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(54) Title: RADIO-PHARMACEUTICAL COMPLEXES

(57) Abstract: The invention provides a method for the formation of a tissue-targeting thorium complex, said method comprising: a) forming an octadentate chelator comprising four hydroxypyridinone (HOPO) moieties, substituted in the N-position with a C₁-C₃ alkyl group, and a coupling moiety terminating in a carboxylic acid group; b) coupling said octadentate chelator to at least one tissue-targeting peptide or protein comprising at least one amine moiety by means of at least one amide-coupling reagent whereby to generate a tissue-targeting chelator; and c) contacting said tissue-targeting chelator with an aqueous solution comprising an ion of at least one alpha-emitting thorium isotope. A method of treatment of a neoplastic or hyperplastic disease comprising administration of such a tissue-targeting thorium complex, as well as the complex and corresponding pharmaceutical formulations are also provided.

