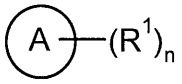
CLAIMS

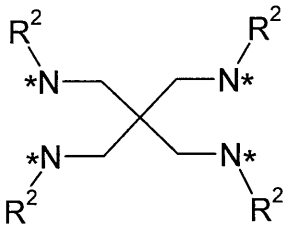
1. A compound of general formula (**I**),



(**I**) ,

in which :



represents a  group,

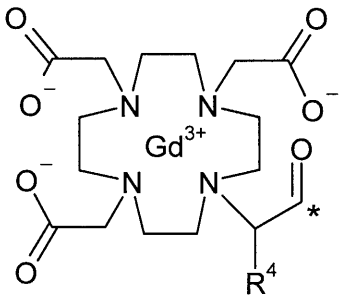
in which group * indicates the point of attachment of said group with R^1 ;

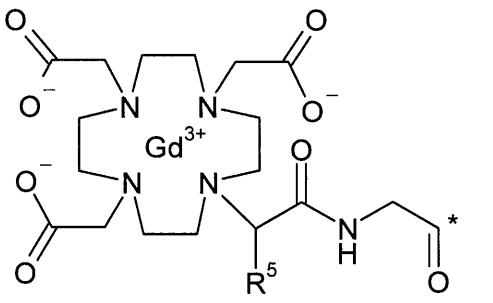
R^1 represents a group R^3 ;

n represents an integer of 4 ;

R^2 represents a hydrogen atom ;

R^3 represents a group selected from :



, and  ,

in which groups * indicates the point of attachment of said group with the rest of the molecule ;

R^4 represents a hydrogen atom ;

R^5 represents a hydrogen atom or a methyl group ;

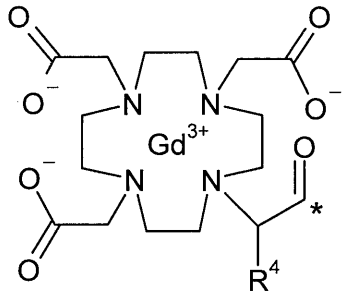
or a stereoisomer, a tautomer, a hydrate, or a solvate thereof, or a mixture of same.

2. The compound according to claim 1, in which :

R^5 represents a methyl group.

3. The compound according to claim 1, in which :

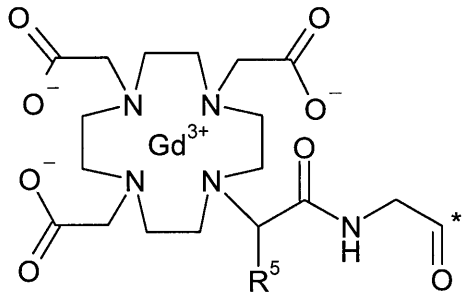
R^3 represents a



group.

4. The compound according to claim 1 or 2, in which :

R^3 represents a



group.

5. The compound according to any one of the claims 1, 2, 3 or 4, which is selected from the group consisting of :

Tetragadolinium [4,10-bis(carboxylatomethyl)-7-{3,6,12,15-tetraoxo-16-[4,7,10-tris-(carboxylatomethyl)-1,4,7,10-tetraazacyclododecan-1-yl]-9,9-bis({[({2-[4,7,10-tris-

(carboxylatomethyl)-1,4,7,10-tetraazacyclododecan-1-yl]propanoyl}amino)acetyl]amino}-methyl)-4,7,11,14-tetraazaheptadecan-2-yl}-1,4,7,10-tetraazacyclododecan-1-yl]acetate ,

Tetragadolinium {4,10-bis(carboxylatomethyl)-7-[(2R,16R)-3,6,12,15-tetraoxo-16-[4,7,10-tris(carboxylatomethyl)-1,4,7,10-tetraazacyclododecan-1-yl]-9,9-bis({[({(2R)-2-[4,7,10-tris-(carboxylatomethyl)-1,4,7,10-tetraazacyclododecan-1-yl]propanoyl}amino)acetyl]amino}-methyl)-4,7,11,14-tetraazaheptadecan-2-yl]-1,4,7,10-tetraazacyclododecan-1-yl}acetate ,

Tetragadolinium {4,10-bis(carboxylatomethyl)-7-[(2S,16S)-3,6,12,15-tetraoxo-16-[4,7,10-tris(carboxylatomethyl)-1,4,7,10-tetraazacyclododecan-1-yl]-9,9-bis({[({(2S)-2-[4,7,10-tris-(carboxylatomethyl)-1,4,7,10-tetraazacyclododecan-1-yl]propanoyl}amino)acetyl]amino}-methyl)-4,7,11,14-tetraazaheptadecan-2-yl]-1,4,7,10-tetraazacyclododecan-1-yl}acetate ,

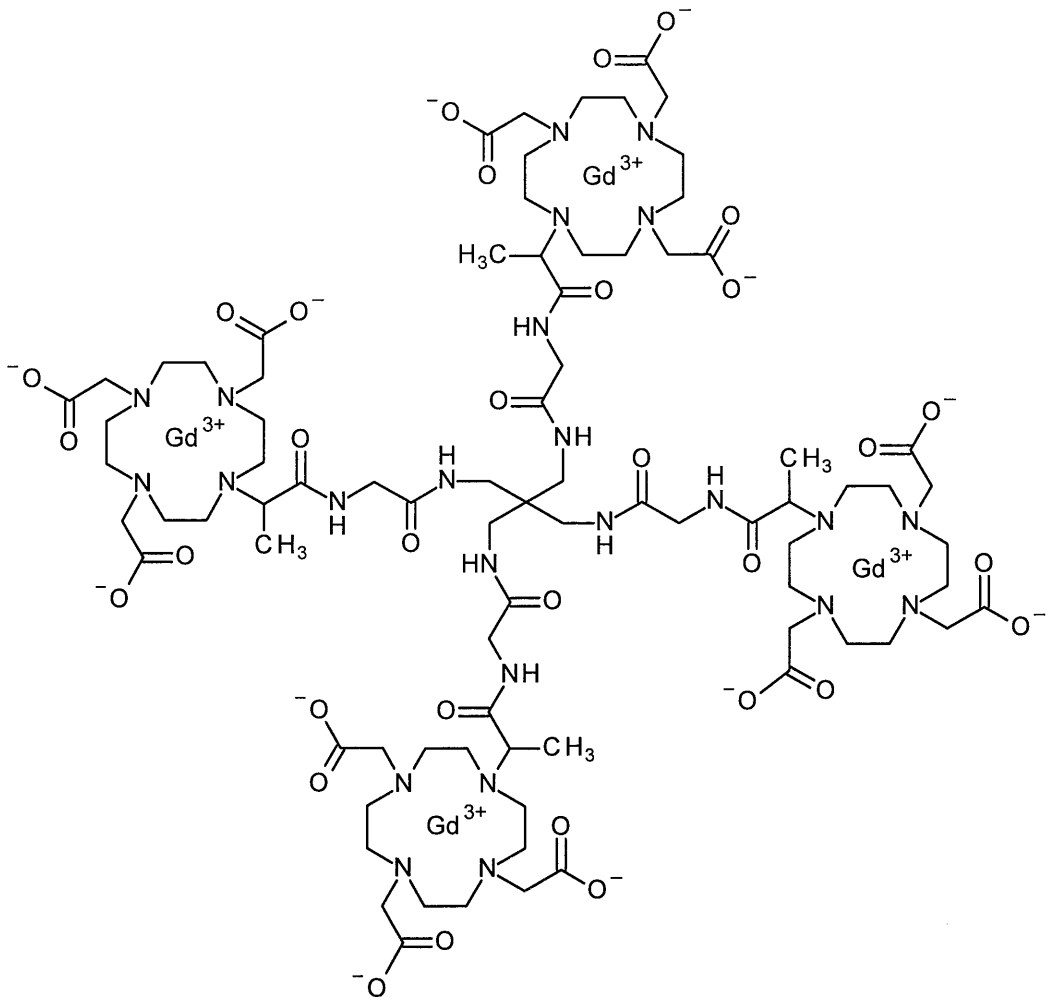
Tetragadolinium {4,10-bis(carboxylatomethyl)-7-[2-oxo-2-({3-({[4,7,10-tris(carboxylatomethyl)-1,4,7,10-tetraazacyclododecan-1-yl]acetyl}amino)-2,2-bis[({[4,7,10-tris(carboxylatomethyl)-1,4,7,10-tetraazacyclododecan-1-yl]acetyl}amino)methyl]propyl}amino)ethyl]-1,4,7,10-tetraazacyclododecan-1-yl}acetate , and

Tetragadolinium [4,10-bis(carboxylatomethyl)-7-{2,5,11,14-tetraoxo-15-[4,7,10-tris(carboxylatomethyl)-1,4,7,10-tetraazacyclododecan-1-yl]-8,8-bis({[({[4,7,10-tris(carboxylatomethyl)-1,4,7,10-tetraazacyclododecan-1-yl]acetyl}amino)acetyl]amino}methyl)-3,6,10,13-tetraazapentadec-1-yl}-1,4,7,10-tetraazacyclododecan-1-yl]acetate ,

or a stereoisomer, a tautomer, a hydrate, or a solvate thereof, or a mixture of same.

6. The compound according to any one of the claims 1, 3 or 4, which is

Tetragadolinium [4,10-bis(carboxylatomethyl)-7-{3,6,12,15-tetraoxo-16-[4,7,10-tris(carboxylatomethyl)-1,4,7,10-tetraazacyclododecan-1-yl]-9,9-bis({[({2-[4,7,10-tris-(carboxylatomethyl)-1,4,7,10-tetraazacyclododecan-1-yl]propanoyl}amino)acetyl]amino}-methyl)-4,7,11,14-tetraazaheptadecan-2-yl}-1,4,7,10-tetraazacyclododecan-1-yl]acetate,



or a stereoisomer, a tautomer, a hydrate, or a solvate thereof, or a mixture of same.

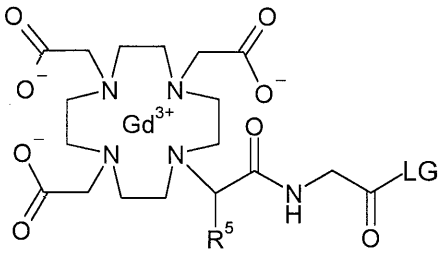
7. A method of preparing a compound of general formula (I-d) according to any one of claims 1 to 6, said method comprising the step of allowing a compound of formula 4,



4

in which  is a tetraamine as defined for the compounds of general formula (I) according to any one of claims 1 to 6, or a salt thereof,

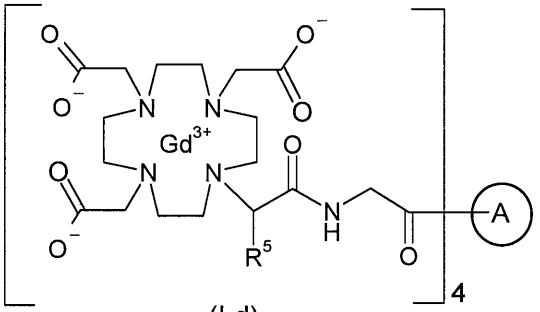
to react with a compound of general formula (III) :



(III)

in which R^5 is as defined for the compounds of general formula (I) according to any one of claims 1 to 6, and LG represents an activating leaving group, such as for example 4-nitrophenol,

thereby giving a compound of general formula (I-d) :



(I-d)

in which R^5 is as defined for the compounds of general formula (I) according to any one of claims 1 to 4, and (A) is a tetraamine as defined according to any one of claims 1 to 6.

8. Use of a compound of any one of claims 1 to 6 for magnetic resonance imaging (MRI).

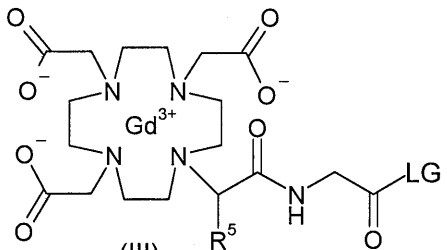
9. Compounds according to any one of claims 1 to 6 for use in magnetic resonance imaging (MRI).

10. Use of the compounds or mixtures thereof according to any one of claims 1 to 6 for the manufacture of diagnostic agents.

11. Use of the compounds or mixtures thereof according to any one of claims 1 to 6 for the manufacture of contrast agents for magnetic resonance imaging.

12. A method of imaging body tissue in a patient, comprising the steps of administering to the patient an effective amount of one or more compounds according to anyone of the claims 1 to 6 in a pharmaceutically acceptable carrier, and subjecting the patient to magnetic resonance imaging.

13. Use of a compound of general formula (III) :

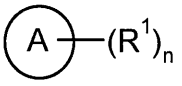


(III)

in which R^5 is as defined for the compounds of general formula (I) according to any one of claims 1 to 6, and LG represents an activating leaving group, such as for example 4-nitro-phenol

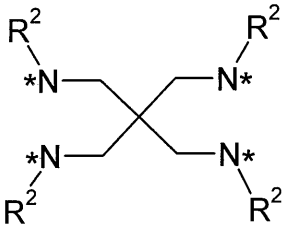
for the preparation of a compound of general formula (I) according to any one of claims 1 to 6.

14. An intermediate compound of general formula (I) for preparation of a compound of any one of claims 1, 2, 3, 4, 5 or 6,



(I) ,

in which :

A represents a  group ;

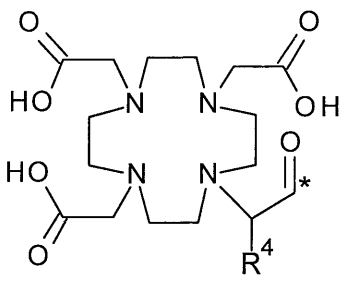
in which group * indicates the point of attachment of said group with R^1 ;

R^1 represents a group R^3 ;

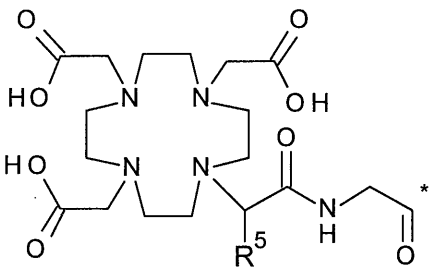
n represents an integer of 4 ;

R^2 represents a hydrogen atom ;

R^3 represents a group selected from :



, and



,

in which groups * indicates the point of attachment of said group with the rest of the molecule ;

R^4 represents a hydrogen atom ;

R^5 represents a hydrogen atom or a methyl group ;

or a stereoisomer, a tautomer, a hydrate, a solvate, or a salt thereof, or a mixture of same.

15. The intermediate compound according to claim 14, which is selected from the group consisting of:

[4,10-bis(carboxylatomethyl)-7-{3,6,12,15-tetraoxo-16-[4,7,10-tris(carboxylatomethyl)-1,4,7,10-tetraazacyclododecan-1-yl]-9,9-bis({[({2-[4,7,10-tris(carboxylatomethyl)-1,4,7,10-tetraazacyclododecan-1-yl]propanoyl}amino)acetyl]amino}methyl)-4,7,11,14-tetraazaheptadecan-2-yl}-1,4,7,10-tetraazacyclododecan-1-yl]acetic acid,

{4,10-Bis(carboxymethyl)-7-[(2R,16R)-3,6,12,15-tetraoxo-16-[4,7,10-tris(carboxymethyl)-1,4,7,10-tetraazacyclododecan-1-yl]-9,9-bis({[({(2R)-2-[4,7,10-tris(carboxymethyl)-1,4,7,10-tetraazacyclododecan-1-yl]propanoyl}amino)acetyl]amino}methyl)-4,7,11,14-tetraazaheptadecan-2-yl]-1,4,7,10-tetraazacyclododecan-1-yl}acetic acid,

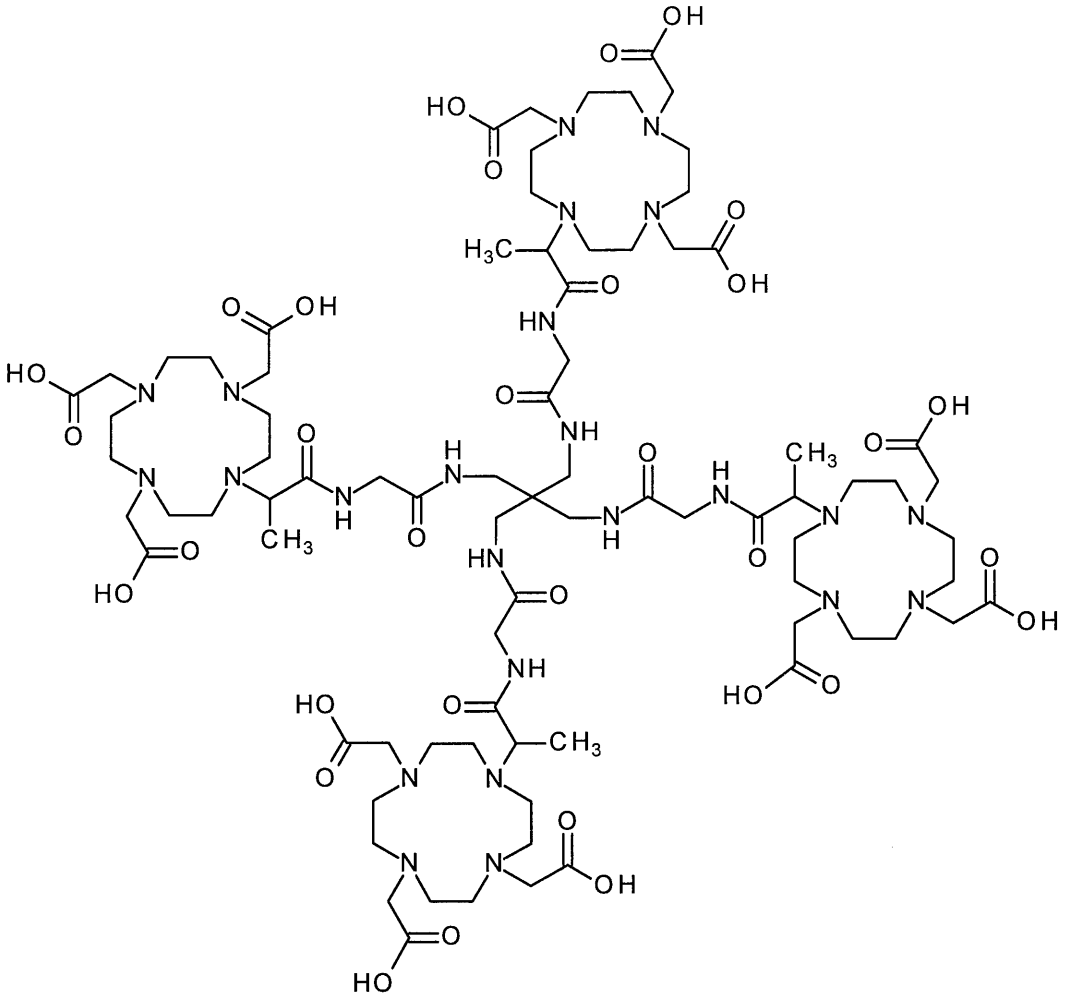
{4,10-Bis(carboxymethyl)-7-[(2S,16S)-3,6,12,15-tetraoxo-16-[4,7,10-tris(carboxymethyl)-1,4,7,10-tetraazacyclododecan-1-yl]-9,9-bis({[({(2S)-2-[4,7,10-tris(carboxymethyl)-1,4,7,10-tetraazacyclododecan-1-yl]propanoyl}amino)acetyl]amino}methyl)-4,7,11,14-tetraazaheptadecan-2-yl]-1,4,7,10-tetraazacyclododecan-1-yl}acetic acid,

{4,10-bis(carboxymethyl)-7-[2-oxo-2-({3-({[4,7,10-tris(carboxymethyl)-1,4,7,10-tetraaza-cyclododecan-1-yl]acetyl}amino)-2,2-bis[({[4,7,10-tris(carboxymethyl)-1,4,7,10-tetra-azacyclododecan-1-yl]acetyl}amino)methyl]propyl}amino)ethyl]-1,4,7,10-tetraazacyclo-dodecan-1-yl}acetic acid, and

[4,10-bis(carboxymethyl)-7-{2,5,11,14-tetraoxo-15-[4,7,10-tris(carboxymethyl)-1,4,7,10-tetraazacyclododecan-1-yl]-8,8-bis({[({[4,7,10-tris(carboxymethyl)-1,4,7,10-tetraaza-cyclododecan-1-yl]acetyl}amino)acetyl]amino}methyl)-3,6,10,13-tetraazapentadec-1-yl}-1,4,7,10-tetraazacyclododecan-1-yl]acetic acid,
or a stereoisomer, a tautomer, a hydrate, a solvate, or a salt thereof, or a mixture of same.

16. The intermediate compound according to claim 15, which is :

[4,10-bis(carboxylatomethyl)-7-{3,6,12,15-tetraoxo-16-[4,7,10-tris(carboxylatomethyl)-1,4,7,10-tetraazacyclododecan-1-yl]-9,9-bis({[({2-[4,7,10-tris(carboxylatomethyl)-1,4,7,10-tetraazacyclododecan-1-yl]propanoyl}amino)acetyl]amino}methyl)-4,7,11,14-tetraazaheptadecan-2-yl}-1,4,7,10-tetraazacyclododecan-1-yl]acetic acid,



or a stereoisomer, a tautomer, a hydrate, a solvate, or a salt thereof, or a mixture of same.