Claims:

1) A method for generating a purified solution of at least one alpha-emitting thorium isotope, said method comprising contacting a solution comprising said at least one alpha-emitting thorium isotope complex and at least one radium isotope with at least one selective binder for said at least one radium isotope and subsequently separating said solution of at least one alpha-emitting thorium isotope complex from said at least one selective binder, wherein said at least one selective binder is selected from the group consisting of cation exchange resins and ceramic hydroxyapatite.

2) A method as claimed in claim 1 wherein said alpha-emitting thorium isotope is in the form of a complex with a ligand, wherein said ligand is conjugated to a specific binding moiety.

3) A method as claimed in any preceding claim wherein said at least one selective binder is in the form of, or is attached to, a solid support or gel support.

4) A method as claimed in claim 3 wherein said solid or gel support is in the form of, or attached to, at least one selected from membranes, resin heads, gel heads, self-assembled lipid structures, microparticles, nanoparticles, powders, crystals, ceramics and polymer structures.

5) A method as claimed in any preceding claim wherein said solution is contacted with said at least one selective binder by means of flow of said solution through or past said at least one selective binder or through or past a support upon which said at least one selective binder is immobilized.

6) A method as claimed in claim 5 wherein said contacting is by means of a filtration in which said solution flows through or past said at least one selective binder or through or past a support upon which said at least one selective binder is immobilized.

7) A method as claimed in claim 6 wherein said filtration further comprises flowing said solution through a sterile filtration membrane.

8) A method as claimed in any preceding claim wherein said contacting takes place for a period of less than 30 minutes, such as less than 10 minutes, e.g. less than 5 minutes or less than 1 minute.

9) A method as claimed in any of claims 1 to 4 wherein said solution is contacted with said at least one selective binder by means of addition of said at least one selective binder and said solution to a vessel.

10) A method as claimed in claim 9 wherein said contacting takes place for 30 minutes or longer.

11) A kit for the formation of a pharmaceutical preparation of at least one alpha-emitting thorium isotope complex, said kit comprising:

i) a solution of said at least one alpha-emitting thorium isotope and at least one radium isotope;

ii) at least one ligand;

iii) a specific binding moiety;

iv) at least one selective binder for said at least one radium isotope,

wherein said at least one alpha-emitting thorium isotope is complexed or complexable by said at least one ligand which is conjugated or conjugatable to said specific binding moiety, and said at least one selective binder is selected from the group consisting of cation exchange resins and ceramic hydroxyapatite.

12) A kit as claimed in claim 11 wherein said solution of said at least one alpha-emitting thorium isotope and said at least one radium isotope is present in a first vessel and said at least one ligand conjugated to said specific binding moiety is present in a second vessel.

13) A kit as claimed in claim 11 or claim 12 wherein said at least one selective binder is present in the form of at least one filter, such as a syringe filter, through which said solution of said at least one alpha-emitting thorium isotope can be passed after complexation by said at least one ligand and optionally after conjugation to said specific

binding moiety.

14) A kit as claimed in claim 11 or claim 12 wherein said at least one selective binder is present in the form of or attached to at least one solid or gel support.

15) A kit as claimed in claim 14 wherein said at least one selective binder is present in a first vessel.

16) A kit as claimed in any of claims 11 to 15 wherein said at least one selective binder is arranged to be separated from said solution by the process of administration of said solution.

17) A kit as claimed in claim 16 wherein said solid or gel support is least one selected from membranes, resin beads, gel beads, self-assembled lipid structures, microparticles, nanoparticles, powders, crystals and polymer structures.

18) A kit as claimed in any of claims 11 to 17 additionally comprising a filter and/or an administration device.

19) A kit as claimed in any of claims 11 to 18 comprising a filter of pore size of no larger than 0.22 μm.

20) An administration device comprising a solution of at least one alpha-emitting thorium isotope complex and at least one radium isotope, said device further comprising a filter containing at least one selective binder for said radium isotope, wherein said at least one selective binder is selected from the group consisting of cation exchange resins and ceramic hydroxyapatite.

21) A device as claimed in claim 20 in the form of a disposable syringe and syringe filter.

22) A kit as claimed in any of claims 11 to 19 comprising an administration device comprising a solution of at least one complexed alpha-emitting radionuclide and at least

one daughter nuclide, said kit further comprising a selective binder for said daughter nuclide in the form of a filter.

23) A method for the formation of an injectable solution of an alpha-emitting thorium isotope complex, the method comprising the steps of:

a) combining a first solution comprising a dissolved salt of an alpha-emitting thorium isotope and at least one radium isotope with a second solution comprising at least one ligand conjugated to at least one targeting moiety;

b) incubating the combined solutions at a suitable temperature for a period to allow complex formation between said ligand and said alpha-emitting thorium isotope whereby to form a solution of at least one alpha-emitting thorium isotope complex;

c) contacting said solution of at least one alpha-emitting thorium isotope complex with at least one selective binder for at least one of said radium isotope, wherein said at least one selective binder is selected from the group consisting of cation exchange resins and ceramic hydroxyapatite;

d) separating said solution of at least one alpha-emitting thorium isotope complex from said at least one selective binder.

24) A method for the formation of an injectable solution as claimed in claim 23 wherein steps c) and d) comprise a method for generating a purified solution as claimed in any of claims 1 to 10.