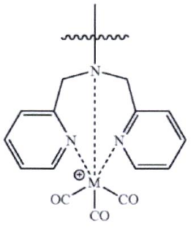
tium (Tc), rhenium (Re), yttrium (Y), indium (In), and copper (Cu). In some embodiments, the radionuclide is a low oxidation state metal. Examples of low oxidization state metals include metals with an oxidation state less than or equal to about 4, for example Tc(I), Re(I), and Cu(0). In some embodiments, Metal represents a ^{185}Re-carbonyl, ^{186}Re-carbonyl, ^{188}Re-carbonyl, ^{185}Re-tricarbonyl, ^{186}Re-tricarbonyl, or ^{188}Re-tricarbonyl ligand. In some embodiments, Metal represents a ^{99m}Tc-carbonyl ligand or a ^{99m}Tc-tricarbonyl ligand.

[0100] Any suitable chelating moiety may be used to provide a covalent or other association with a radionuclide. Examples of chelating agents include but not limited to a substituted or unsubstituted N_2S_2 structure, a N_4 structure, an isonitrile, a hydrazine, a triaminothiol, a chelating agent with a hydrazinonicotinic acid group, a phosphorus group, phosphinothiols, thioesters, thioethers, a picolineamine monoacetic acid, a pyridine or bipyridyl based compound, and a substituted or unsubstituted cyclopentadienyl. By way of example, suitable chelating agents include tetra-azacyclododecanetetra-acetic acid (DOTA), diethylenetriaminepentaacetic acid (DTPA), bis(pyri din-2-ylmethyl)amine (DPA), quinolinemethylamino acetic acid, 2,2'-azanediyldiacetic acid, 2,2'-azanediylbis(methylene)diphenol, 2-((1H-imidazol-2-yl)methylamino)acetic acid, bis(isoquinolinemethyl)amine, bis(quinolinemethyl)amine, pyridine-2-ylmethylamino acetic acid (PAMA), 2-(isoquinolin-3-ylmethylamino)acetic acid, bis((1H-imidazol-2-yl)methyl) amine, bis(thiazol-2-ylmethyl)amine, 2-(thiazol-2-ylmethylamino)acetic acid, and their derivatives, e.g. bis(5-dimethylamino pyridine-2-ylmethyl)amine, bis((1-methyl-/H-imidazol-2-yl)methyl)amine, 2,2'-(2,2'-azanediylbis (methylene)bis(1H-imidazole-2,1-diyl))diacetic acid, 2-((1-(carboxymethyl)-/H-imidazol-2-yl)methylamino)acetic acid, 2,2'-(2-(2-(azanediylbis(methylene)bis(1H-imidazol-1-yl)acetylazanediyl)diacetic acid, and the like. Other chelating groups that may be incorporated into the compound of Formula I, include, but are not limited, to those groups as illustrated in Tables 3 and 4, below.

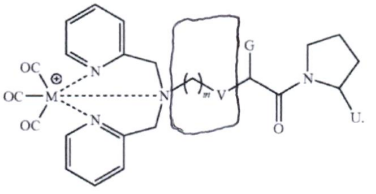
[0101] The distance between the Metal-Chelate moiety and the pyrrolidine moiety of the complex represented by Formula I can be varied by altering the tether and/or expanding the length of the tether between them to modify the affinity and selectivity of the complex for seprase. The pharmacokinetic properties of the complex may also be modified by incorporating heteroatoms into the tethers. The following structures represented by Formulas I-a to I-k are some exemplary embodiments with different tethers and/or the length of tethers. To facilitate description, the complexes are described below with embodiments where the Metal-Chelate moiety has the following structure:



where M is technetium-99m (^{99m}Tc), rhenium-186 (^{186}Re) or rhenium-188 (^{188}Re). It will be appreciated that other Metal-Chelate structures are within the scope described embodiments.

[0102] In some embodiments, the complex has the structure of Formula I-a:

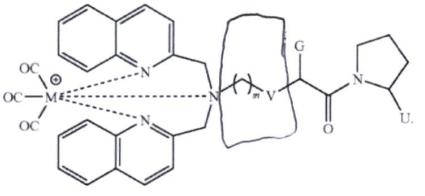
I-a



In such embodiments, the variables U, G, V, X, R, W, R', n, and m are as described above. However, the M is now part of the Metal in Formula I, and M may be a technetium-99m (^{99m}Tc), rhenium-186 (^{186}Re) or rhenium-188 (^{188}Re).

[0103] In some embodiments, the complex has the structure of Formula I-b:

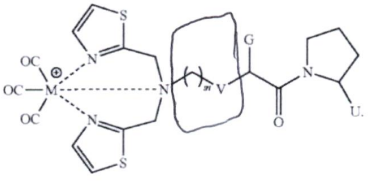
I-b



In such embodiments, the variables U, G, V, X, R, W, R', n, and m are as described above. However, the M is now part of the Metal in Formula I, and M may be a technetium-99m (^{99m}Tc), rhenium-186 (^{186}Re) or rhenium-188 (^{188}Re).

[0104] In some embodiments, the complex has the structure of Formula I-c:

I-c



In such embodiments, the variables U, G, V, X, R, W, R', n, and m are as described above. However, the M is now part of the Metal in Formula I, and M may be a technetium-99m (^{99m}Tc), rhenium-186 (^{186}Re) or rhenium-188 (^{188}Re).

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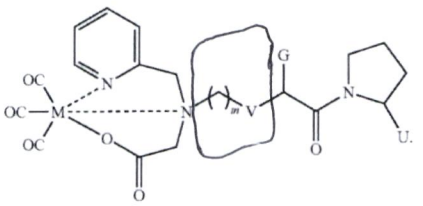
[0105] In some embodiments, the complex has the structure of Formula I-d:

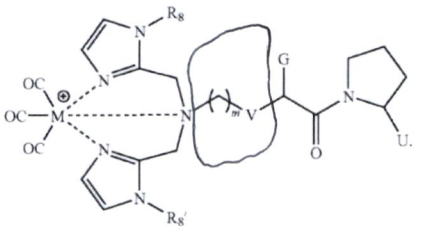
I-d



In such embodiments, the variables U, G, V, X, R, W, R', n, and m are as described above. However, the M is now part of the Metal in Formula I, and M may be a technetium-99m (^{99m}Tc), rhenium-186 (^{186}Re) or rhenium-188 (^{188}Re).

[0106] In some embodiments, the complex has the structure of Formula I-e:

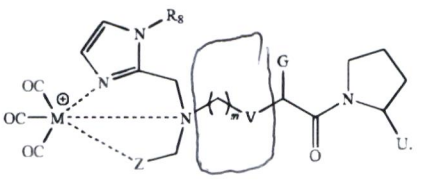
I-e



In such embodiments, the variables U, G, V, X, R, W, R', n, and m are as described above. However, the M is now part of the Metal in Formula I, and M may be a technetium-99m (^{99m}Tc), rhenium-186 (^{186}Re) or rhenium-188 (^{188}Re). Furthermore, R_8 and R_8' are independently hydrogen, halogen, a substituted or unsubstituted alkyl, alkenyl, alkynyl, hydroxyl, alkoxyl, acyl, acyloxy, acylamino, silyloxy, amino, monoalkylamino, dialkylamino, nitro, sulfhydryl, alkylthio, imino, amido, phosphoryl, phosphonate, phosphine, carbonyl, carboxyl, carboxamide, anhydride, silyl, thioalkyl, alkylsulfonyl, aryl sulfonyl, selenoalkyl, ketone, aldehyde, ether, ester, heteroalkyl, cyano, guanidine, amidine, acetal, ketal, amine oxide, aryl, heteroaryl, aralkyl, arylether, heteroaralkyl, azido, aziridine, carbamoyl, epoxide, hydroxamic acid, imide, oxime, sulfonamide, thioamide, thiocarbamate, urea, thiourea, $(CH_2)_dCO_2H$, $CH_2CH_2OCH_2CH_3$, $CH_2CH(OCH_3)_2$, $(CH_2CH_2O)_dCH_2CH_3$, $(CH_2)_dNH_2$, $CH_2CH_2C(O)NH_2$, $(CH_2)_dC(O)N((CH_2)_dCOOH)_2$, $(CH_2)_dN(CH_3)_2$, CH_2CH_2OH, $(CH_2)_dCH(CO_2H)_2$, $(CH_2)_dP(O)(OH)_2$, $(CH_2)_dB(OH)_2$, or ---$(CH_2)_d$—R_9, where each d is individually an integer from 0 to 6; and each R_9 is independently 15-Crown-5,18-Crown-6, tetrazole, oxazole, aziridine, triazole, imidazole, pyrazole, thiazole, hydroxamic acid, phosphonate, phosphinate, thiol, thioether, polysaccharide, sacharride, nucleotide or oligonucleotide. In some embodiments, R_8 and R_8' are $(CH_2)_dC(O)N((CH_2)_dCOOH)_2$. In some embodiments, R_8 and R_8' are $CH_2C(O)N(CH_2COOH)_2$. In some embodiments, R_8 and R_8' are $(CH_2)_dCOOH$. In some embodiments, R_8 and R_8' are CH_2COOH.

[0107] In some embodiments, the complex has the structure of Formula I-f:

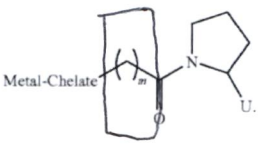
I-f



In such embodiments, the variables U, G, V, X, R, W, R', R_8, n, and m are as described above. However, the M is now part of the Metal in Formula I, and M may be a technetium-99m (^{99m}Tc), rhenium-186 (^{186}Re) or rhenium-188 (^{188}Re). In such embodiments, Z is a substituted or unsubstituted thioalkyl, carboxylate, carboxyalkyl, aminoalkyl, heterocyclyl, (amino acid), (amino acid)alkyl, hydroxy, hydroxyalkyl, 2-(carboxy)aryl, 2-(carboxy)heteroaryl, 2-(hydroxy)aryl, 2-(hydroxy)heteroaryl, 2-(thiol)aryl, 2-pyrrolidine boronic acid, or 2-(thiol)heteroaryl.

[0108] In some embodiments, the complex has the structure of Formula I-g:

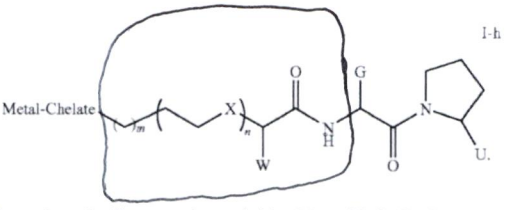
I-g



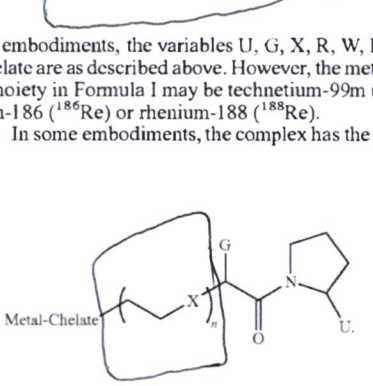
In such embodiments, U, m, Metal, and Chelate are as described above. In some embodiments, the Metal is metal containing moiety, that contains technetium-99m, rhenium-186 or rhenium-188.

[0109] In some embodiments, the complex has the formula of I-h:

I-h



In such embodiments, the variables U, G, X, R, W, R', n, m, and Chelate are as described above. However, the metal in the Metal moiety in Formula I may be technetium-99m (^{99m}Tc), rhenium-186 (^{186}Re) or rhenium-188 (^{188}Re).

[0110] In some embodiments, the complex has the formula of I-i:

I-i