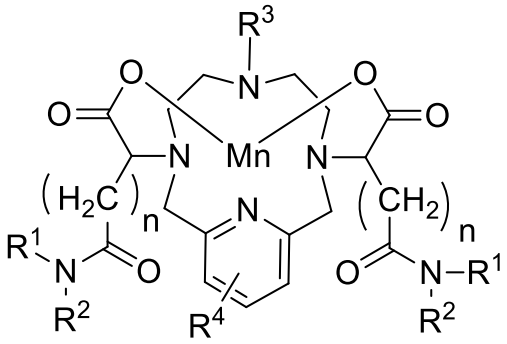
## Claims

(1) A compound of Formula I:



(I)

or a salt or solvate thereof, wherein:

each $R^1$ is independently selected from the group comprising $C_{1-20}$ hydroxyalkyl, $C_{1-6}$ alkyl, $C_{3-6}$ aryl optionally-substituted with one or more substituents selected from halo and –C(=O)-NH-$C_{1-6}$ hydroxyalkyl, or a carbohydrate moiety;

each $R^2$ is independently selected from the group comprising $C_{1-20}$ hydroxyalkyl, $C_{1-6}$ alkyl or hydrogen;

$R^3$ is selected from the group comprising $C_{1-3}$ alkyl or $–(CH_2)_m$-C(=O)-$NR^5R^6$ wherein m is an integer from 2-5, and $R^5$ and $R^6$ are as respectively defined for $R^1$ and $R^2$;

$R^4$ represents 0-3 substituents selected from the group comprising hydroxy, $C_{1-6}$ alkyl and $C_{1-6}$ hydroxyalkyl; and,

each n is an integer from 0-4;

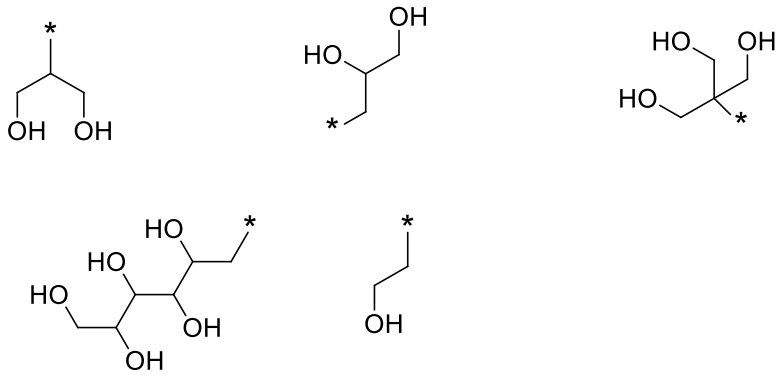
and wherein the compound of Formula I comprises at least two hydroxy groups.

(2) The compound as defined in Claim 1 wherein each $R^1$ is $C_{1-12}$ hydroxyalkyl.

(3) The compound as defined in either Claim 1 or Claim 2 wherein each $R^1$ is $C_{3-6}$ hydroxyalkyl.

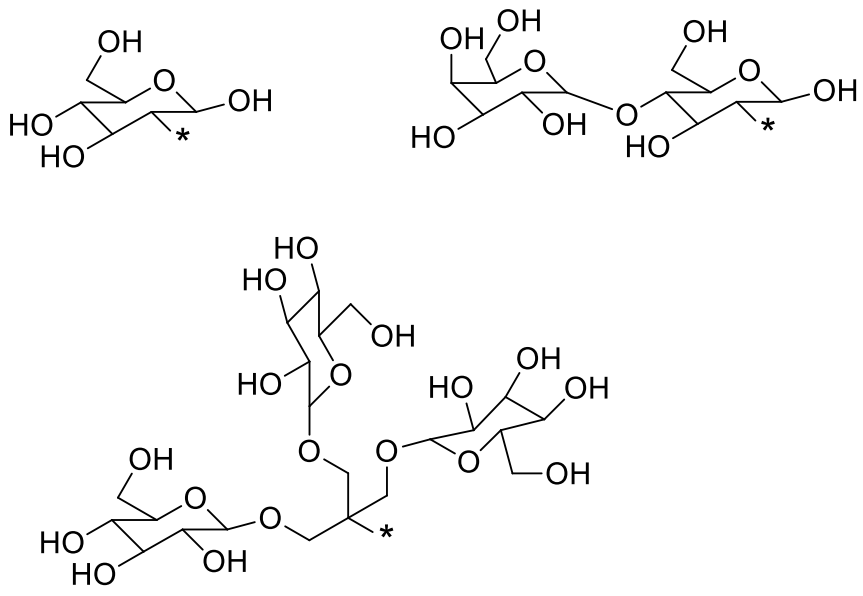
(4) The compound as defined in any one of Claims 1-3 wherein each $R^1$ is $C_6$ hydroxyalkyl.

(5) The compound as defined in any one of Claims 1-3 wherein each $R^1$ is independently selected from the group comprising:



wherein in each case the asterisk denotes the point of attachment to the rest of the compound of Formula I.

(6) The compound as defined in Claim 1 wherein each $R^1$ is independently selected from the group comprising:



wherein in each case the asterisk denotes the point of attachment to the rest of the compound of Formula I.

(7) The compound as defined in Claim 1 wherein each $R^1$ is a $C_{3-6}$ aryl

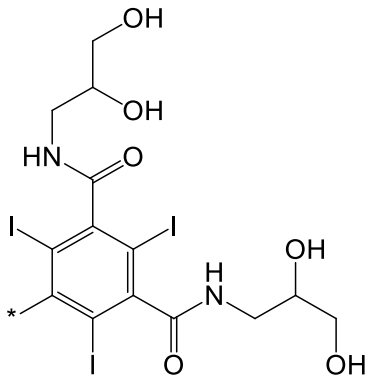
substituted with one or more substituents selected from halo and –C(=O)-NH-$C_{1-6}$ hydroxyalkyl.

(8) The compound as defined in Claim 7 wherein said $C_{3-6}$ aryl is phenyl.

(9) The compound as defined in Claim 7 or Claim 8 wherein said halo is iodo.

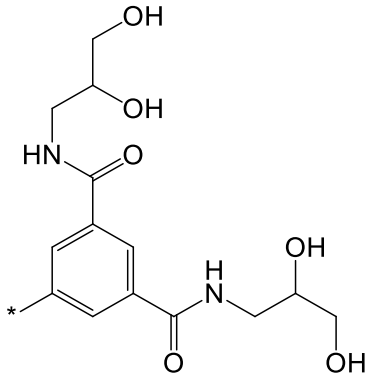
(10) The compound as defined in any one of Claims 7-9 wherein said –C(=O)-NH-$C_{1-6}$ hydroxyalkyl is –C(=O)-NH-$CH_2$-C(OH)-$CH_2$-C(OH).

(11) The compound as defined in any one of Claims 7-10 wherein each $R^1$ is:




wherein the asterisk denotes the point of attachment to the rest of the compound of Formula I.

(12) The compound as defined in any one of Claims 7-10 wherein each $R^1$ is:




wherein the asterisk denotes the point of attachment to the rest of the compound of Formula I.

(13) The compound as defined in any one of Claims 1-12 wherein each $R^1$ is the same.

(14) The compound as defined in any one of Claims 1-13 wherein each $R^2$ is $C_{1-3}$ alkyl.

(15) The compound as defined in Claim 14 wherein each $R^2$ is methyl.

(16) The compound as defined in any one of Claims 1-13 wherein each $R^2$ is hydrogen.

(17) The compound as defined in any one of Claims 1-13 wherein each $R^2$ is $C_{1-20}$ hydroxyalkyl.

(18) The compound as defined in Claim 17 wherein each $R^2$ is $C_{1-6}$ hydroxyalkyl.

(19) The compound as defined in Claim 18 wherein each $R^1$ is $C_{1-6}$ hydroxyalkyl.

(20) The compound as defined in any one of Claims 1-19 wherein each $R^2$ is the same.

(21) The compound as defined in any one of Claims 1-20 wherein each n is an integer from 1-3.

(22) The compound as defined in Claim 21 wherein each n is 1.

(23) The compound as defined in Claim 21 wherein each n is 2.

(24) The compound as defined in Claim 21 wherein each n is 3.

(25) The compound as defined in any one of Claims 1-24 wherein $R^3$ is $C_{1-3}$ alkyl.

(26) The compound as defined in Claim25 wherein $R^3$ is methyl.

(27) The compound as defined in any one of Claims 1-24 wherein $R^3$ is $–(CH_2)_m-C(=O)-NR^5R^6$ as defined in Claim 1.

(28) The compound as defined in Claim 27 wherein $R^5$ is as defined for $R^1$ in any one of Claims 2-12.

(29) The compound as defined in either Claim 27 or Claim 28 wherein $R^6$ is as defined for $R^2$ in any one of Claims 14-18.

(30) The compound as defined in any one of Claims 27-29 wherein m is 3.

(31) The compound as defined in Claim 30 wherein n is 2.

(32) The compound as defined in any one of Claims 1-31 wherein $R^4$ represents 0 substituents.

(33) The compound as defined in any one of Claims 1-31 wherein $R^4$ represents 1 or 2 hydroxy groups.

(34) The compound as defined in Claim 33 wherein $R^4$ represents 2 hydroxy groups at the meta positions of the pyridyl ring.

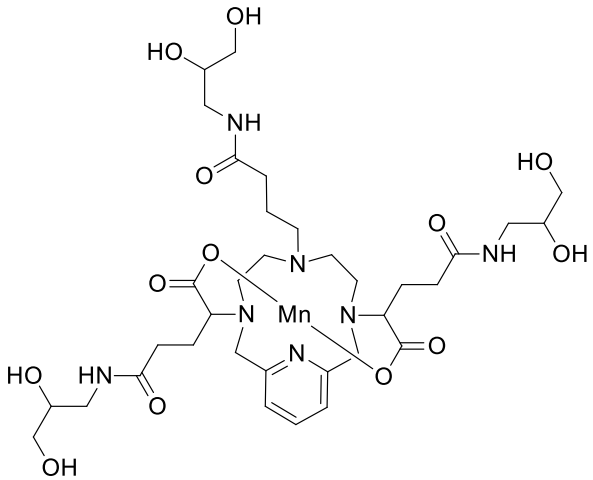
(35) The compound as defined in any one of Claims 1-34 which comprises at least 4 hydroxy groups.

(36) The compound as defined in Claim 35 which comprises 4-15 hydroxy groups.

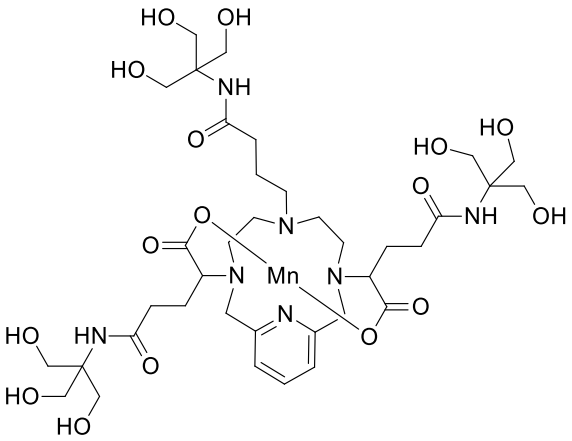
(37) The compound as defined in Claim 36 which comprises 5-10 hydroxy groups.

(38) The compound as defined in any one of Claims 1-37 wherein said Mn is an enriched isotope of Mn selected from the group comprising $^{52}Mn$ and $^{54}Mn$.

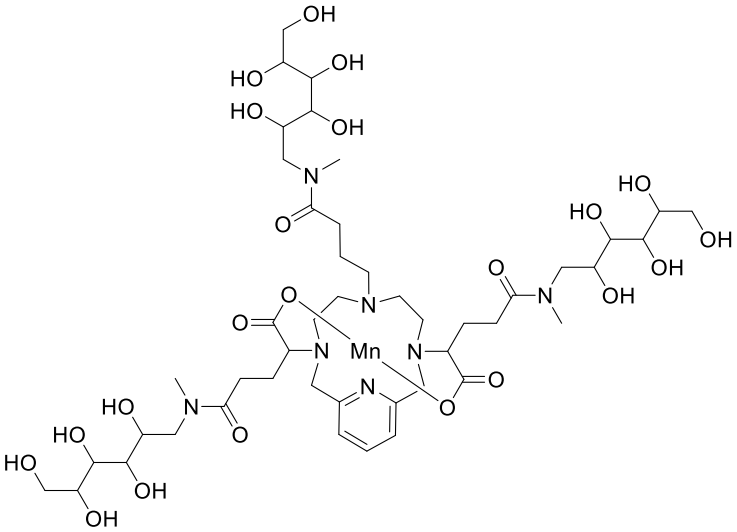
(39) The compound as defined in Claim 1 which is selected from any one of the following compounds:



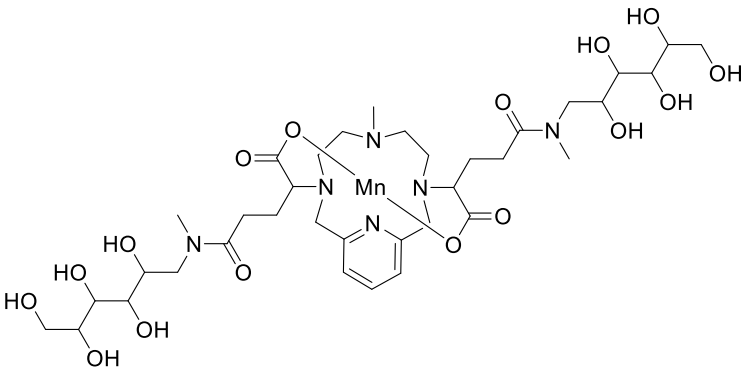

Mn Chelate 1 Racemate



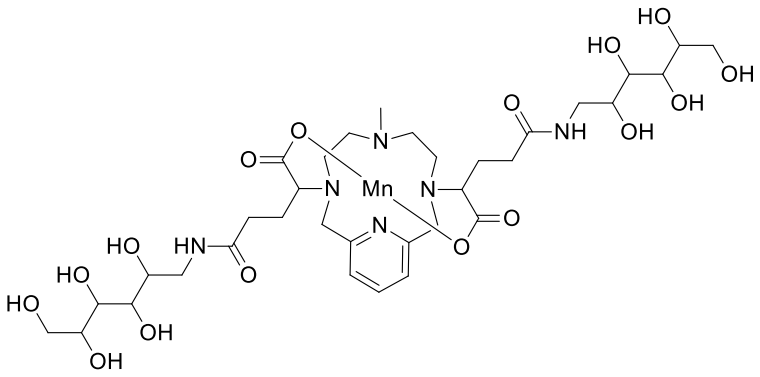
Mn Chelate 2 Racemate



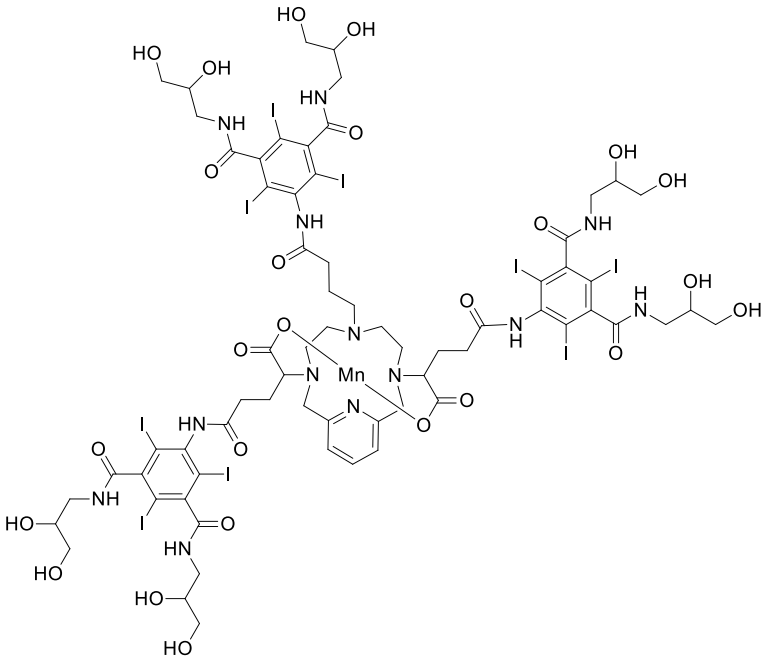
Mn Chelate 3 Racemate



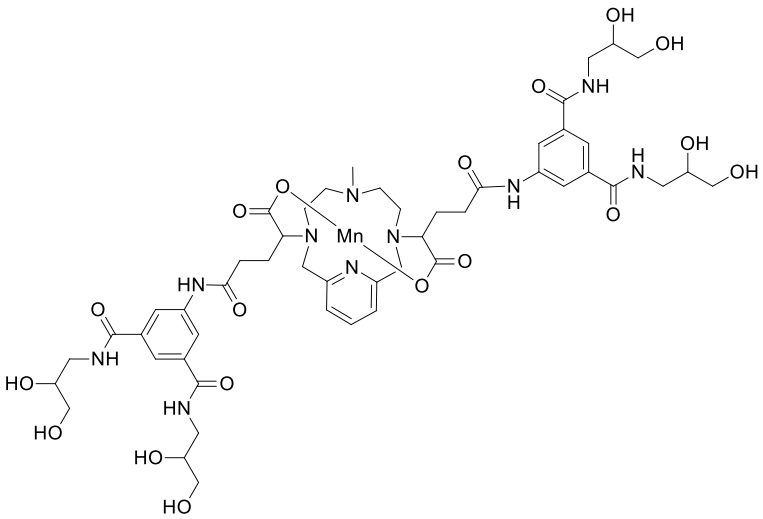
Mn Chelate 4 Racemate



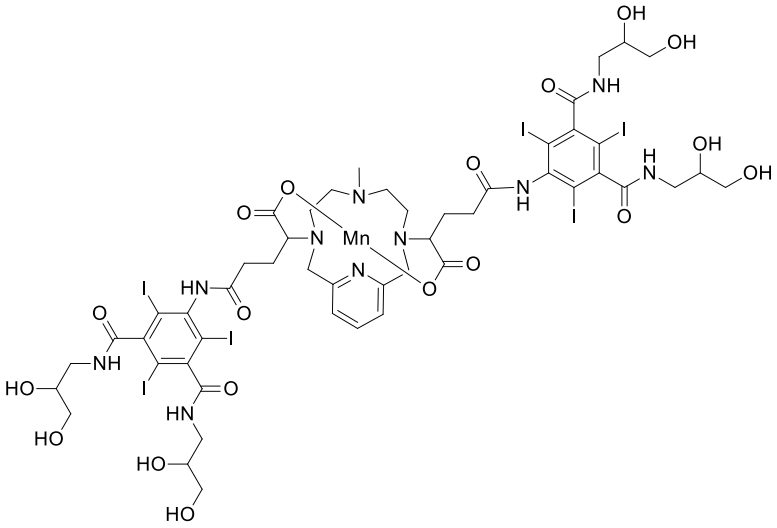
Mn Chelate 5 Racemate



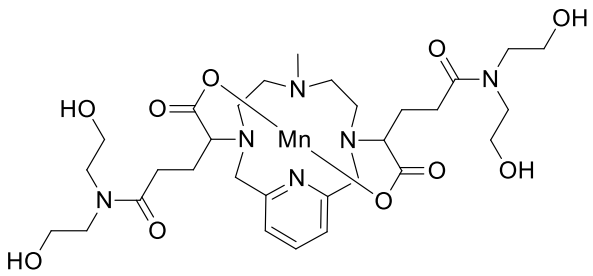
Mn Chelate 6 Racemate



Mn Chelate 7 Racemate

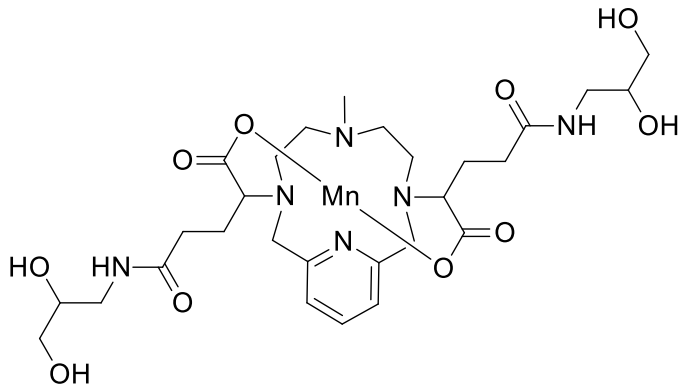


Mn Chelate 8 Racemate

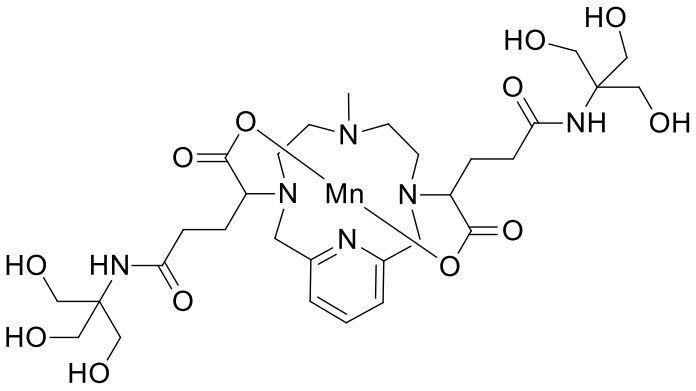


Mn Chelate 9 Racemate

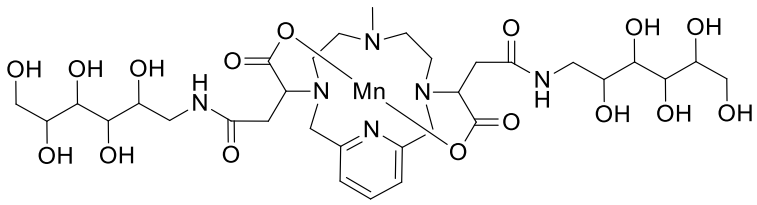
5



Mn Chelate 10 Racemate



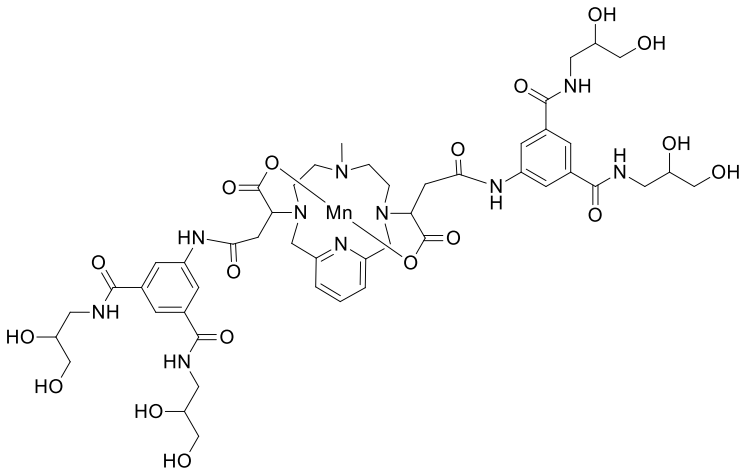
Mn Chelate 11 Racemate



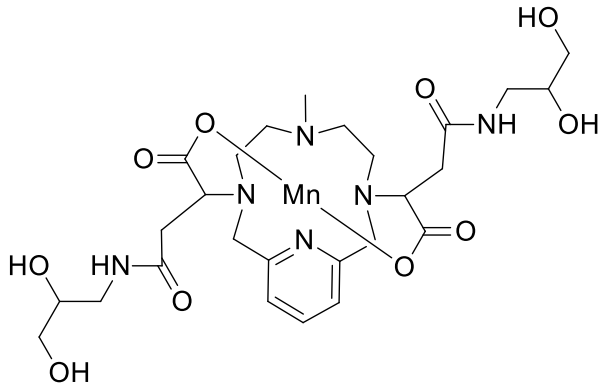
Mn Chelate 5a

Racemate

5



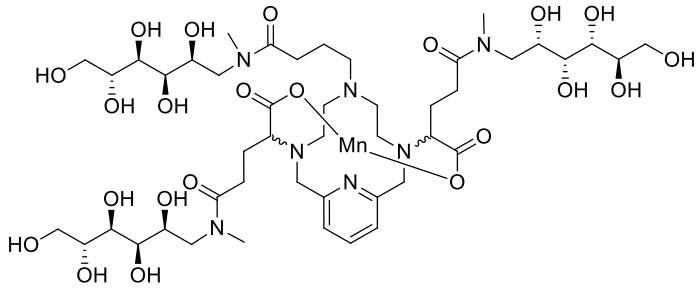
Mn Chelate 7a Racemate



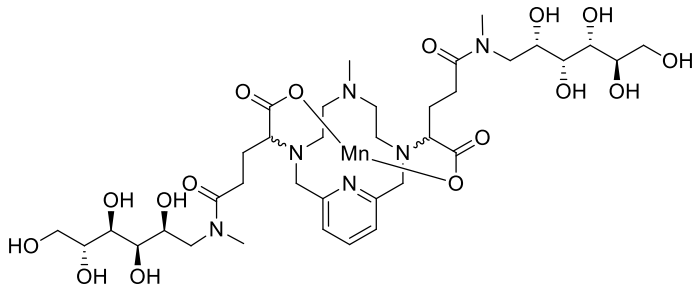

Mn Chelate 10a Racemate

(40) The compound of Formula I as defined in any one of Claims 1-39 which is diastereomerically pure.

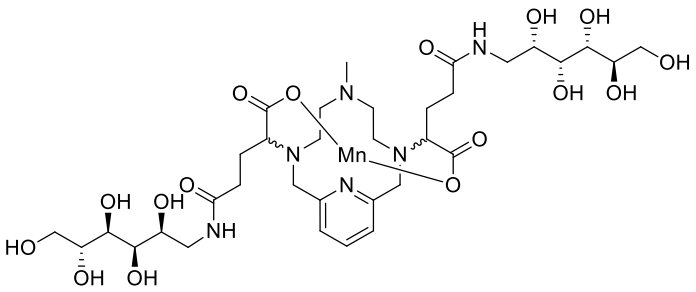
(41) The compound as defined in Claim 40 which is selected from any one of the following compounds:



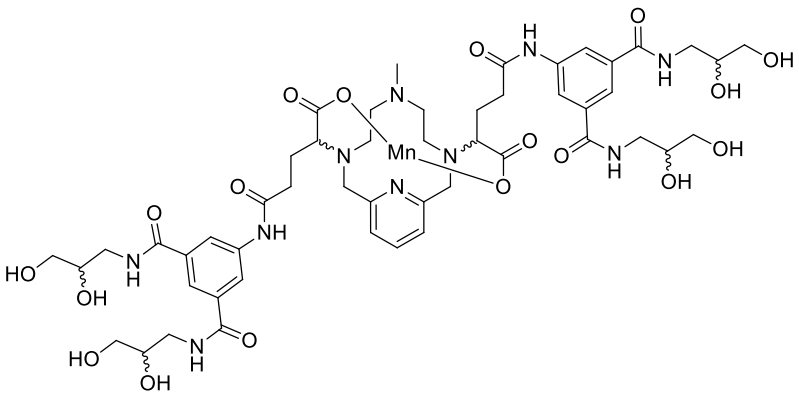

Mn Chelate 3



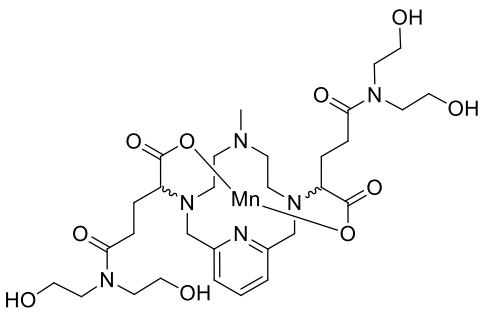

Mn Chelate 4



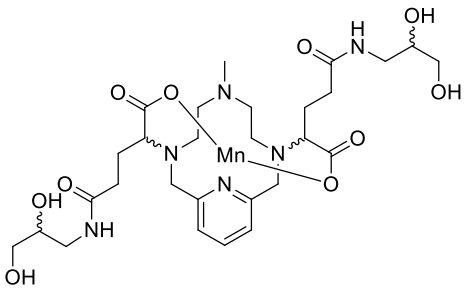
Mn Chelate 5



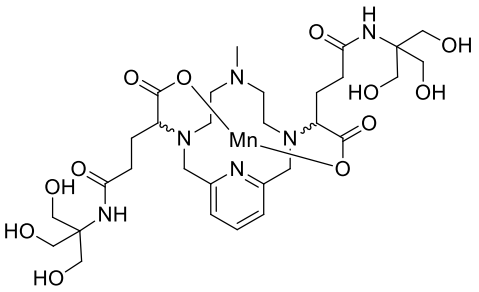
Mn Chelate 7



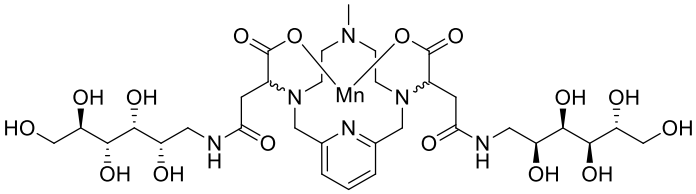
Mn Chelate 9



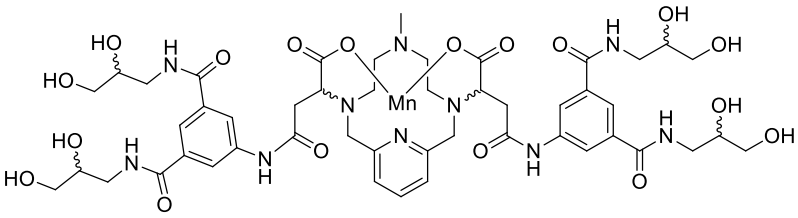
Mn Chelate 10



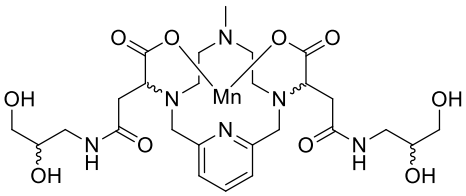
Mn Chelate 11



Mn Chelate 5a

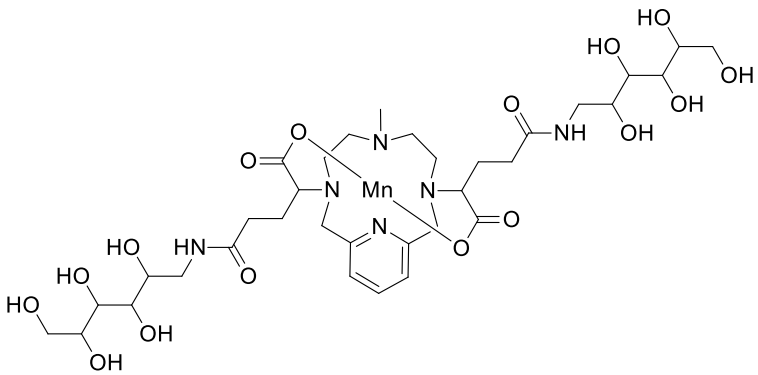


Mn Chelate 7a



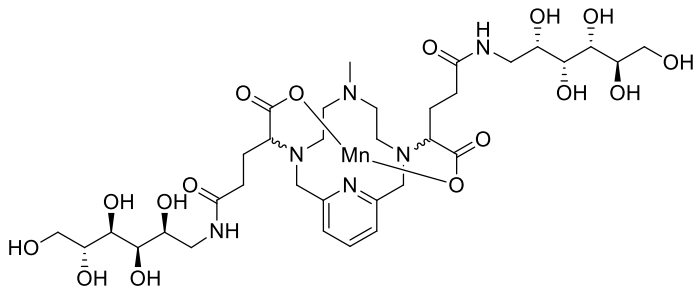
Mn Chelate 10a

(42) The compound as defined in claim 1, wherein said compound is



Mn Chelate 5 Racemate.

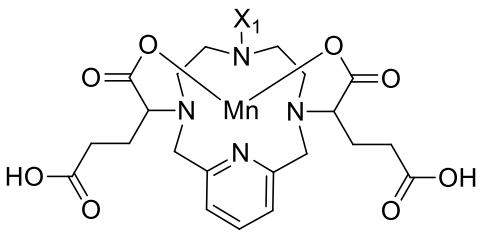
(43) The compound as defined in claim 1, wherein said compound is



Mn Chelate 5.

(442) A method for the preparation of a compound of Formula I as defined in any one of Claims 1-431 comprising:

(i) activating the carboxylate groups of a compound of Formula II with a peptide reagent

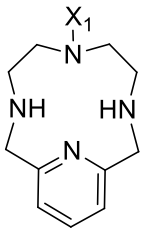


(II); then,

(ii) coupling said activated compound of Formula II with an amine derivative of substituent -$NR^1R^2$ to arrive at said compound of Formula I wherein $R^1$ and $R^2$ are as defined in Claim 1.

(435) The method as defined in Claim 442 wherein said peptide reagent is selected from 1-ethyl-3-(3-dimethylaminopropyl)carbodiimide (EDCI) or hydroxybenzotriazole (HOBT).

(464) A method for the preparation of a compound of Formula II as defined in Claim 442 comprising alkylation of a compound of Formula III:



(III)

wherein $X_1$ is methyl or $–(CH_2)_3$-COOH

(475) A pharmaceutical composition comprising the compound of Formula I as

defined in any one of Claims 1-413 together with a biocompatible carrier in a form suitable for mammalian administration.

(486) The pharmaceutical composition as defined in Claim 475 further comprising one or more pharmaceutically-acceptable excipients.

(479) The pharmaceutical composition as defined in Claim 468 wherein said pharmaceutically-acceptable excipients are selected from buffering agents, stabilizers, antioxidants, osmolality adjusting agents, pH adjusting agents, excess cheland and weak complexes of physiologically tolerable ions.

(5048) A method comprising:

(i) administration to a subject of the compound of Formula I as defined in any one of Claims 1-413 or the pharmaceutical composition as defined in any one of Claims 457-479;

(ii) detection of magnetic resonance (MR) signals from said subject or parts of said subject in which said compound has distributed;

(iii) generation of MR images and/or MR spectra from said detected signals.

(4951) The compound of Formula I as defined in any one of Claims 1-413 for use in the method as defined in Claim 5048.