conjugate, is also equipped with the fluorophore rhodamine 6G for fluorescence applications. [18]

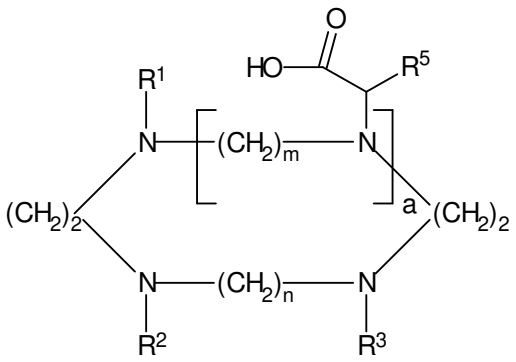
The application of chelators like TRAP and DOTPI as multimeric bridges results usually in peptides of high affinity, due to the general concept of avidity.[19] The combination of carboxylates for the conjugation with target addressing peptides and hydrophilic phosphinates for the complexation of radiometals results in peptides of overall high hydrophilicity.[16, 18]

Although typical parameters as target affinity and lipophilicity are generally promising, the synthetical accessibility of the chelators themselves as well as the multimeric/multimodal peptides is complicated and often unfavorable.

SUMMARY

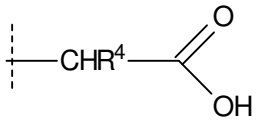
The present disclosure provides a novel approach for the development of chelator-based radiohybrid ligand compounds. In these compounds, the heterocyclic ring structure of a chelator functions as a bridging structure between the binding motif and a SiFA group as a second labeling structure. Since the chelating structure serves as a linker, an additional linker structure acting as a spacer between the binding motif and the chelator is not needed, so that the overall structure of the ligand compound is simplified. The resulting compounds are of high affinity, high hydrophilicity and low binding to human serum albumin, resulting in favorable *in vivo* results in the mouse model.

In one aspect, the present disclosure refers to a compound selected from:
(a) a compound of formula (I)



(I)

wherein
a is 0 or 1;
m is 2 or 3;
n is 2 or 3;
one group selected from R^1, R^2 and R^3 is a group comprising an effector moiety R^B;
another group selected from R^1, R^2 and R^3 is a group comprising a silicon-based fluoride acceptor (SiFA) moiety R^S, which moiety comprises a silicon atom and a fluorine atom, wherein the fluorine atom is linked via a covalent bond directly to the silicon atom, and which can be labeled with ^{18}F by isotopic exchange of ^{19}F by ^{18}F or which is labeled with ^{18}F;
and the remaining group selected from R^1, R^2 and R^3 is a group of the formula (R-1):



(R-1)

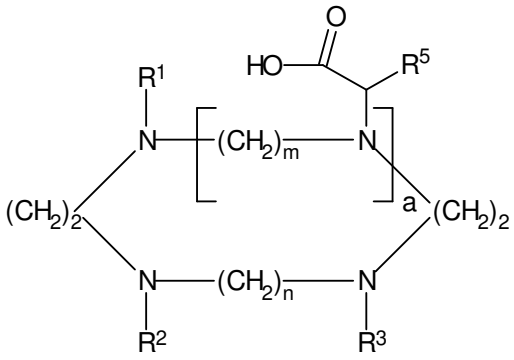
wherein
R^4 is selected from -H, -OH and C1-C3 alkyl; and wherein the dashed line marks a bond which attaches the group to the remainder of the compound;
R^5 is selected from -H, -OH and C1-C3 alkyl;

(b) a salt thereof, and
(c) a chelate compound formed from a compound of formula (I) or its salt, and a radioactive or non-radioactive cation.

In another aspect, the present disclosure refers to a pharmaceutical or diagnostic composition comprising or consisting of one or more compounds as described herein.

DETAILED DESCRIPTION

In particular, the invention provides a compound selected from:
a compound of the following formula (I):



(I)

wherein