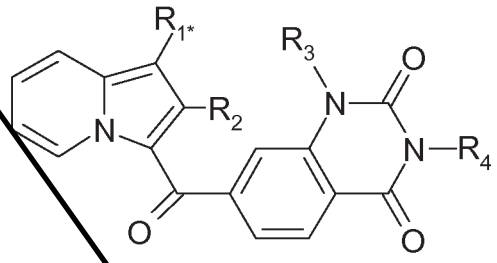
CLAIMS

1. FGF receptor agonist compounds corresponding to the general formula:

M_1-L-M_2

in which M_1 and M_2, which may be identical or different, each represent, independently of one another, a monomer unit M and L represents a linker group which links M_1 and M_2 covalently, characterized in that said monomer unit corresponds to the general formula M which follows:



(M)

in which,

* indicates the site of linkage between the monomer unit M and the linker L,

- **R_1** represents

. a group –NHCOPh, said phenyl being substituted with an oxygen atom, such that the oxygen atom is the site of linkage between the monomer unit and the linker L; this group can be denoted –NHCOPhO*,

or

. an aryl, in particular phenyl, group or a heteroaryl group, said group being substituted with a group chosen from a divalent oxygen atom, such that the oxygen atom is the site of linkage between the monomer unit and the linker L, or an amide group -CONH*-, such that the nitrogen atom is the site of linkage between the monomer unit and the linker L,

- **R_2** represents an alkyl group,

- **R_3** represents a hydrogen atom or a linear, branched, cyclic or partially cyclic alkyl group,

- **R_4** represents a hydrogen atom or an alkyl or -alkyl-$COOR_5$ group with R_5 representing a hydrogen atom or an alkyl group, in the form of a base or of an

addition salt with an acid or with a base.

2. FGF receptor agonist compounds according to Claim 1, characterized in that R_1 represents a group -NHCO-PhO*, -Ph-O* or -Ph-NHCO*, in the form of a base or of an addition salt with an acid or with a base.

3. FGF receptor agonist compounds according to one of Claims 1 or 2, characterized in that R_2 represents a methyl group, in the form of a base or of an addition salt with an acid or with a base.

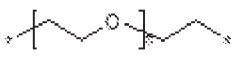
4. FGF receptor agonist compounds according to any one of Claims 1 to 3, characterized in that:

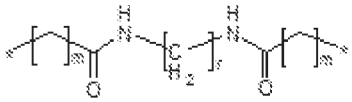
R_3 represents a hydrogen atom,

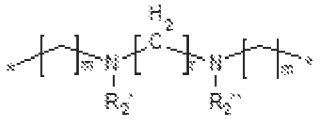
R_4 represents an -alkyl-$COOR_5$ group with R_5 representing a hydrogen atom or an alkyl group, in the form of a base or of an addition salt with an acid or with a base.

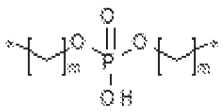
5. FGF receptor agonist compounds of general formula M_1-L-M_2 according to any one of Claims 1 to 4, such that the monomer units M_1 and M_2 are identical.

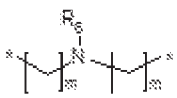
6. FGF receptor agonist compounds of general formula M_1-L-M_2 according to any one of Claims 1 to 5, characterized in that L is chosen from the radicals having the following formulae:


(A)


(B)


(C)


(D)


(E)

in which

* indicates the atom for connecting L with the monomer unit M on the substituent R_1,

n represents an integer from 0 to 5,

m represents an integer from 1 to 5,

r represents an integer from 1 to 6,

R_2' and **R_2''**, which may be identical or different, represent a linear alkyl radical having from 1 to 5 carbon atoms, and which can be optionally linked to form a ring,

R_6 represents a (C_1-C_4)alkyl group optionally substituted with one or more substituents chosen from:

- an aryl or heteroaryl group optionally substituted with a group chosen from a hydroxyl, amine or $NR_6'R_6''$ group with **R_6'** and **R_6''**, which may be identical or different, chosen from a hydrogen atom or a linear, branched or cyclic (C_1-C_4)alkyl group,

- a heterocycloalkyl group comprising at least one heteroatom chosen from a nitrogen atom and an oxygen atom optionally substituted with a linear or branched alkyl group,

- an $NR_6'R_6''$ group with **R_6'** and **R_6''**, which may be identical or different, chosen from a hydrogen atom or a linear, branched or cyclic (C_1-C_4)alkyl group,

- an -O-(C_1-C_4)alkyl group optionally substituted with a hydroxyl group, in the form of a base or of an addition salt with an acid or with a base.

7. FGF receptor agonist compounds corresponding to the general formula M_1-L-M_2 according to one of the preceding claims, characterized in that it is chosen from the following compounds:

- Compound 1: 2,2'-{oxybis[ethane-2,1-diyloxyethane-2,1-diyloxybenzene-3,1-diyl(2-methylindolizine-1,3-diyl)carbonyl(2,4-dioxo-1,4-dihydroquinazoline-6,3(2*H*)-diyl)]} diacetic acid;

- Compound 2: 2,2'-{oxybis[ethane-2,1-diyloxyethane-2,1-diyloxybenzene-3,1-diyl(2-methylindolizine-1,3-diyl)carbonyl(2,4-dioxo-1,4-dihydroquinazoline-6,3(2*H*)-diyl)]} diacetic acid;

- Compound 3: 2,2'-{ethane-1,2-diylbis[oxyethane-2,1-diyloxybenzene-4,1-diyl(2-methylindolizine-1,3-diyl)carbonyl(2,4-dioxo-1,4-dihydroquinazoline-6,3(2*H*)-diyl)]} diacetic acid;

- Compound 4: 2,2'-{hexane-1,6-diylbis[imino(2-oxoethane-2,1-diyl)oxybenzene-4,1-diyl(2-methylindolizine-1,3-diyl)carbonyl(2,4-dioxo-1,4-dihydroquinazoline-6,3(2*H*)-

diyl)]}diacetic acid;

- Compound 5: 2,2'-{butane-1,4-diylbis[imino(2-oxoethane-2,1-diyl)oxybenzene-4,1-diyl(2-methylindolizine-1,3-diyl)carbonyl(2,4-dioxo-1,4-dihydroquinazoline-6,3(2*H*)-diyl)]}diacetic acid;

- Compound 6: 2,2'-{hexane-1,6-diylbis[imino(2-oxoethane-2,1-diyl)oxybenzene-3,1-diyl(2-methylindolizine-1,3-diyl)carbonyl(2,4-dioxo-1,4-dihydroquinazoline-6,3(2*H*)-diyl)]}diacetic acid;

- Compound 7: 2,2'-{butane-1,4-diylbis[imino(2-oxoethane-2,1-diyl)oxybenzene-3,1-diyl(2-methylindolizine-1,3-diyl)carbonyl(2,4-dioxo-1,4-dihydroquinazoline-6,3(2*H*)-diyl)]}diacetic acid;

- Compound 8: 2,2'-({[2-(2-hydroxyethoxy)ethyl]imino}bis[pentane-5,1-diyloxybenzene-4,1-diyl(2-methylindolizine-1,3-diyl)carbonyl(2,4-dioxo-1,4-dihydroquinazoline-7,3(2*H*)-diyl)])diacetic acid;

- Compound 9: 2,2'-[(ethylimino)bis[pentane-5,1-diyloxybenzene-4,1-diyl(2-methylindolizine-1,3-diyl)carbonyl(2,4-dioxo-1,4-dihydroquinazoline-7,3(2*H*)-diyl)]] diacetic acid;

- Compound 10: 2,2'-({[2-(morpholin-4-yl)ethyl]imino}bis[pentane-5,1-diyloxybenzene-4,1-diyl(2-methylindolizine-1,3-diyl)carbonyl(2,4-dioxo-1,4-dihydroquinazoline-7,3(2*H*)-diyl)])diacetic acid;

- Compound 11: 2,2'-({[2-(4-methylpiperazin-1-yl)ethyl]imino}bis[pentane-5,1-diyloxybenzene-4,1-diyl(2-methylindolizine-1,3-diyl)carbonyl(2,4-dioxo-1,4-dihydroquinazoline-7,3(2*H*)-diyl)])diacetic acid;

- Compound 12: 2,2'-{[(pyridin-4-ylmethyl)imino]bis[pentane-5,1-diyloxybenzene-4,1-diyl(2-methylindolizine-1,3-diyl)carbonyl(2,4-dioxo-1,4-dihydroquinazoline-7,3(2*H*)-diyl)]}diacetic acid;

- Compound 13: 2,2'-({[4-(dimethylamino)benzyl]imino}bis[pentane-5,1-diyloxybenzene-4,1-diyl(2-methylindolizine-1,3-diyl)carbonyl(2,4-dioxo-1,4-dihydroquinazoline-7,3(2*H*)-diyl)])diacetic acid;

- Compound 14: 2,2'-({[2-(diethylamino)ethyl]imino}bis[pentane-5,1-diyloxybenzene-4,1-diyl(2-methylindolizine-1,3-diyl)carbonyl(2,4-dioxo-1,4-dihydroquinazoline-7,3(2*H*)-diyl)])diacetic acid;

- Compound 15: 2,2'-{piperazine-1,4-diylbis[propane-3,1-diyloxybenzene-4,1-diyl(2-methylindolizine-1,3-diyl)carbonyl(2,4-dioxo-1,4-dihydroquinazoline-7,3(2*H*)-diyl)]}diacetic acid;

- Compound 16: [7-({1-[4-({9-[4-(3-{[3-(carboxymethyl)-2,4-dioxo-1,4-

dihydroquinazolin-7(2*H*)-yl]carbonyl}-2-methylindolizin-1-yl)phenyl]-4-hydroxy-4-oxido-9-oxo-3,5-dioxa-8-aza-4λ^5-phosphanon-1-yl}carbamoyl)phenyl]-2-methylindolizin-3-yl}carbonyl)-2,4-dioxo-1,4-dihydroquinazolin-3(2*H*)-yl]acetic acid;

- Compound 17: 2,2'-{ethane-1,2-diylbis[oxyethane-2,1-diylcarbamoylbenzene-4,1-diyl(2-methylindolizine-1,3-diyl)carbonyl(2,4-dioxo-1,4-dihydroquinazoline-7,3(2*H*)-diyl)]}diacetic acid;

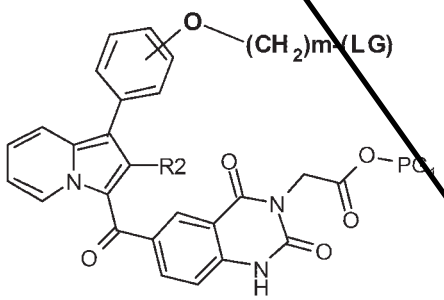
- Compound 18: 2,2'-{ethane-1,2-diylbis[oxyethane-2,1-diylcarbamoylbenzene-3,1-diyl(2-methylindolizine-1,3-diyl)carbonyl(2,4-dioxo-1,4-dihydroquinazoline-7,3(2*H*)-diyl)]}diacetic acid;

- Compound 19: [7-({1-[3-({9-[3-(3-{[3-(carboxymethyl)-2,4-dioxo-1,4-dihydroquinazolin-7(2*H*)-yl]carbonyl}-2-methylindolizin-1-yl)phenyl]-4-hydroxy-4-oxido-9-oxo-3,5-dioxa-8-aza-4λ^5-phosphanon-1-yl}carbamoyl)phenyl]-2-methylindolizin-3-yl}carbonyl)-2,4-dioxo-1,4-dihydroquinazolin-3(2*H*)-yl]acetic acid;

- Compound 20: 2,2'-{ethane-1,2-diylbis[imino(2-oxoethane-2,1-diyl)oxybenzene-3,1-diylcarbonylimino(2-methylindolizine-1,3-diyl)carbonyl(2,4-dioxo-1,4-dihydroquinazoline-7,3(2*H*)-diyl)]}diacetic acid.

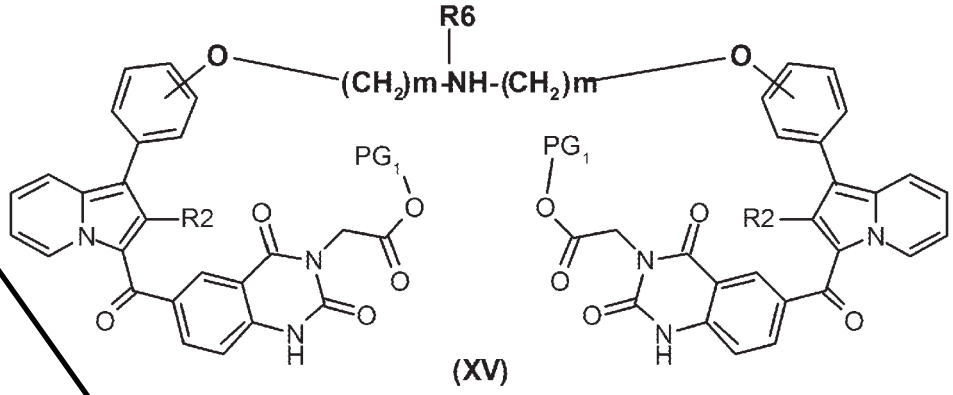
8. Process for preparing an FGF receptor agonist compound according to any one of Claims 1 to 6, characterized in that:

- the compound of formula **(IX)**



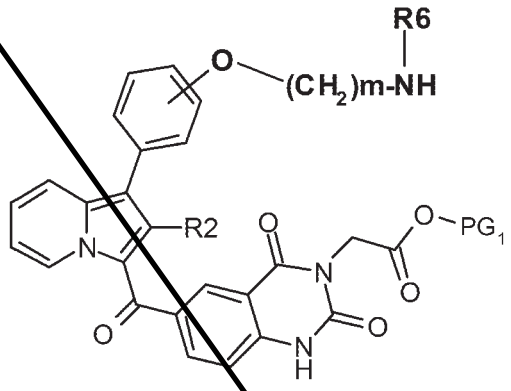
(IX)

in which **m** represents an integer from 1 to 5, $\mathbf{R_2}$ represents an alkyl group, PG_1 represents an alkyl group and LG represents a halogen atom or an activated hydroxyl group, reacts with an amine R_6-NH_2 in the presence of a base to give the dimer of formula **(XV)**



(XV)

with R_6 having the same meaning as in Claim 6, or else the amine of formula **(XVI)**



(XVI)

when the amine R_6-NH_2 is present in excess,

- the isolated amine **(XVI)** reacts with a stoichiometric amount of the compound of formula **(IX)** to give the dimer of formula **(XV)**,
- the esters of formula **(XV)** are saponified.

9. Medicament, characterized in that it comprises an FGF receptor agonist compound according to any one of Claims 1 to 7, or an addition salt of this compound with a pharmaceutically acceptable acid or base.

10. FGF receptor agonist compound according to any one of Claims 1 to 7, as a medicament.

11. Pharmaceutical composition, characterized in that it comprises a compound according to any one of Claims 1 to 7, or a pharmaceutically acceptable salt of this compound, and also at least one pharmaceutically acceptable excipient.

12. Use of an FGF receptor agonist compound according to any one of Claims 1 to 7, for preparing a medicament intended for the treatment of diseases requiring FGF receptor activation.

13. Use of an FGF receptor agonist compound according to any one of Claims 1 to 7, for preparing a medicament intended for the treatment of the consequences of cardiac ischaemia, the treatment of diseases associated with narrowing or obstruction of the arteries or of arteritis, the treatment of angina pectoris, the treatment of thromboangiitis obliterans, the treatment of atherosclerosis, treatment for inhibiting post-angioplasty or post-endoarterectomy restenosis, the treatment of healing, treatment for muscle regeneration, treatment for myoblast survival, treatment for sarcopenia, loss of functionality of the smooth muscles of the sphincters, the treatment of nociception and the treatment of chronic pain, the treatment of peripheral neuropathy, treatment for improving bioartificial pancreatic graft survival in diabetic patients, treatment to bring about a decrease in cholesterol associated with a decrease in adiposity, treatment for improving graft revascularization and graft survival, the treatment of retinal degeneration, the treatment of pigmentary retinitis, the treatment of osteoarthritis, the treatment of pre-eclampsia, the treatment of vascular lesions and of acute respiratory distress syndrome, bone protection treatment, or treatment for hair follicle protection and hair growth regulation.

14. FGF receptor agonist compound according to any one of Claims 1 to 7, for use thereof in the treatment of the consequences of cardiac ischaemia, the treatment of diseases associated with narrowing or obstruction of the arteries or of arteritis, the treatment of angina pectoris, the treatment of thromboangiitis obliterans, the treatment of atherosclerosis, treatment for inhibiting post-angioplasty or post-endoarterectomy restenosis, the treatment of healing, treatment for muscle regeneration, treatment for myoblast survival, treatment for sarcopenia, loss of functionality of the smooth muscles of the sphincters, the treatment of nociception and the treatment of chronic pain, the treatment of peripheral neuropathy, treatment for improving bioartificial pancreatic graft survival in diabetic patients, treatment to bring about a decrease in cholesterol associated with a decrease in adiposity, treatment for improving graft revascularization and graft survival, the treatment of

retinal degeneration, the treatment of pigmentary retinitis, the treatment of osteoarthritis, the treatment of pre-eclampsia, the treatment of vascular lesions and of acute respiratory distress syndrome, bone protection treatment, or treatment for hair follicle protection and hair growth regulation.

CLAIMS

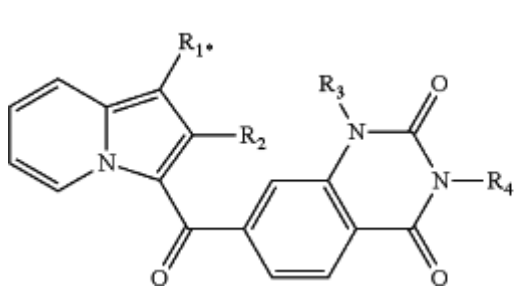
1. A compound of the formula:

$$M_1\text{-}L\text{-}M_2$$

in which M_1 and M_2, which may be identical or different, each represent, independently of one another, a monomer unit M; and

L represents a linker group which links M_1 and M_2 covalently, wherein

monomer unit M is of formula (M):



(M)

in which,

* indicates the site of linkage between the monomer unit M and the linker L,

R_1 represents

a group —NHCOPhO*, such that the *-labeled oxygen atom is covalently bonded to linker L;

or

an aryl group or a heteroaryl group, said group being substituted with a group chosen from a divalent oxygen atom, such that the oxygen atom is covalently bonded to the linker L, and an amide group —CONH*—, such that the *-labeled nitrogen atom is covalently bonded to the linker L,

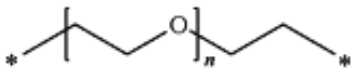
R_2 represents an alkyl group,

R_3 represents a hydrogen atom or a linear, branched, or cyclic alkyl group, and

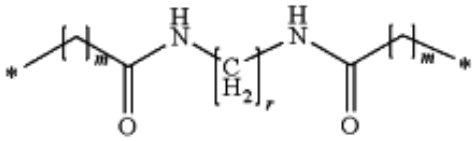
R_4 represents a hydrogen atom, an alkyl, or -alkyl-COOR5 group, with R5 representing a hydrogen atom or an alkyl group; and

linker L is chosen from formula (A), formula (B), formula (C), formula (D) or formula (E):

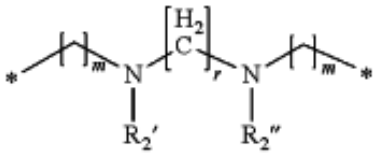
(A)



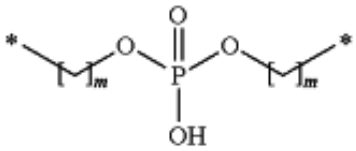
(B)



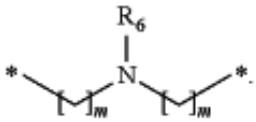
(C)



(D)



(E)



wherein

* indicates the atom for connecting L with R_1,

n represents 0, 1, 2, 3, 4, or 5,

m represents 1, 2, 3, 4, or 5,

r represents 1, 2, 3, 4, 5, or 6,

R_2' and R_2'', which may be identical or different, represent a linear alkyl radical having from 1 to 5 carbon atoms, and which can be optionally linked to form a ring,

R_6 represents a (C_1-C_4)alkyl group optionally substituted with one or more substituents independently selected from:

an aryl or heteroaryl group, each optionally substituted with hydroxy or $NR_6'R_6''$, where R_6' and R_6'' are independently chosen from a hydrogen atom or a linear, branched or cyclic (C_1-C_4)alkyl group,

a heterocycloalkyl group comprising at least one heteroatom chosen from a nitrogen atom and an oxygen atom, wherein the heterocycloalkyl group is optionally substituted with a linear or branched alkyl group,

an $NR_6'R_6''$ group where R_6' and R_6'' are independently chosen from a hydrogen atom or a linear, branched or cyclic (C_1-C_4)alkyl group, and

an —O—(C_1-C_4)alkyl group optionally substituted with a hydroxy group,

or a pharmaceutically acceptable salt thereof.

2. The compound according to claim 1, wherein R_1 represents a group --NHCO-PhO*, -Ph-O* or -Ph-CONH*, or a pharmaceutically acceptable salt thereof.

3. The compound according to claim 1, wherein R_2 represents a methyl group, or a pharmaceutically acceptable salt thereof.

4. The compound according to claim 1, wherein:

R_3 represents a hydrogen atom,

R_4 represents an -alkyl-$COOR_5$ group, wherein R_5 represents a hydrogen atom or an alkyl group, or a pharmaceutically acceptable salt thereof.

5. The compound according to claim 1, such that the monomer units M_1 and M_2 are identical.

6. The compound according to claim 1 chosen from the following compounds:

2,2'-{oxybis[ethane-2,1-diyloxyethane-2,1-diyloxybenzene-3,1-diyl(2-methy-lindolizine-1,3-diyl)carbonyl(2,4-dioxo-1,4-dihydroquinazoline-6,3(2H)-diy- l)]}diacetic acid;

2,2'-{oxybis[ethane-2,1-diyloxyethane-2,1-diyloxybenzene-3,1-diyl(2-methy-lindolizine-1,3-diyl)carbonyl(2,4-dioxo-1,4-dihydroquinazoline-6,3(2H)-diy- l)]}diacetic acid;

2,2'-{ethane-1,2-diylbis[oxyethane-2,1-diyloxybenzene-4,1-diyl(2-methylin-dolizine-1,3-diyl)carbonyl(2,4-dioxo-1,4-dihydroquinazoline-6,3(2H)-diyl)]- }diacetic acid;

2,2'-{hexane-1,6-diylbis[imino(2-oxoethane-2,1-diyl)oxybenzene-4,1-diyl(2- -methylindolizine-1,3-diyl)carbonyl(2,4-dioxo-1,4-dihydroquinazoline-6,3(2- H)-diyl)]}diacetic acid;

2,2'-{butane-1,4-diylbis[imino(2-oxoethane-2,1-diyl)oxybenzene-4,1-diyl(2- -methylindolizine-1,3-diyl)carbonyl(2,4-dioxo-1,4-dihydroquinazoline-6,3(2- H)-diyl)]}diacetic acid;

2,2'-{hexane-1,6-diylbis[imino(2-oxoethane-2,1-diyl)oxybenzene-3,1-diyl(2- -methylindolizine-1,3-diyl)carbonyl(2,4-dioxo-1,4-dihydroquinazoline-6,3(2- H)-diyl)]}diacetic acid;

2,2'-{butane-1,4-diylbis[imino(2-oxoethane-2,1-diyl)oxybenzene-3,1-diyl(2- -methylindolizine-1,3-diyl)carbonyl(2,4-dioxo-1,4-dihydroquinazoline-6,3(2- H)-diyl)]}diacetic acid;

2,2'-({[2-(2-hydroxyethoxyl)ethyl]imino}bis[pentane-5,1-diyloxybenzene-4,- 1-diyl(2-methylindolizine-1,3-diyl)carbonyl(2,4-dioxo-1,4-dihydroquinazoli- ne-7,3(2H)-diyl)])diacetic acid;

2,2'-{(ethylimino)bis[pentane-5,1-diyloxybenzene-4,1-diyl(2-methylindolizine-1,3-diyl)carbonyl(2,4-dioxo-1,4-dihydroquinazoline-7,3(2H)-diyl)]}diacetic acid;

2,2'-({[2-(morpholin-4-yl)ethyl]imino}bis[pentane-5,1-diyloxybenzene-4,1-diyl(2-methylindolizine-1,3-diyl)carbonyl(2,4-dioxo-1,4-dihydroquinazoline-7,3(2H)-diyl)])diacetic acid;

2,2'-({[2-(4-methylpiperazin-1-yl)ethyl]imino}bis[pentane-5,1-diyloxybenzene-4,1-diyl(2-methylindolizine-1,3-diyl)carbonyl(2,4-dioxo-1,4-dihydroquinazoline-7,3(2H)-diyl)])diacetic acid;

2,2'-{[(pyridin-4-ylmethyl)imino]bis[pentane-5,1-diyloxybenzene-4,1-diyl(- 2-methylindolizine-1,3-diyl)carbonyl(2,4-dioxo-1,4-dihydroquinazoline-7,3(2H)-diyl)]}diacetic acid;

2,2'-({[4-(dimethylamino)benzyl]imino}bis[pentane-5,1-diyloxybenzene-4,1--diyl(2-methylindolizine-1,3-diyl)carbonyl(2,4-dioxo-1,4-dihydroquinazoline- -7,3(2H)-diyl)])diacetic acid;

2,2'-({[2-(diethylamino)ethyl]imino}bis[pentane-5,1-diyloxybenzene-4,1-di- yl(2-methylindolizine-1,3-diyl)carbonyl(2,4-dioxo-1,4-dihydroquinazoline-7- ,3(2H)-diyl)])diacetic acid;

2,2'-{piperazine-1,4-diylbis[propane-3,1-diyloxybenzene-4,1-diyl(2-methyl-indolizine-1,3-diyl)carbonyl(2,4-dioxo-1,4-dihydroquinazoline-7,3(2H)-diyl-)]}diacetic acid;

[7-({1-[4-({9-[4-(3-{[3-(carboxymethyl)-2,4-dioxo-1,4-dihydroquinazolin-7- (2H)-yl]carbonyl}-2-methylindolizin-1-yl)phenyl]-4-hydroxy-4-oxido-9-oxo-3- ,5-dioxa-8-aza-

4λ^5-phosphanon-1-yl}carbamoyl)phenyl]-2-methylin- dolizin-3-yl}carbonyl)-2,4-dioxo-1,4-dihydroquinazolin-3(2H)-yl]acetic acid;

2,2'-{ethane-1,2-diylbis[oxyethane-2,1-diylcarbamoylbenzene-4,1-diy- l(2-methylindolizine-1,3-diyl)carbonyl(2,4-dioxo-1,4-dihydroquinazoline-7,- 3(2H)-diyl)]}diacetic acid;

2,2'-{ethane-1,2-diylbis[oxyethane-2,1-diylcarbamoylbenzene-3,1-diyl(2-methylindolizine-1,3-diyl)carbonyl(2,4-dioxo-1,4-dihydroquinazoline-7,3(2H)--diyl)]}diacetic acid;

[7-({1-[3-({9-[3-(3-{[3-(carboxymethyl)-2,4-dioxo-1,4-dihydroquinazolin-7- (2H)-yl]carbonyl}-2-methylindolizin-1-yl)phenyl]-4-hydroxy-4-oxido-9-oxo-3- ,5-dioxa-8-aza-4λ^5-phosphanon-1-yl}carbamoyl)phenyl]-2-methylin- dolizin-3-yl}carbonyl)-2,4-dioxo-1,4-dihydroquinazolin-3(2H)-yl]acetic acid;

2,2'-{ethane-1,2-diylbis[imino(2-oxoethane-2,1-diyl)oxybenzene-3,1--diylcarbonylimino(2-methylindolizine-1,3-diyl)carbonyl(2,4-dioxo-1,4-dihydroquinazoline-7,3(2H)-diyl)]}diacetic acid; and

a pharmaceutically acceptable salt thereof.

7. A pharmaceutical composition comprising a compound according to claim 1, or a pharmaceutically acceptable salt thereof, and at least one pharmaceutically acceptable excipient.

8. A method of activating fibroblast growth factor receptor in a patient, comprising administering to the patient a compound according to claim 1.

9. The method according to claim 8, wherein the patient suffers from cardiac ischaemia, arteritis, arteriosclerosis, angina pectoris, obesity, diabetes, thromboangiitis obliterans, post-angioplasty restenosis, post-endoarterectomy restenosis, muscle injury, muscular dystrophy, myoblast survival, sarcopenia, nociception, chronic pain, peripheral neuropathy, bioartificial pancreatic graft survival, graft revascularization, retinal degeneration, pigmentary retinitis, osteoarthritis, osteoporosis, preeclampsia, vascular lesions, acute respiratory distress syndrome or alopecia.

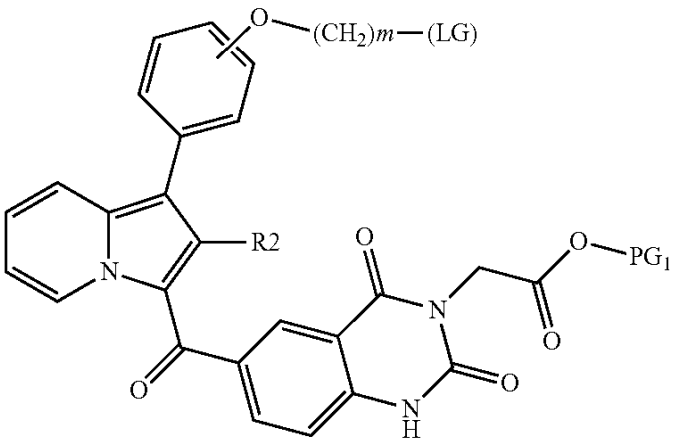
10. A method of promoting angiogenesis in a patient, comprising administering to the patient a compound according to claim 1.

11. A process for preparing a compound according to claim 1, wherein:

(a)

a compound of formula (IX)

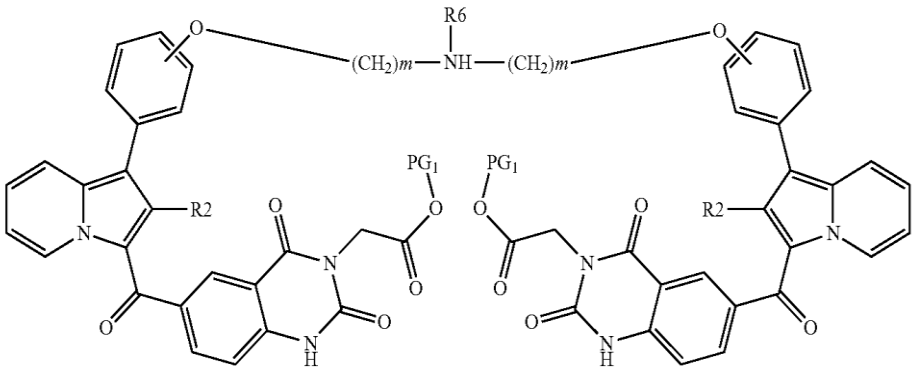
(IX)



in which m represents 1, 2, 3, 4, or 5, R_2 represents an alkyl group, PG_1 represents an alkyl group and LG represents a halogen atom or an activated hydroxy group,

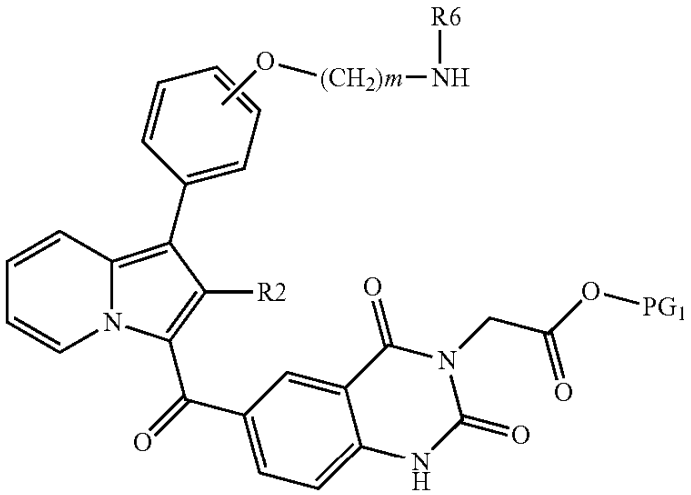
reacts with an amine R_6--NH_2 in the presence of a base to give a dimer of formula (XV):

(XV)



(b) an amine of formula (XVI)

(XVI)



wherein R_6 independently represents a (C_1-C_4)alkyl group optionally substituted with one or more substituents independently chosen from:

an aryl or heteroaryl group, each optionally substituted with hydroxyl or $NR_6'R_6''$ group, wherein R_6' and R_6'' are independently chosen from a hydrogen atom and a linear, branched or cyclic (C_1-C_4)alkyl group,

a heterocycloalkyl group comprising at least one heteroatom chosen from a nitrogen atom and an oxygen atom optionally substituted with a linear or branched alkyl group,

an $NR_6'R_6''$ group, wherein R_6' and R_6'' are independently chosen from a hydrogen atom and a linear, branched or cyclic (C_1-C_4)alkyl group, and

an --O--(C_1-C_4)alkyl group optionally substituted with a hydroxy group, or a pharmaceutically acceptable salt thereof;

when present in excess, reacts with a stoichiometric amount of the compound of formula (IX) to give the dimer of formula (XV), and

the dimer of formula (XV) is saponified.