34. A compound as claimed in claim 32 or claim 33 for use as a combined sonosensitiser and near-infrared imaging agent.