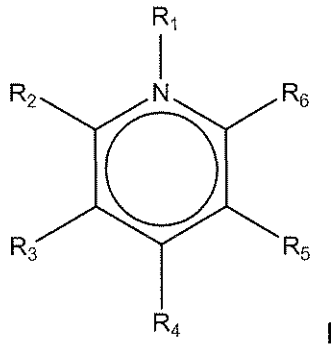
Claims

1. A tissue-targeting complex comprising a tissue targeting moiety selected from antibodies, antibody constructs, fragments of antibodies, constructs of fragments or a mixture thereof, peptide, amino acid, steroidal or non-steroidal hormone, folate, estrogen, testosterone or biotin, an octadentate hydroxypyridinone-containing ligand and the ion of an alpha-emitting 227-thorium radionuclide, said octadentate ligand comprising four independently chosen chelating moieties of formula I



I

wherein R_1 is an optional N-substituent group and may thus be absent or may be selected from hydrocarbyl, OH, O-hydrocarbyl, SH and S-hydrocarbyl groups; comprises a linker moiety; and/or comprises a coupling moiety; groups R_2 to R_6 are each independently selected from H, OH, =O, short hydrocarbyl groups, linker moieties and/or a coupling moieties, and wherein at least one of groups R_1 to R_6 is OH and at least one of groups R_2 to R_6 is =O.

2. The complex as claimed in claim 1 wherein at least one of groups R_1 to R_6 is a linker moiety.

3. The complex as claimed in any of claims 1 or 2 comprising at least one 3,2-hydroxypyridinone moiety.

4 The complex as claimed in any of claims 1 to 3, wherein said ion of an alpha-emitting thorium radionuclide is the 4+ ion of an alpha-emitting thorium radionuclide.

5. Use of a tissue-targeting complex comprising a tissue targeting moiety selected from Antibodies, antibody constructs, fragments of antibodies, constructs of fragments or a mixture thereof, an octadentate hydroxypyridinone-containing ligand and the ion of an alpha-emitting 227-thorium radionuclide in the manufacture of a medicament for the treatment of hyperplastic or neoplastic disease, wherein said tissue-targeting complex is a complex as claimed in any of claims 1 to 4.

6. The use as claimed in claim 5 wherein said hyperplastic or neoplastic disease is selected from the group consisting of a carcinoma, sarcoma, myeloma, leukemia, lymphoma and mixed type cancer.

7. Use of at least one tissue-targeting complex comprising a tissue targeting moiety selected from antibodies, antibody constructs, fragments of antibodies, constructs of fragments or a mixture thereof, peptide, amino acid, steroidal or non-steroidal hormone, folate, estrogen, testosterone, or biotin, an octadentate hydroxypyridinone-containing ligand and the ion of an alpha-emitting 227-thorium radionuclide in the manufacture of a medicament for treating of a human or non-human animal body,wherein said tissue-targeting complex is a complex as claimed in any of claims 1 to 4.

8. The use as claimed in claim 7 for the treatment of hyperplastic or neoplastic disease selected from the group consisting of a carcinoma, sarcoma, myeloma, leukemia, lymphoma and mixed type cancer.

9. A pharmaceutical composition comprising a tissue-targeting complex comprising a tissue targeting moiety selected from antibodies, antibody constructs, fragments of antibodies, constructs of fragments or a mixture thereof, peptide, amino acid, steroidal or non-steroidal hormone, folate, estrogen, testosterone, or biotin, an octadentate hydroxypyridinone-containing ligand and the ion of an alpha-emitting 227-thorium radionuclide together with at least one pharmaceutical carrier or excipient, wherein said tissue-targeting complex is a complex as claimed in any of claims 1 to 4.

10. A kit for a use according to any of claims 7 to 8, said kit comprising a tissue targeting moiety selected from antibodies, antibody constructs, fragments of antibodies, constructs of fragments or a mixture thereof, peptide, amino acid,

steroidal or non-steroidal hormone, folate, estrogen, testosterone or biotin, conjugated or conjugatable to an octadentate hydroxypyridinone-containing ligand.

11. The kit as claimed in claim 10, further comprising an alpha emitting 227-thorium radionuclide.

12. A tissue-targeting complex comprising a tissue targeting moiety selected from antibodies, antibody constructs, fragments of antibodies, constructs of fragments or a mixture thereof, peptide, amino acid, steroidal or non-steroidal hormone, folate, estrogen, testosterone or biotin, an octadentate hydroxypyridinone-containing ligand and the ion of an alpha-emitting 227-thorium radionuclide for use in the treatment of hyperplastic or neoplastic disease, wherein said tissue-targeting complex is a complex as claimed in any of claims 1 to 4.

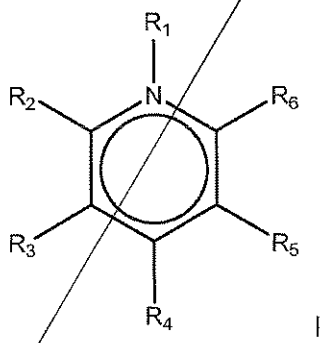
13. The tissue-targeting complex as claimed in claim 12 wherein said hyperplastic or neoplastic disease is selected from the group consisting of a carcinoma, sarcoma, myeloma, leukemia, lymphoma and mixed type cancer.

Claims

1. A tissue-targeting complex comprising a tissue targeting moiety, an octadentate hydroxypyridinone-containing ligand and the ion of an alpha-emitting thorium radionuclide.

2. The complex as claimed in claim 1 comprising a polypeptide tissue-targeting moiety.

3. The complex as claimed in claim 1 or claim 2 comprising an octadentate ligand comprising at least one chelating moiety of formula I



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Wherein R_1 is an optional N-substituent group and may thus be absent or may be selected from hydrocarbyl, OH, O-hydrocarbyl, SH and S-hydrocarbyl groups; comprises a linker moiety; and/or comprises a coupling moiety; groups R_2 to R_6 are each independently selected from H, OH, =O, short hydrocarbyl groups, linker moieties and/or a coupling moieties.

4) The complex as claimed in claim 3 wherein at least one of groups R_1 to R_6 is OH and at least one of groups R_2 to R_6 is =O

5) The complex as claimed in claim 3 or claim 4 wherein at least one of groups R_1 to R_6 is a linker moiety.

6. The complex as claimed in any of claims 3 to 5 comprising at least one 3,2-hydroxypyridinone moiety.

7 The complex as claimed in any of claims 1 to 6, wherein said ion of an alpha-emitting thorium radionuclide is the 4+ ion of an alpha-emitting thorium radionuclide such as ^{227}Th.

8. Use of a tissue-targeting complex comprising a tissue targeting moiety, an octadentate hydroxypyridinone-containing ligand and the ion of an alpha-emitting thorium radionuclide in the manufacture of a medicament for the treatment of hyperplastic or neoplastic disease.

9. Use as claimed in claim 8 wherein said tissue-targeting complex is a complex as claimed in any of claims 1 to 7.

10. Use as claimed in claim 8 or claim 9 wherein said disease is a carcinoma, sarcoma, myeloma, leukemia, lymphoma or mixed type cancer.

11. Method of treatment of a human or non-human animal body (particularly one in need thereof) comprising administration of at least one tissue-targeting complex comprising a tissue targeting moiety, an octadentate hydroxypyridinone-containing ligand and the ion of an alpha-emitting thorium radionuclide.

12. The method of claim 11 wherein said tissue-targeting complex is a complex as claimed in any of claims 1 to 7.

13. The method as claimed in claim 11 or claim 12 for the treatment of hyperplastic or neoplastic disease, such as a carcinoma, sarcoma, myeloma, leukemia, lymphoma or mixed type cancer.

14. A pharmaceutical composition comprising a tissue-targeting complex comprising a tissue targeting moiety, an octadentate hydroxypyridinone-containing ligand and the ion of an alpha-emitting thorium radionuclide together with at least one pharmaceutical carrier or excipient.

15. The pharmaceutical composition as claimed in claim 14 comprising tissue-targeting complex is a complex as claimed in any of claims 1 to 7.

16. A kit for use in a method according to any of claims 11 to 13, said kit comprising a tissue targeting moiety, conjugated or conjugatable to an octadentate hydroxypyridinone-containing ligand, optionally and preferably include an alpha-emitting thorium radionuclide, such as ^{227}Th.

17. A tissue-targeting complex comprising a tissue targeting moiety, an octadentate hydroxypyridinone-containing ligand and the ion of an alpha-emitting thorium radionuclide for use in the treatment of hyperplastic or neoplastic disease.

18. The tissue-targeting complex as claimed in claim 17 wherein said tissue-targeting complex is a complex as claimed in any of claims 1 to 7.

19. The tissue-targeting complex as claimed in claim 17 or claim 18 wherein said disease is a carcinoma, sarcoma, myeloma, lukemia, lymphoma or mixed type cancer.