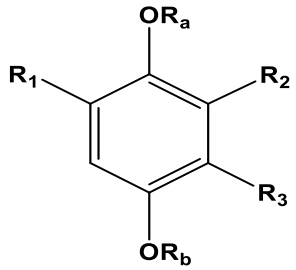
CLAIMS

1. A substituted hydroquinone of formula (I):



(I)

wherein:

R_a, R_b = H, $C_{1\text{-}4}$acyl, aryl$C_{1\text{-}4}$alkyl, C_6-C_{10}arylCO, $HOOC(CH_2)_nCO$, C_1-C_7alkylNHCO, phosphono, phosphonooxymethyl, C_1-C_6acyloxymethyl, C_1-C_6acyloxy-1-ethyl, C_1-C_6alkoxycarbonyloxymethyl, or C_1-C_6alkoxycarbonyloxy-1-ethyl;

$R_1 = COOR_4$, $(CH_2)_nCOOR_4$, SO_3H, $(CH_2)_nSO_3H$, or CONH-$R_{10;}$

R_2 and R_3 are H or R_5, with the proviso that when one of R_2 and R_3 is R_5, the other is H and when one of R_2 and R_3 is H, the other is R_5;

R_4 = H, $C_{1\text{-}4}$alkyl, aryl$C_{1\text{-}4}$alkyl, functionalized C_1-C_6alkyl including morpholino-C_1-C_6alkyl, pyrrolidino-C_1-C_6alkyl, N-methylpiperazino-C_1-C_6alkyl, C_1-C_6acyloxymethyl, C_1-C_6acyloxy-1-ethyl, C_1-C_6alkoxycarbonyloxymethyl, C_1-C_6alkoxycarbonyloxy-1-ethyl, (oxodioxolyl)methyl, or optionally substituted C_6-C_{10}aryl including *o*-methoxyphenyl (guaiacol ester);

$R_5 = R_6$, R_7, or R_8

R_6 = CONH-R_9, $CONHCOR_9$, $CONH(CH_2)_n$-R_9, $CONHCH(COOR_4)(CH_2)_kR_{9,;}$ wherein k = 0-4;

R_7 = benzoheteroaryl substituted with at least one or more groups selected from: $COOR_4$, $(CH_2)_nCOOR_4$, SO_3H, $(CH_2)_nSO_3H$, OR_4, 5-membered N-containing heterocycles, or fluorine;

$R_8 = (CH_2)_mX(CH_2)_pR_{9;}$

X = O, S, SO_2, NH, NAc, or $N(CH_2)_qR_9$;

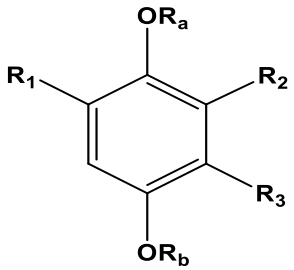
R_9 = aryl, heteroaryl, substituted with at least one or more groups selected from $COOR_4$, $(CH_2)_nCOOR_4$, $(CH_2)_nSO_3H$, OR_4, SO_3H, 5-membered N-containing heterocycles, fluorine, C=O, or NHCO-R_{10};

R_{10} = aryl, heteroaryl, substituted with at least one or more groups selected from $COOR_4$, $(CH_2)_nCOOR_4$, $(CH_2)_nSO_3H$, OR_4, SO_3H, 5-membered N-containing heterocycles, or fluorine;

wherein the aryl of R_9 and R_{10} is an aromatic group containing from 6 to 14 carbon atoms, selected among phenyl, naphthyl, biphenyl group; and the heteroaryl of R_9 and R_{10} is an aromatic group containing 1 to 14 carbon atoms and one or more nitrogen; and

n, m, p and q are independently 1-4.

2. The compound of formula (I), according to claim 1:



(I)

wherein:

R_a, R_b = H, $C_{1\text{-}4}$acyl, aryl$C_{1\text{-}4}$alkyl, C_6-C_{10}arylCO, HOOC$(CH_2)_n$CO, C_1-C_7alkylNHCO, phosphono, phosphonooxymethyl, C_1-C_6acyloxymethyl, C_1-C_6acyloxy-1-ethyl, C_1-C_6alkoxycarbonyloxymethyl, or C_1-C_6alkoxycarbonyloxy-1-ethyl;

R_1 = $COOR_4$, $(CH_2)_nCOOR_4$, SO_3H, $(CH_2)_nSO_3H$, or CONH-$R_{10;}$

R_2 and R_3 are H or R_5, with the proviso that when one of R_2 and R_3 is R_5, the other is H and when one of R_2 and R_3 is H, the other is R_5;

R_4 = H, $C_{1\text{-}4}$alkyl, aryl$C_{1\text{-}4}$alkyl, functionalized C_1-C_6alkyl including morpholino-C_1-C_6alkyl, pyrrolidino-C_1-C_6alkyl, N-methylpiperazino-C_1-C_6alkyl, C_1-C_6acyloxymethyl, C_1-C_6acyloxy-1-ethyl, C_1-C_6alkoxycarbonyloxymethyl, C_1-C_6alkoxycarbonyloxy-1-ethyl, (oxodioxolyl)methyl, or optionally substituted C_6-C_{10}aryl including *o*-methoxyphenyl (guaiacol ester);

R_5 = R_6, or R_7,

R_6 = CONH-R_9, CONHCOR_9, CONH$(CH_2)_n$-R_9, or CONHCH$(COOR_4)(CH_2)_kR_{9;}$ wherein k = 0-4;

R_7 = benzoheteroaryl substituted with at least one or more groups selected from: $COOR_4$, $(CH_2)_nCOOR_4$, SO_3H, $(CH_2)_nSO_3H$, OR_4, 5-membered N-containing heterocycles, or fluorine;

R_9 = aryl, heteroaryl, substituted with at least one or more groups selected from $COOR_4$, $(CH_2)_nCOOR_4$, $(CH_2)_nSO_3H$, OR_4, SO_3H, 5-membered N-containing heterocycles, fluorine, C=O, or NHCO-R_{10};

R_{10} = aryl, heteroaryl, substituted with at least one or more groups selected from $COOR_4$, $(CH_2)_nCOOR_4$, $(CH_2)_nSO_3H$, OR_4, SO_3H, 5-membered N-containing heterocycles, or fluorine; wherein the aryl of R_9 and R_{10} is an aromatic group containing from 6 to 14 carbon atoms, selected among phenyl, naphthyl, biphenyl group; and the heteroaryl of R_9 and R_{10} is an aromatic group containing 1 to 14 carbon atoms and one or more nitrogen; and n, is independently 1-4.

3. The compound according to claim 2, wherein:

(A)

R_a, R_b = H, $C_{1\text{-}4}$acyl, aryl$C_{1\text{-}4}$alkyl, C_6-C_{10}arylCO, $HOOC(CH_2)_nCO$, C_1-C_7alkylNHCO, phosphono, phosphonooxymethyl, C_1-C_6acyloxymethyl, C_1-C_6acyloxy-1-ethyl, C_1-C_6alkoxycarbonyloxymethyl, or C_1-C_6alkoxycarbonyloxy-1-ethyl;

R_1 = $COOR_4$; R_4 = H, $C_{1\text{-}4}$alkyl, aryl$C_{1\text{-}4}$alkyl, functionalized C_1-C_6alkyl including morpholino-C_1-C_6alkyl, pyrrolidino-C_1-C_6alkyl, N-methylpiperazino-C_1-C_6alkyl, C_1-C_6acyloxymethyl, C_1-C_6acyloxy-1-ethyl, C_1-C_6alkoxycarbonyloxymethyl, C_1-C_6alkoxycarbonyloxy-1-ethyl, (oxodioxolyl)methyl, or optionally substituted C_6-C_{10}aryl including *o*-methoxyphenyl (guaiacol ester);

R_2 = H; R_3 = R_5; and

R_5 = R_6 = CONH-R_9;

or

(B)

R_a, R_b = H, $C_{1\text{-}4}$acyl, aryl$C_{1\text{-}4}$alkyl, C_6-C_{10}arylCO, $HOOC(CH_2)_nCO$, C_1-C_7alkylNHCO, phosphono, phosphonooxymethyl, C_1-C_6acyloxymethyl, C_1-C_6acyloxy-1-ethyl, C_1-C_6alkoxycarbonyloxymethyl, or C_1-C_6alkoxycarbonyloxy-1-ethyl;

R_1 = $COOR_4$; R_4 = H, $C_{1\text{-}4}$alkyl, aryl$C_{1\text{-}4}$alkyl, functionalized C_1-C_6alkyl including morpholino-C_1-C_6alkyl, pyrrolidino-C_1-C_6alkyl, N-methylpiperazino-C_1-C_6alkyl, C_1-C_6acyloxymethyl, C_1-C_6acyloxy-1-ethyl, C_1-C_6alkoxycarbonyloxymethyl, C_1-C_6alkoxycarbonyloxy-1-ethyl, (oxodioxolyl)methyl, or optionally substituted C_6-C_{10}aryl including *o*-methoxyphenyl (guaiacol ester);

R_3 = H; R_2 = R_5; and

R_5 = R_6 = CONH-R_9;

or

wherein said compound is selected form the group consisting of:

4-(2-carboxyphenylaminocarbonyl)-2,5-dihydroxybenzoic acid;

4-(2-(1H-tetrazol-5-yl)phenylaminocarbonyl)-2,5-dihydroxybenzoic acid;

2,5-dihydroxy-4-(2-sulfophenylaminocarbonyl)benzoic acid;

4-(3-carboxyphenylaminocarbonyl)-2,5-dihydroxybenzoic acid;

4-(3-(1H-tetrazol-5-yl)phenylaminocarbonyl)-2,5-dihydroxybenzoic acid;

2,5-dihydroxy-4-(3-sulfophenylaminocarbonyl)benzoic acid;

4-(4-carboxyphenylaminocarbonyl)-2,5-dihydroxybenzoic acid;

4-(4-(1H-tetrazol-5-yl)phenylaminocarbonyl)-2,5-dihydroxybenzoic acid;

2,5-dihydroxy-4-(4-sulfophenylaminocarbonyl)benzoic acid;

4-(3-carboxy-4-hydroxyphenylaminocarbonyl)-2,5-dihydroxybenzoic acid;

4-(4-carboxy-3-hydroxyphenylaminocarbonyl)-2,5-dihydroxybenzoic acid;

4-(4-carboxy-2,5-dihydroxyphenylaminocarbonyl)-2,5-dihydroxybenzoic acid;

4-(2-carboxy-4-hydroxyphenylaminocarbonyl)-2,5-dihydroxybenzoic acid;
3,5-bis(2,5-dihydroxy-4-carboxybenzoylamino)benzoic acid;
3-(4-carboxy-2,5-dihydroxybenzamido)phthalic acid;
2-(4-carboxy-2,5-dihydroxybenzamido)terephthalic acid;
2-(4-carboxy-2,5-dihydroxybenzamido)isophthalic acid;
4-(4-carboxy-2,5-dihydroxybenzamido)phthalic acid;
5-(4-carboxy-2,5-dihydroxybenzamido)isophthalic acid;
2-(4-carboxy-2,5-dihydroxybenzamido)nicotinic acid;
2-(4-carboxy-2,5-dihydroxybenzamido)isonicotinic acid;
6-(4-carboxy-2,5-dihydroxybenzamido)nicotinic acid;
6-(4-carboxy-2,5-dihydroxybenzamido)picolinic acid;
2-(4-carboxy-2,5-dihydroxybenzamido)-5-fluoronicotinic acid;
6-(4-carboxy-2,5-dihydroxybenzamido)pyridine-2,5-dicarboxylic acid;
2-(4-carboxy-2,5-dihydroxybenzamido)pyridine-3,5-dicarboxylic acid;
3-(4-carboxy-2,5-dihydroxybenzamido)isonicotinic acid;
5-(4-carboxy-2,5-dihydroxybenzamido)nicotinic acid;
5-(4-carboxy-2,5-dihydroxybenzamido)picolinic acid;
3-(4-carboxy-2,5-dihydroxybenzamido)picolinic acid;
5-(4-carboxy-2,5-dihydroxybenzamido)-2-fluoroisonicotinic acid;
4-(4-carboxy-2,5-dihydroxybenzamido)nicotinic acid;
4-(4-carboxy-2,5-dihydroxybenzamido)picolinic acid;
4-(4-(carboxymethyl)phenylaminocarbonyl)-2,5-dihydroxybenzoic acid;
4-(3-(carboxymethyl)phenylaminocarbonyl)-2,5-dihydroxybenzoic acid;
2,5-dihydroxy-4-(3-(1-hydroxy-1H-pyrazol-4-yl)phenylaminocarbonyl)benzoic acid;
4-(2-(carboxymethyl)phenylaminocarbonyl)-2,5-dihydroxybenzoic acid;
ethyl 4-(2-(ethoxycarbonyl)phenylaminocarbonyl)-2,5-diacetoxybenzoate;
ethyl 4-(2-(ethoxycarbonyl)phenylaminocarbonyl)-2,5-dihydroxybenzoate;
ethyl 4-(2-(1H-tetrazol-5-yl)phenylaminocarbonyl)-2,5-diacetoxybenzoate;
ethyl 4-(2-(1H-tetrazol-5-yl)phenylaminocarbonyl)-2,5-dihydroxybenzoate;
ethyl 2,5-dihydroxy-4-(4-hydroxy-3-(methoxycarbonyl)phenylaminocarbonyl)benzoate;
ethyl 3,5-bis(2,5-diacetoxy-4-ethoxycarbonylbenzoylamino)benzoate;
ethyl 3,5-bis(2,5-dihydroxy-4-ethoxycarbonylbenzoylamino)benzoate;
ethyl 3-(4-(ethoxycarbonyl)-2,5-dihydroxybenzamido)isonicotinate;
Ethyl 4-(4-ethoxycarbonyl-2,5-dihydroxyphenylaminocarbonyl)-2,5-dihydroxybenzoate;
3-(2-carboxyphenylaminocarbonyl)-2,5-dihydroxybenzoic acid;

3-(2-(1H-tetrazol-5-yl)phenylaminocarbonyl)-2,5-dihydroxybenzoic acid;
2,5-dihydroxy-3-(2-sulfophenylaminocarbonyl)benzoic acid;
3-(3-carboxyphenylaminocarbonyl)-2,5-dihydroxybenzoic acid;
3-(3-(1H-tetrazol-5-yl)phenylaminocarbonyl)-2,5-dihydroxybenzoic acid;
2,5-dihydroxy-3-(3-sulfophenylaminocarbonyl)benzoic acid;
3-(4-carboxyphenylaminocarbonyl)-2,5-dihydroxybenzoic acid;
3-(4-(1H-tetrazol-5-yl)phenylaminocarbonyl)-2,5-dihydroxybenzoic acid;
2,5-dihydroxy-3-(4-sulfophenylaminocarbonyl)benzoic acid;
3-(3-carboxy-4-hydroxyphenylaminocarbonyl)-2,5-dihydroxybenzoic acid;
3-(4-carboxy-3-hydroxyphenylaminocarbonyl)-2,5-dihydroxybenzoic acid;
3-(2-carboxy-4-hydroxyphenylaminocarbonyl)-2,5-dihydroxybenzoic acid;
3,5-Bis(2,5-dihydroxy-3-carboxybenzoylamino)benzoic acid;
3-(3-carboxy-2,5-dihydroxybenzamido)phthalic acid;
2-(3-carboxy-2,5-dihydroxybenzamido)terephthalic acid;
2-(3-carboxy-2,5-dihydroxybenzamido)isophthalic acid;
4-(3-carboxy-2,5-dihydroxybenzamido)phthalic acid;
5-(3-carboxy-2,5-dihydroxybenzamido)isophthalic acid;
2-(3-carboxy-2,5-dihydroxybenzamido)nicotinic acid;
2-(3-carboxy-2,5-dihydroxybenzamido)isonicotinic acid;
6-(3-carboxy-2,5-dihydroxybenzamido)nicotinic acid;
6-(3-carboxy-2,5-dihydroxybenzamido)picolinic acid;
2-(3-carboxy-2,5-dihydroxybenzamido)-5-fluoronicotinic acid;
6-(3-carboxy-2,5-dihydroxybenzamido)pyridine-2,5-dicarboxylic acid;
2-(3-carboxy-2,5-dihydroxybenzamido)pyridine-3,5-dicarboxylic acid;
3-(3-carboxy-2,5-dihydroxybenzamido)isonicotinic acid;
5-(3-carboxy-2,5-dihydroxybenzamido)nicotinic acid;
5-(3-carboxy-2,5-dihydroxybenzamido)picolinic acid;
3-(3-carboxy-2,5-dihydroxybenzamido)picolinic acid
5-(3-carboxy-2,5-dihydroxybenzamido)-2-fluoroisonicotinic acid;
4-(3-carboxy-2,5-dihydroxybenzamido)nicotinic acid;
4-(3-carboxy-2,5-dihydroxybenzamido)picolinic acid;
3-(4-(carboxymethyl)phenylaminocarbonyl)-2,5-dihydroxybenzoic acid;
3-(3-(carboxymethyl)phenylaminocarbonyl)-2,5-dihydroxybenzoic acid;
2,5-dihydroxy-3-(3-(1-hydroxy-1H-pyrazol-4-yl)phenylaminocarbonyl)benzoic acid;
3-(2-(carboxymethyl)phenylaminocarbonyl)-2,5-dihydroxybenzoic acid;

ethyl 3-(2-(1H-tetrazol-5-yl)phenylaminocarbonyl)-2,5-dihydroxybenzoate; and
ethyl 3-(2-(ethoxycarbonylmethyl)phenylaminocarbonyl)-2,5-dihydroxybenzoate;

4. The compound according to claim 2, wherein:

(A)

R_a, R_b = H;

$R_1 = SO_3H$;

R_2 = H; $R_3 = R_5$; and

$R_5 = R_6 = CONH\text{-}R_9$;

or

(B)

R_a, R_b = H;

$R_1 = SO_3H$;

R_3 = H; $R_2 = R_5$; and

$R_5 = R_6 = CONH\text{-}R_9$;

or

wherein said compound is selected form the group consisting of:
2-(2,5-dihydroxy-4-sulfobenzamido)benzoic acid;
2,5-dihydroxy-4-(2-sulfophenylaminocarbonyl)benzenesulfonic acid;
3-(2,5-dihydroxy-4-sulfobenzamido)benzoic acid;
2,5-dihydroxy-4-(3-sulfophenylaminocarbonyl)benzenesulfonic acid;
4-(2,5-dihydroxy-4-sulfobenzamido)benzoic acid;
2,5-dihydroxy-4-(4-sulfophenylaminocarbonyl)benzenesulfonic acid;
5-(2,5-dihydroxy-4-sulfobenzamido)-2-hydroxybenzoic acid;
4-(2,5-dihydroxy-4-sulfobenzamido)-2-hydroxybenzoic acid;
2-(2,5-dihydroxy-4-sulfobenzamido)-5-hydroxybenzoic acid;
3,5-bis(2,5-dihydroxy-4-sulfobenzamido)benzoic acid;
3-(2,5-dihydroxy-4-sulfobenzamido)phthalic acid;
2-(2,5-dihydroxy-4-sulfobenzamido)terephthalic acid;
2-(2,5-dihydroxy-4-sulfobenzamido)isophthalic acid;
4-(2,5-dihydroxy-4-sulfobenzamido)phthalic acid;
5-(2,5-dihydroxy-4-sulfobenzamido)isophthalic acid;
2-(2,5-dihydroxy-4-sulfobenzamido)nicotinic acid;
2-(2,5-dihydroxy-4-sulfobenzamido)isonicotinic acid;
6-(2,5-dihydroxy-4-sulfobenzamido)nicotinic acid;

6-(2,5-dihydroxy-4-sulfobenzamido)picolinic acid;
2-(2,5-dihydroxy-4-sulfobenzamido)-5-fluoronicotinic acid;
6-(2,5-dihydroxy-4-sulfobenzamido)pyridine-2,5-dicarboxylic acid;
2-(2,5-dihydroxy-4-sulfobenzamido)pyridine-3,5-dicarboxylic acid;
3-(2,5-dihydroxy-4-sulfobenzamido)isonicotinic acid;
5-(2,5-dihydroxy-4-sulfobenzamido)nicotinic acid;
5-(2,5-dihydroxy-4-sulfobenzamido)picolinic acid;
3-(2,5-dihydroxy-4-sulfobenzamido)picolinic acid;
5-(2,5-dihydroxy-4-sulfobenzamido)-2-fluoroisonicotinic acid;
4-(2,5-dihydroxy-4-sulfobenzamido)nicotinic acid;
4-(2,5-dihydroxy-4-sulfobenzamido)picolinic acid;
(4-(2,5-dihydroxy-4-sulfobenzamido)phenyl)acetic acid;
(3-(2,5-dihydroxy-4-sulfobenzamido)phenyl)acetic acid;
(2-(2,5-dihydroxy-4-sulfobenzamido)phenyl)acetic acid;
2-(2,5-dihydroxy-3-sulfobenzamido)benzoic acid;
2,5-dihydroxy-3-(2-sulfophenylaminocarbonyl)benzenesulfonic acid;
3-(2,5-dihydroxy-3-sulfobenzamido)benzoic acid;
2,5-dihydroxy-3-(3-sulfophenylaminocarbonyl)benzenesulfonic acid;
4-(2,5-dihydroxy-3-sulfobenzamido)benzoic acid;
2,5-dihydroxy-3-(4-sulfophenylaminocarbonyl)benzenesulfonic acid;
5-(2,5-dihydroxy-3-sulfobenzamido)-2-hydroxybenzoic acid;
4-(2,5-dihydroxy-3-sulfobenzamido)-2-hydroxybenzoic acid;
2-(2,5-dihydroxy-3-sulfobenzamido)-5-hydroxybenzoic acid;
3-(2,5-dihydroxy-3-sulfobenzamido)-5-(2,5-dihydroxy-4-sulfobenzamido)benzoic acid
3-(2,5-dihydroxy-3-sulfobenzamido)phthalic acid;
2-(2,5-dihydroxy-3-sulfobenzamido)terephthalic acid;
2-(2,5-dihydroxy-3-sulfobenzamido)isophthalic acid;
4-(2,5-dihydroxy-3-sulfobenzamido)phthalic acid;
5-(2,5-dihydroxy-3-sulfobenzamido)isophthalic acid;
2-(2,5-dihydroxy-3-sulfobenzamido)nicotinic acid;
2-(2,5-dihydroxy-3-sulfobenzamido)isonicotinic acid;
6-(2,5-dihydroxy-3-sulfobenzamido)nicotinic acid;
6-(2,5-dihydroxy-3-sulfobenzamido)picolinic acid;
2-(2,5-dihydroxy-3-sulfobenzamido)-5-fluoronicotinic acid;
6-(2,5-dihydroxy-3-sulfobenzamido)pyridine-2,5-dicarboxylic acid;

2-(2,5-dihydroxy-3-sulfobenzamido)pyridine-3,5-dicarboxylic acid;

3-(2,5-dihydroxy-3-sulfobenzamido)isonicotinic acid;

5-(2,5-dihydroxy-3-sulfobenzamido)nicotinic acid;

5-(2,5-dihydroxy-3-sulfobenzamido)picolinic acid;

3-(2,5-dihydroxy-3-sulfobenzamido)picolinic acid;

5-(2,5-dihydroxy-3-sulfobenzamido)-2-fluoroisonicotinic acid;

4-(2,5-dihydroxy-3-sulfobenzamido)nicotinic acid;

4-(2,5-dihydroxy-3-sulfobenzamido)picolinic acid;

(4-(2,5-dihydroxy-3-sulfobenzamido)phenyl)acetic acid;

(3-(2,5-dihydroxy-3-sulfobenzamido)phenyl)acetic acid; and

(2-(2,5-dihydroxy-3-sulfobenzamido)phenyl)acetic acid.

5. The compound according to claim 2, wherein:

(A)

R_a, R_b = H,

$R_1 = (CH_2)_nCOOR_4$; R_4 = H, $C_{1\text{-}4}$alkyl, aryl$C_{1\text{-}4}$alkyl, functionalized C_1-C_6alkyl including morpholino-C_1-C_6alkyl, pyrrolidino-C_1-C_6alkyl, N-methylpiperazino-C_1-C_6alkyl, C_1-C_6acyloxymethyl, C_1-C_6acyloxy-1-ethyl, C_1-C_6alkoxycarbonyloxymethyl, C_1-C_6alkoxycarbonyloxy-1-ethyl, (oxodioxolyl)methyl, or optionally substituted C_6-C_{10}aryl including *o*-methoxyphenyl (guaiacol ester);

R_2 = H or R_5, $R_3 = R_5$; and

$R_5 = R_6 = CONH\text{-}R_9$;

Or

(B)

R_a, R_b = H;

$R_1 = (CH_2)_nCOOR_4$; R_4 = H, $C_{1\text{-}4}$alkyl, aryl$C_{1\text{-}4}$alkyl, functionalized C_1-C_6alkyl including morpholino-C_1-C_6alkyl, pyrrolidino-C_1-C_6alkyl, N-methylpiperazino-C_1-C_6alkyl, C_1-C_6acyloxymethyl, C_1-C_6acyloxy-1-ethyl, C_1-C_6alkoxycarbonyloxymethyl, C_1-C_6alkoxycarbonyloxy-1-ethyl, (oxodioxolyl)methyl, or optionally substituted C_6-C_{10}aryl including *o*-methoxyphenyl (guaiacol ester);

R_3 = H; $R_2 = R_5$; and

$R_5 = R_6 = CONH\text{-}R_9$;

or wherein said compound is selected form the group consisting of:

2-(4-(carboxymethyl)-2,5-dihydroxybenzamido)benzoic acid;

(2-(1H-tetrazol-5-yl)phenylaminocarbonyl)-2,5-dihydroxyphenyl)acetic acid;

(2,5-dihydroxy-4-(2-sulfophenylaminocarbonyl)phenyl)acetic acid;

3-(4-(carboxymethyl)-2,5-dihydroxybenzamido)benzoic acid;

(2,5-dihydroxy-4-(3-sulfophenylaminocarbonyl)phenyl)acetic acid;
4-(4-(carboxymethyl)-2,5-dihydroxybenzamido)benzoic acid;
2-(2,5-dihydroxy-4-(4-sulfophenylaminocarbonyl)phenyl)acetic acid;
5-(4-(carboxymethyl)-2,5-dihydroxybenzamido)-2-hydroxybenzoic acid;
4-(4-(carboxymethyl)-2,5-dihydroxybenzamido)-2-hydroxybenzoic acid;
2-(4-(carboxymethyl)-2,5-dihydroxybenzamido)-5-hydroxybenzoic acid;
3,5-Bis(2,5-dihydroxy-4-carboxymethylbenzoylamino)benzoic acid
3-(4-(carboxymethyl)-2,5-dihydroxybenzamido)phthalic acid;
2-(4-(carboxymethyl)-2,5-dihydroxybenzamido)terephthalic acid;
2-(4-(carboxymethyl)-2,5-dihydroxybenzamido)isophthalic acid;
4-(4-(carboxymethyl)-2,5-dihydroxybenzamido)phthalic acid;
5-(4-(carboxymethyl)-2,5-dihydroxybenzamido)isophthalic acid;
2-(4-(carboxymethyl)-2,5-dihydroxybenzamido)nicotinic acid;
2-(4-(carboxymethyl)-2,5-dihydroxybenzamido)isonicotinic acid;
6-(4-(carboxymethyl)-2,5-dihydroxybenzamido)nicotinic acid;
6-(4-(carboxymethyl)-2,5-dihydroxybenzamido)picolinic acid;
2-(4-(carboxymethyl)-2,5-dihydroxybenzamido)-5-fluoronicotinic acid;
6-(4-(carboxymethyl)-2,5-dihydroxybenzamido)pyridine-2,5-dicarboxylic acid;
2-(4-(carboxymethyl)-2,5-dihydroxybenzamido)pyridine-3,5-dicarboxylic acid;
3-(4-(carboxymethyl)-2,5-dihydroxybenzamido)isonicotinic acid;
5-(4-(carboxymethyl)-2,5-dihydroxybenzamido)nicotinic acid;
5-(4-(carboxymethyl)-2,5-dihydroxybenzamido)picolinic acid;
3-(4-(carboxymethyl)-2,5-dihydroxybenzamido)picolinic acid;
5-(4-(carboxymethyl)-2,5-dihydroxybenzamido)-2-fluoroisonicotinic acid;
4-(4-(carboxymethyl)-2,5-dihydroxybenzamido)nicotinic acid;
4-(4-(carboxymethyl)-2,5-dihydroxybenzamido)picolinic acid;
(4-(4-(carboxymethyl)-2,5-dihydroxybenzamido)phenyl)acetic acid;
(3-(4-(carboxymethyl)-2,5-dihydroxybenzamido)phenyl)acetic acid;
(2-(4-(carboxymethyl)-2,5-dihydroxybenzamido)phenyl)acetic acid;
methyl 2-(4-(ethoxycarbonylmethyl)-2,5-dihydroxybenzamido)benzoate;
ethyl (4-(2-(1H-tetrazol-5-yl)phenylaminocarbonyl)-2,5-dihydroxyphenyl)acetate;
diethyl 5-(4-(ethoxycarbonylmethyl)-2,5-dihydroxybenzamido)isophthalate;
methyl 3,5-bis(4-(ethoxycarbonylmethyl)-2,5-dihydroxybenzamido)benzoate;
2-(3-(carboxymethyl)-2,5-dihydroxybenzamido)benzoic acid;
(2,5-dihydroxy-3-(2-sulfophenylaminocarbonyl)phenyl)acetic acid;

3-(3-(carboxymethyl)-2,5-dihydroxybenzamido)benzoic acid;
(2,5-dihydroxy-3-(3-sulfophenylaminocarbonyl)phenyl)acetic acid;
4-(3-(carboxymethyl)-2,5-dihydroxybenzamido)benzoic acid;
(2,5-dihydroxy-3-(4-sulfophenylaminocarbonyl)phenyl)acetic acid;
5-(3-(carboxymethyl)-2,5-dihydroxybenzamido)-2-hydroxybenzoic acid;
4-(3-(carboxymethyl)-2,5-dihydroxybenzamido)-2-hydroxybenzoic acid;
2-(3-(carboxymethyl)-2,5-dihydroxybenzamido)-5-hydroxybenzoic acid;
3,5-Bis(2,5-dihydroxy-3-carboxymethylbenzoylamino)benzoic acid
3-(3-(carboxymethyl)-2,5-dihydroxybenzamido)phthalic acid;
2-(3-(carboxymethyl)-2,5-dihydroxybenzamido)terephthalic acid;
2-(3-(carboxymethyl)-2,5-dihydroxybenzamido)isophthalic acid;
4-(3-(carboxymethyl)-2,5-dihydroxybenzamido)phthalic acid;
5-(3-(carboxymethyl)-2,5-dihydroxybenzamido)isophthalic acid;
2-(3-(carboxymethyl)-2,5-dihydroxybenzamido)nicotinic acid;
2-(3-(carboxymethyl)-2,5-dihydroxybenzamido)isonicotinic acid;
6-(3-(carboxymethyl)-2,5-dihydroxybenzamido)nicotinic acid;
6-(3-(carboxymethyl)-2,5-dihydroxybenzamido)picolinic acid;
2-(3-(carboxymethyl)-2,5-dihydroxybenzamido)-5-fluoronicotinic acid;
6-(3-(carboxymethyl)-2,5-dihydroxybenzamido)pyridine-2,5-dicarboxylic acid;
2-(3-(carboxymethyl)-2,5-dihydroxybenzamido)pyridine-3,5-dicarboxylic acid;
3-(3-(carboxymethyl)-2,5-dihydroxybenzamido)isonicotinic acid;
5-(3-(carboxymethyl)-2,5-dihydroxybenzamido)nicotinic acid;
5-(3-(carboxymethyl)-2,5-dihydroxybenzamido)picolinic acid;
3-(3-(carboxymethyl)-2,5-dihydroxybenzamido)picolinic acid;
5-(3-(carboxymethyl)-2,5-dihydroxybenzamido)-2-fluoroisonicotinic acid;
4-(3-(carboxymethyl)-2,5-dihydroxybenzamido)nicotinic acid;
4-(3-(carboxymethyl)-2,5-dihydroxybenzamido)picolinic acid;
(4-(3-(carboxymethyl)-2,5-dihydroxybenzamido)phenyl)acetic acid;
(3-(3-(carboxymethyl)-2,5-dihydroxybenzamido)phenyl)acetic acid; and
(2 -(3-(carboxymethyl)-2,5-dihydroxybenzamido)phenyl)acetic acid.

6. The compound according to claim 2, wherein:

(A)

R_a, R_b = H, C_{1-4}acyl, arylC_{1-4}alkyl, C_6-C_{10}arylCO, $HOOC(CH_2)_nCO$, C_1-C_7alkylNHCO, phosphono, phosphonooxymethyl, C_1-C_6acyloxymethyl, C_1-C_6acyloxy-1-ethyl, C_1-C_6alkoxycarbonyloxymethyl, or C_1-C_6alkoxycarbonyloxy-1-ethyl;

R_1 = CONH-R_{10}; R_4 = H, C_{1-4}alkyl, arylC_{1-4}alkyl, functionalized C_1-C_6alkyl including morpholino-C_1-C_6alkyl, pyrrolidino-C_1-C_6alkyl, N-methylpiperazino-C_1-C_6alkyl, C_1-C_6acyloxymethyl, C_1-C_6acyloxy-1-ethyl, C_1-C_6alkoxycarbonyloxymethyl, C_1-C_6alkoxycarbonyloxy-1-ethyl, (oxodioxolyl)methyl, or optionally substituted C_6-C_{10}aryl including *o*-methoxyphenyl (guaiacol ester);

R_2 = H; R_3 = R_5; and

R_5 = R_6 = CONH-R_9;

Or

(B)

R_a, R_b = H, C_{1-4}acyl, arylC_{1-4}alkyl, C_6-C_{10}arylCO, $HOOC(CH_2)_nCO$, C_1-C_7alkylNHCO, phosphono, phosphonooxymethyl, C_1-C_6acyloxymethyl, C_1-C_6acyloxy-1-ethyl, C_1-C_6alkoxycarbonyloxymethyl, or C_1-C_6alkoxycarbonyloxy-1-ethyl;

R1 = CONH-R_{10}; R_4 = H, C_{1-4}alkyl, arylC_{1-4}alkyl, functionalized C_1-C_6alkyl including morpholino-C_1-C_6alkyl, pyrrolidino-C_1-C_6alkyl, N-methylpiperazino-C_1-C_6alkyl, C_1-C_6acyloxymethyl, C_1-C_6acyloxy-1-ethyl, C_1-C_6alkoxycarbonyloxymethyl, C_1-C_6alkoxycarbonyloxy-1-ethyl, (oxodioxolyl)methyl, or optionally substituted C_6-C_{10}aryl including *o*-methoxyphenyl (guaiacol ester);

R_3 = H; R_2 = R_5; and

R_5 = R_6 = CONH-R_9.

or

wherein said compound is selected form the group consisting of:

5-(4-(2-(1H-tetrazol-5-yl)phenylaminocarbonyl)-2,5-dihydroxybenzamido)-2-hydroxybenzoic acid;

N_1,N_4-bis(2-(1H-tetrazol-5-yl)phenyl)-2,5-dihydroxyterephthalamide;

5-(4-(3-carboxy-4-hydroxyphenylaminocarbonyl)-2,5-dihydroxybenzamido)-2-hydroxybenzoic acid;

5-(2,5-dihydroxy-4-(4-hydroxy-3-sulfophenylaminocarbonyl)benzamido)-2-hydroxybenzenesulphonic acid;

4-(4-(4-carboxy-3-hydroxyphenylaminocarbonyl)-2,5-dihydroxybenzamido)-2-hydroxybenzoic acid;

4-(2,5-dihydroxy-4-(3-hydroxy-4-sulfophenylaminocarbonyl)benzamido)-2-hydroxybenzenesulphonic acid;

2-(2,5-dihydroxy-4-(4-hydroxy-2-carboxyphenylaminocarbonyl)benzamido)-5-hydroxybenzoic acid;

2-(2,5-dihydroxy-4-(4-hydroxy-2-sulfophenylaminocarbonyl)benzamido)-5-hydroxybenzene sulphonic acid;

methyl 5-(4-(2-(1H-tetrazol-5-yl)phenylaminocarbonyl)-2,5-dihydroxybenzamido)-2-hydroxybenzoate;

methyl 5-(2,5-diacetoxy-4-(4-acetoxy-3-(methoxycarbonyl)phenylaminocarbonyl)benzamido)-2-acetoxybenzoate;

methyl 5-(2,5-dihydroxy-4-(4-hydroxy-3-(methoxycarbonyl)phenylaminocarbonyl)benzamido)-2-hydroxybenzoate;

methyl 2-(2,5-dihydroxy-4-(4-hydroxy-2-(methoxycarbonyl)phenylaminocarbonyl)benzamido)-5-hydroxybenzoate;

1-(2,2-dimethylpropanoyloxy)ethyl 5-[[4-[[3-[1-(2,2-dimethylpropanoyloxy)ethoxycarbonyl]-4-hydroxy-phenyl]aminocarbonyl]-2,5-dihydroxy-benzoyl]amino]-2-hydroxybenzoate

5-(3-(3-carboxy-4-hydroxyphenylaminocarbonyl)-2,5-dihydroxybenzamido)-2-hydroxybenzoic acid;

5-(2,5-dihydroxy-3-(4-hydroxy-3-sulfophenylaminocarbonyl)benzamido)-2-hydroxybenzenesulphonic acid;

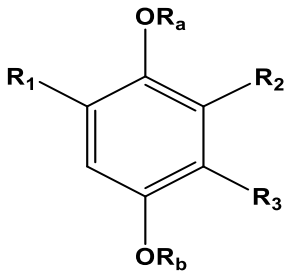
4-(3-(3-hydroxy-4-carboxyphenylaminocarbonyl)-2,5-dihydroxybenzamido)-2-hydroxybenzoic acid;

4-(2,5-dihydroxy-3-(3-hydroxy-4-sulfophenylaminocarbonyl)benzamido)-2-hydroxybenzenesulphonic acid;

2-(3-(2-carboxy-4-hydroxyphenylaminocarbonyl)-2,5-dihydroxybenzamido)-5-hydroxylbenzoic acid; and

2-(2,5-dihydroxy-3-(4-hydroxy-2-sulfophenylaminocarbonyl)benzamido)-5-hydroxybenzenesulphonic acid.

7. The compound according to claim 2 having the formula (I):



(I)

wherein:

R_a, R_b = H;

R_1 = CONH-$R_{10;}$

R_{10} = phenyl substituted with $COOR_4$ and with $OR_{4;}$

R_2 = H;

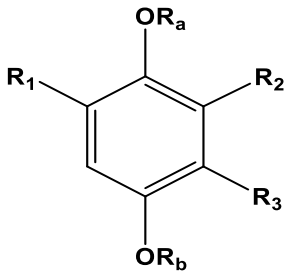
R_3 = CONH-R_9;

R_9 = phenyl substituted with $COOR_4$ and with OR_4; and

R_4 = H;

and wherein said compound is 5-(4-(3-carboxy-4-hydroxyphenylaminocarbonyl)-2,5-dihydroxybenzamido)-2-hydroxybenzoic acid.

8. The compound according to claim 2 having the formula (I):



(I)

wherein:

R_a, R_b = H;

R_1 = CONH-R_{10};

R_{10} = phenyl substituted with $COOR_4$ and with OR_4;

R_2 = CONH-R_9;

R_3 = H;

R_9 = phenyl substituted with $COOR_4$ and with OR_4; and

R_4 = H;

and wherein said compound is 5-(3-(3-carboxy-4-hydroxyphenylaminocarbonyl)-2,5-dihydroxybenzamido)-2-hydroxybenzoic acid.

9. The compound according to claim 2, wherein:

(A)

R_a, R_b = H;

R1 = $COOR_4$; $(CH_2)_nCOOR_4$; R_4 = H, $C_{1\text{-}4}$alkyl, aryl$C_{1\text{-}4}$alkyl, functionalized C_1-C_6alkyl including morpholino-C_1-C_6alkyl, pyrrolidino-C_1-C_6alkyl, N-methylpiperazino-C_1-C_6alkyl, C_1-C_6acyloxymethyl, C_1-C_6acyloxy-1-ethyl, C_1-C_6alkoxycarbonyloxymethyl, C_1-C_6alkoxycarbonyloxy-1-ethyl, (oxodioxolyl)methyl, or optionally substituted C_6-C_{10}aryl including *o*-methoxyphenyl (guaiacol ester);

R_2 = H; R_3 = R_5; and

R_5 = R_6 = $CONHCOR_9$;

or

(B)

R_a, R_b = H;

R^1 = $COOR_4$; $(CH_2)_nCOOR_4$; R_4 = H, $C_{1\text{-}4}$alkyl, aryl$C_{1\text{-}4}$alkyl, functionalized C_1-C_6alkyl including morpholino-C_1-C_6alkyl, pyrrolidino-C_1-C_6alkyl, N-methylpiperazino-C_1-C_6alkyl, C_1-C_6acyloxymethyl, C_1-C_6acyloxy-1-ethyl, C_1-C_6alkoxycarbonyloxymethyl, C_1-C_6alkoxycarbonyloxy-1-ethyl, (oxodioxolyl)methyl, or optionally substituted C_6-C_{10}aryl including *o*-methoxyphenyl (guaiacol ester);

R_3 = H; R_2 = R_5; and

R_5 = R_6 = $CONHCOR_9$;

or wherein said compound is selected form the group consisting of:

N-(1,3,4,5-tetrahydroxycyclohexylcarbonyl) 4-carboxy-2,5-dihydroxybenzamide;

N-(4-carboxy-2,5-dihydroxybenzoyl) 4-carboxy-2,5-dihydroxy-benzamide;

N-(3-carboxy-2,5-dihydroxybenzoyl) 4-carboxy-2,5-dihydroxy-benzamide;

N-(3,4-dihydroxybenzoyl) 4-carboxy-2,5-dihydroxybenzamide;

N-(3,5-dihydroxybenzoyl) 4-carboxy-2,5-dihydroxybenzamide;

N-(1,3,4,5-tetrahydroxycyclohexylcarbonyl) 3-carboxy-2,5-dihydroxybenzamide;

N-(4-carboxy-2,5-dihydroxybenzoyl) 3-carboxy-2,5-dihydroxy-benzamide;

N-(3-carboxy-2,5-dihydroxybenzoyl) 3-carboxy-2,5-dihydroxy-benzamide;

N-(3,4-dihydroxybenzoyl) 3-carboxy-2,5-dihydroxybenzamide;

N-(3,5-dihydroxybenzoyl) 3-carboxy-2,5-dihydroxybenzamide;

N-(1,3,4,5-tetrahydroxycyclohexylcarbonyl) 4-carboxymethyl-2,5-dihydroxybenzamide;

N-(4-carboxy-2,5-dihydroxybenzoyl) 4-carboxymethyl-2,5-dihydroxy-benzamide;

N-(3-carboxy-2,5-dihydroxybenzoyl) 4-carboxymethyl-2,5-dihydroxy-benzamide;

N-(3,4-dihydroxybenzoyl) 4-carboxymethyl-2,5-dihydroxybenzamide;

N-(3,5-dihydroxybenzoyl) 4-carboxymethyl-2,5-dihydroxybenzamide;

N-(1,3,4,5-tetrahydroxycyclohexylcarbonyl) 3-carboxymethyl-2,5-dihydroxybenzamide;

N-(4-carboxy-2,5-dihydroxybenzoyl) 3-carboxymethyl-2,5-dihydroxy-benzamide;

N-(3-carboxy-2,5-dihydroxybenzoyl) 3-carboxymethyl-2,5-dihydroxy-benzamide;

N-(3,4-dihydroxybenzoyl) 3-carboxymethyl-2,5-dihydroxybenzamide; and

N-(3,5-dihydroxybenzoyl) 3-carboxymethyl-2,5-dihydroxybenzamide.

10. A compound according to claim 2, wherein

(A)

R_a, R_b = H;

R_1 = $COOR_4$; $(CH_2)_nCOOR_4$; R_4 = H, $C_{1\text{-}4}$alkyl, aryl$C_{1\text{-}4}$alkyl, functionalized C_1-C_6alkyl including morpholino-C_1-C_6alkyl, pyrrolidino-C_1-C_6alkyl, N-methylpiperazino-C_1-C_6alkyl, C_1-C_6acyloxymethyl,

C_1-C_6acyloxy-1-ethyl, C_1-C_6alkoxycarbonyloxymethyl, C_1-C_6alkoxycarbonyloxy-1-ethyl, (oxodioxolyl)methyl, or optionally substituted C_6-C_{10}aryl including *o*-methoxyphenyl (guaiacol ester);

R_2 = H; R_3 = R_5; and

R_5 = R_6 = $CONH(CH_2)_n$-R_9;

Or

(B)

R_a, R_b = H;

R_1 = $COOR_4$; $(CH_2)_nCOOR_4$; R_4 = H, $C_{1\text{-}4}$alkyl, aryl$C_{1\text{-}4}$alkyl, functionalized C_1-C_6alkyl including morpholino-C_1-C_6alkyl, pyrrolidino-C_1-C_6alkyl, N-methylpiperazino-C_1-C_6alkyl, C_1-C_6acyloxymethyl, C_1-C_6acyloxy-1-ethyl, C_1-C_6alkoxycarbonyloxymethyl, C_1-C_6alkoxycarbonyloxy-1-ethyl, (oxodioxolyl)methyl, or optionally substituted C_6-C_{10}aryl including *o*-methoxyphenyl (guaiacol ester);

R_3 = H; R_2 = R_5; and

R_5 = R_6 = $CONH(CH_2)_n$-R_9;

or wherein said compound is selected form the group consisting of:

4-(3,4-dihydroxyphenylmethylaminocarbonyl)-2,5-dihydroxybenzoic acid;

4-(2-(3,4-dihydroxyphenyl)ethylaminocarbonyl)-2,5-dihydroxybenzoic acid;

4-(3,5-dihydroxyphenylmethylaminocarbonyl)-2,5-dihydroxybenzoic acid;

4-((4,5-dihydroxy-3-oxocyclohex-1-enyl)methylaminocarbonyl)-2,5-dihydroxybenzoic acid;

2,5-dihydroxy-4-((3,4,5-trihydroxycyclohexyl)methylaminocarbonyl)benzoic acid;

4-(2-carboxyphenylmethylaminocarbonyl)-2,5-dihydroxybenzoic acid;

4-(3-carboxyphenylmethylaminocarbonyl)-2,5-dihydroxybenzoic acid;

4-(4-carboxyphenylmethylaminocarbonyl) 2,5-dihydroxybenzoic acid;

3-(3,4-dihydroxyphenylmethylaminocarbonyl)-2,5-dihydroxybenzoic acid;

3-(2-(3,4-dihydroxyphenyl)ethylaminocarbonyl)-2,5-dihydroxybenzoic acid;

3-(3,5-dihydroxyphenylmethylaminocarbonyl)-2,5-dihydroxybenzoic acid;

3-((4,5-dihydroxy-3-oxocyclohex-1-enyl)methylaminocarbonyl)-2,5-dihydroxybenzoic acid;

2,5-dihydroxy-3-((3,4,5-trihydroxycyclohexyl)methylaminocarbonyl)benzoic acid;

3-(2-carboxyphenylmethylaminocarbonyl)-2,5-dihydroxybenzoic acid;

3-(3-carboxyphenylmethylaminocarbonyl)-2,5-dihydroxybenzoic acid;

3-(4-carboxyphenylmethylaminocarbonyl)-2,5-dihydroxybenzoic acid;

(4-(3,4-dihydroxyphenylmethylaminocarbonyl)-2,5-dihydroxyphenyl)acetic acid;

(4-(3,5-dihydroxyphenylmethylaminocarbonyl)-2,5-dihydroxyphenyl)acetic acid;

(4-((4,5-dihydroxy-3-oxocyclohex-1-enyl)methylaminocarbonyl)-2,5-dihydroxyphenyl)acetic acid;

(2,5-dihydroxy-4-((3,4,5-trihydroxycyclohexyl)methylaminocarbonyl)phenyl)acetic acid;

(4-(2-carboxyphenylmethylaminocarbonyl)-2,5-dihydroxyphenyl)acetic acid;

(4-(3-carboxyphenylmethylaminocarbonyl)-2,5-dihydroxyphenyl)acetic acid;
(4-(4-carboxyphenylmethylaminocarbonyl)-2,5-dihydroxyphenyl)acetic acid;
(3-(3,4-dihydroxyphenylmethylaminocarbonyl)-2,5-dihydroxyphenyl)acetic acid;
(3-(3,5-dihydroxyphenylmethylaminocarbonyl)-2,5-dihydroxyphenyl)acetic acid;
(3-((4,5-dihydroxy-3-oxocyclohex-1-enyl)methylaminocarbonyl)-2,5-dihydroxyphenyl)acetic acid;
(2,5-dihydroxy-3-((3,4,5-trihydroxycyclohexyl)methylcarbonylamino)phenyl)acetic acid;
(3-(2-carboxyphenylmethylaminocarbonyl)-2,5-dihydroxyphenyl)acetic acid;
(3-(3-carboxyphenylmethylaminocarbonyl)-2,5-dihydroxyphenyl)acetic acid; and
(3-(4-carboxyphenylmethylaminocarbonyl)-2,5-dihydroxyphenyl)acetic acid.

11. The compound according to claim 2, wherein said compound is selected form the group consisting of:
N-(1,3,4,5-tetrahydroxycyclohexylcarbonyl) 4-carboxy-2,5-dihydroxybenzamide;
N-(1,3,4,5-tetrahydroxycyclohexylcarbonyl) 3-carboxy-2,5-dihydroxybenzamide;
N-(1,3,4,5-tetrahydroxycyclohexylcarbonyl) 4-carboxymethyl-2,5-dihydroxybenzamide;
N-(1,3,4,5-tetrahydroxycyclohexylcarbonyl) 3-carboxymethyl-2,5-dihydroxybenzamide;
4-((4,5-dihydroxy-3-oxocyclohex-1-enyl)methylaminocarbonyl)-2,5-dihydroxybenzoic acid;
2,5-dihydroxy-4-((3,4,5-trihydroxycyclohexyl) methylaminocarbonyl)benzoic acid;
3-(3,5-dihydroxyphenylmethylaminocarbonyl)-2,5-dihydroxybenzoic acid;
3-((4,5-dihydroxy-3-oxocyclohex-1-enyl)methylaminocarbonyl)-2,5-dihydroxybenzoic acid;
(4-((4,5-dihydroxy-3-oxocyclohex-1-enyl)methylaminocarbonyl)-2,5-dihydroxyphenyl) acetic acid;
(2,5-dihydroxy-4-((3,4,5-trihydroxycyclohexyl)methylaminocarbonyl)phenyl)acetic acid;
(3-((4,5-dihydroxy-3-oxocyclohex-1-enyl)methylaminocarbonyl)-2,5-dihydroxyphenyl) acetic acid; and
(2,5-dihydroxy-3-((3,4,5-trihydroxycyclohexyl)methylcarbonylamino)phenyl)acetic acid.

12. The compound according to claim 2, wherein:
R_a, R_b = H;
$R_1 = SO_3H$;
R_2 = H; $R_3 = R_5$; and
$R_5 = R_6 = CONH(CH_2)_n\text{-}R_9$;
or wherein said compound is selected form the group consisting of:
2-((2,5-dihydroxy-4-sulfobenzamido)methyl)benzoic acid;
3-((2,5-dihydroxy-4-sulfobenzamido)methyl)benzoic acid; and
4-((2,5-dihydroxy-4-sulfobenzamido)methyl)benzoic acid.

13. The compound according to claim 2, wherein:

(A)

R_a, R_b = H;

R_1 = $COOR_4$; $(CH_2)_nCOOR_4$; R_4 = H, $C_{1\text{-}4}$alkyl, aryl$C_{1\text{-}4}$alkyl, functionalized C_1-C_6alkyl including morpholino-C_1-C_6alkyl, pyrrolidino-C_1-C_6alkyl, N-methylpiperazino-C_1-C_6alkyl, C_1-C_6acyloxymethyl, C_1-C_6acyloxy-1-ethyl, C_1-C_6alkoxycarbonyloxymethyl, C_1-C_6alkoxycarbonyloxy-1-ethyl, (oxodioxolyl)methyl, or optionally substituted C_6-C_{10}aryl including *o*-methoxyphenyl (guaiacol ester);

R_2 = H; R_3 = R_5; and

R_5 = R_6 = $CONHCH(COOR_4)(CH_2)_kR_9$;

or

(B)

R_a, R_b = H;

R_1 = $COOR_4$; $(CH_2)_nCOOR_4$; R_4 = H, $C_{1\text{-}4}$alkyl, aryl$C_{1\text{-}4}$alkyl, functionalized C_1-C_6alkyl including morpholino-C_1-C_6alkyl, pyrrolidino-C_1-C_6alkyl, N-methylpiperazino-C_1-C_6alkyl, C_1-C_6acyloxymethyl, C_1-C_6acyloxy-1-ethyl, C_1-C_6alkoxycarbonyloxymethyl, C_1-C_6alkoxycarbonyloxy-1-ethyl, (oxodioxolyl)methyl, or optionally substituted C_6-C_{10}aryl including *o*-methoxyphenyl (guaiacol ester);

R_3 = H; R_2 = R_5; and

R_5 = R_6 = $CONHCH(COOR_4)(CH_2)_kR_9$;

or wherein said compound is selected form the group consisting of:

4-(1-carboxy-2-(3,4-dihydroxyphenyl)ethylaminocarbonyl)-2,5-dihydroxybenzoic acid;

4-(carboxy(3,4-dihydroxyphenyl)methylaminocarbonyl)-2,5-dihydroxybenzoic acid;

3-(1-carboxy-2-(3,4-dihydroxyphenyl)ethylaminocarbonyl)-2,5-dihydroxybenzoic acid

3-(carboxy(3,4-dihydroxyphenyl)methylaminocarbonyl)-2,5-dihydroxybenzoic acid;

(4-(carboxy(3,4-dihydroxyphenyl)methylaminocarbonyl)-2,5-dihydroxyphenyl)acetic acid; and

(3-(carboxy(3,4-dihydroxyphenyl)methylaminocarbonyl)-2,5-dihydroxyphenyl)acetic acid.

14. The compound according to claim 2, wherein:

(A)

R_a, R_b = H;

R_1 = $COOR_4$, $(CH_2)_nCOOR_4$, SO_3H, $(CH_2)_nSO_3H$, $CONH\text{-}R_{10}$;

R_4 = H, $C_{1\text{-}4}$alkyl, aryl$C_{1\text{-}4}$alkyl, functionalized C_1-C_6alkyl including morpholino-C_1-C_6alkyl, pyrrolidino-C_1-C_6alkyl, N-methylpiperazino-C_1-C_6alkyl, C_1-C_6acyloxymethyl, C_1-C_6acyloxy-1-ethyl, C_1-C_6alkoxycarbonyloxymethyl, C_1-C_6alkoxycarbonyloxy-1-ethyl, (oxodioxolyl)methyl, or optionally substituted C_6-C_{10}aryl including *o*-methoxyphenyl (guaiacol ester);

R_2 = H; R_3 = R_5; and

R_5 = R_7 = benzoheteroaryl substituted with at least one or more groups selected from: $COOR_4$, $(CH_2)_nCOOR_4$, SO_3H, $(CH_2)_nSO_3H$, OR_4, 5-membered N-containing heterocycles, or fluorine;

or

(B)

R_a, R_b = H;

R_1 = $COOR_4$, $(CH_2)_nCOOR_4$, SO_3H, $(CH_2)_nSO_3H$, CONH-R_{10};

R_4 = H, $C_{1\text{-}4}$alkyl, aryl$C_{1\text{-}4}$alkyl, functionalized C_1-C_6alkyl including morpholino-C_1-C_6alkyl, pyrrolidino-C_1-C_6alkyl, N-methylpiperazino-C_1-C_6alkyl, C_1-C_6acyloxymethyl, C_1-C_6acyloxy-1-ethyl, C_1-C_6alkoxycarbonyloxymethyl, C_1-C_6alkoxycarbonyloxy-1-ethyl, (oxodioxolyl)methyl, or optionally substituted C_6-C_{10}aryl including *o*-methoxyphenyl (guaiacol ester);

R_3 = H; R_2 = R_5; and

R_5= R_7 = benzoheteroaryl substituted with at least one or more groups selected from: COOR4, (CH2)nCOOR4, SO3H, (CH2)nSO3H, OR4, 5-membered N-containing heterocycles, or fluorine;

or wherein said compound is selected form the group consisting of:

2-(4-Carboxy-2,5-dihydroxyphenyl)-1H-benzo[d]imidazole-4-carboxylic acid;

Methyl 2-(4-ethoxycarbonyl-2,5-dihydroxyphenyl)-1H-benzo[d]imidazole-4-carboxylate;

2-(2,5-Dihydroxy-4-sulfophenyl)-1H-benzo[d]imidazole-4-carboxylic acid;

2-(4-Carboxy-2,5-dihydroxyphenyl)-1H-benzo[d]imidazole-5-carboxylic acid;

2-(2,5-Dihydroxy-4-sulfophenyl)-1H-benzo[d]imidazole-5-carboxylic acid;

2-(3-Carboxy-2,5-dihydroxyphenyl)-1H-benzo[d]imidazole-4-carboxylic acid;

2-(2,5-Dihydroxy-3-sulfophenyl)-1H-benzo[d]imidazole-4-carboxylic acid;

2-(3-Carboxy-2,5-dihydroxyphenyl)-1H-benzo[d]imidazole-5-carboxylic acid;

2-(2,5-Dihydroxy-3-sulfophenyl)-1H-benzo[d]imidazole-5-carboxylic acid;

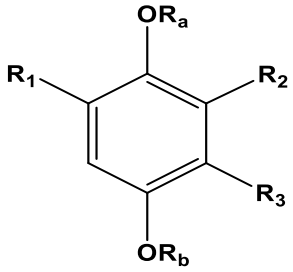
2-(4-(Carboxymethyl)-2,5-dihydroxyphenyl)-1H-benzo[d]imidazole-4-carboxylic acid;

2-(4-(Carboxymethyl)-2,5-dihydroxyphenyl)-1H-benzo[d]imidazole-5-carboxylic acid;

2-(3-(Carboxymethyl)-2,5-dihydroxyphenyl)-1H-benzo[d]imidazole-4-carboxylic acid; and

2-(3-(Carboxymethyl)-2,5-dihydroxyphenyl)-1H-benzo[d]imidazole-5-carboxylic acid.

15. The compound of formula (I), according to claim 1:



(I)

wherein:

R_a, R_b = H, $C_{1\text{-}4}$acyl, aryl$C_{1\text{-}4}$alkyl, C_6-C_{10}arylCO, $HOOC(CH_2)_nCO$, C_1-C_7alkylNHCO, phosphono, phosphonooxymethyl, C_1-C_6acyloxymethyl, C_1-C_6acyloxy-1-ethyl, C_1-C_6alkoxycarbonyloxymethyl, or C_1-C_6alkoxycarbonyloxy-1-ethyl;

$R_1 = COOR_4$, $(CH_2)_nCOOR_4$, SO_3H, $(CH_2)_nSO_3H$, or CONH-$R_{10;}$

R_2 and R_3 are H or R_5, with the proviso that when one of R_2 and R_3 is R_5, the other is H and when one of R_2 and R_3 is H, the other is R_5;

R_4 = H, $C_{1\text{-}4}$alkyl, aryl$C_{1\text{-}4}$alkyl, functionalized C_1-C_6alkyl including morpholino-C_1-C_6alkyl, pyrrolidino-C_1-C_6alkyl, N-methylpiperazino-C_1-C_6alkyl, C_1-C_6acyloxymethyl, C_1-C_6acyloxy-1-ethyl, C_1-C_6alkoxycarbonyloxymethyl, C_1-C_6alkoxycarbonyloxy-1-ethyl, (oxodioxolyl)methyl, or optionally substituted C_6-C_{10}aryl including *o*-methoxyphenyl (guaiacol ester);

$R_5 = R_8$

$R_8 = (CH_2)_mX(CH_2)_pR_{9;}$

X = O, S, SO_2, NH, NAc, or $N(CH_2)_qR_9$;

R_9 = aryl, heteroaryl, substituted with at least one or more groups selected from $COOR_4$, $(CH_2)_nCOOR_4$, $(CH_2)_nSO_3H$, OR_4, SO_3H, 5-membered N-containing heterocycles, fluorine, C=O, or NHCO-R_{10};

R_{10} = aryl, heteroaryl, substituted with at least one or more groups selected from $COOR_4$, $(CH_2)_nCOOR_4$, $(CH_2)_nSO_3H$, OR_4, SO_3H, 5-membered N-containing heterocycles, or fluorine;

wherein the aryl of R_9 and R_{10} is an aromatic group containing from 6 to 14 carbon atoms, selected among phenyl, naphthyl, or biphenyl group; and

the heteroaryl R_9 and R_{10} is an aromatic group containing 1 to 14 carbon atoms and one or more nitrogen; and

n, m, p and q are an integer independently equal to 1-4.

16. The compound according to claim 15, wherein:

(A)

R_a, R_b = H, C_{1-4}acyl, arylC_{1-4}alkyl, C_6-C_{10}arylCO, $HOOC(CH_2)_nCO$, C_1-C_7alkylNHCO, phosphono, phosphonooxymethyl, C_1-C_6acyloxymethyl, C_1-C_6acyloxy-1-ethyl, C_1-C_6alkoxycarbonyloxymethyl, or C_1-C_6alkoxycarbonyloxy-1-ethyl;

$R_1 = COOR_4$, $(CH_2)_nCOOR_4$, SO_3H, $(CH_2)_nSO_3H$, CONH-R_{10};

R_4 = H, C_{1-4}alkyl, arylC_{1-4}alkyl, functionalized C_1-C_6alkyl including morpholino-C_1-C_6alkyl, pyrrolidino-C_1-C_6alkyl, N-methylpiperazino-C_1-C_6alkyl, C_1-C_6acyloxymethyl, C_1-C_6acyloxy-1-ethyl, C_1-C_6alkoxycarbonyloxymethyl, C_1-C_6alkoxycarbonyloxy-1-ethyl, (oxodioxolyl)methyl, or optionally substituted C_6-C_{10}aryl including *o*-methoxyphenyl (guaiacol ester);

R_2 = H; $R_3 = R_5$; and

$R_5 = R_8 = (CH_2)_mX(CH_2)pR_9$;

wherein X = O, S, SO_2, NH, NAc, or $N(CH_2)_qR_9$;

or

(B)

R_a, R_b = H, C_{1-4}acyl, arylC_{1-4}alkyl, C_6-C_{10}arylCO, $HOOC(CH_2)_nCO$, C_1-C_7alkylNHCO, phosphono, phosphonooxymethyl, C_1-C_6acyloxymethyl, C_1-C_6acyloxy-1-ethyl, C_1-C_6alkoxycarbonyloxymethyl, or C_1-C_6alkoxycarbonyloxy-1-ethyl;

R1 = $COOR_4$, (CH2)nCOOR4, SO3H, $(CH_2)_nSO_3H$, CONH-R_{10};

R_4 = H, C_{1-4}alkyl, arylC_{1-4}alkyl, functionalized C_1-C_6alkyl including morpholino-C_1-C_6alkyl, pyrrolidino-C_1-C_6alkyl, N-methylpiperazino-C_1-C_6alkyl, C_1-C_6acyloxymethyl, C_1-C_6acyloxy-1-ethyl, C_1-C_6alkoxycarbonyloxymethyl, C_1-C_6alkoxycarbonyloxy-1-ethyl, (oxodioxolyl)methyl, or optionally substituted C_6-C_{10}aryl including *o*-methoxyphenyl (guaiacol ester);

R_3 = H; $R_2 = R_5$; and

$R_5 = R_8 = (CH_2)_mX(CH_2)_pR_9$;

wherein X = O, S, SO_2, NH, NAc, or $N(CH_2)_qR_9$;

or wherein said compound is selected form the group consisting of:

Bis(4-carboxy-2,5-dihydroxyphenylmethyl)amine;

4-((2,5-Dihydroxy-4-sulfophenylmethylamino)methyl)-2,5-dihydroxybenzoic acid;

4-((2,5-Dihydroxy-3-sulfophenylmethylamino)methyl)-2,5-dihydroxybenzoic acid;

Bis(2,5-dihydroxy-4-sulfophenylmethyl)amine;

N,N-Bis(4-carboxy-2,5-dihydroxyphenylmethyl)acetamide;

N-(2,5-dihydroxy-4-sulfophenylmethyl) N-(4-carboxy-2,5-dihydroxyphenylmethyl)acetamide;

N-(2,5-dihydroxy-3-sulfophenylmethyl) N-(4-carboxy-2,5-dihydroxyphenylmethyl)acetamide;

N,N-Bis(2,5-dihydroxy-4-sulfophenylmethyl)acetamide;

4-((2,5-Dihydroxy-4-carboxyphenyl)methylthiomethyl)-2,5-dihydroxybenzoic acid;

4-((2,5-Dihydroxy-4-sulfophenyl)methylthiomethyl)-2,5-dihydroxybenzoic acid;

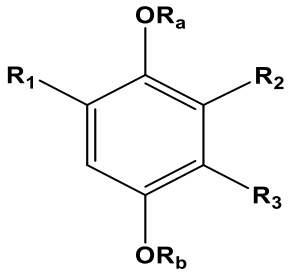
4-((2,5-Dihydroxy-3-sulfophenyl)methylthiomethyl)-2,5-dihydroxybenzoic acid;
4-((2,5-Dihydroxy-4-sulfophenyl)methylthiomethyl)-2,5-dihydroxybenzenesulfonic acid;
4-((2,5-Dihydroxy-4-carboxyphenyl)methylsulfonylmethyl)-2,5-dihydroxybenzoic acid;
4-((2,5-Dihydroxy-4-sulfophenyl)methylsulfonylmethyl)-2,5-dihydroxybenzoic acid;
4-((2,5-Dihydroxy-3-sulfophenyl)methylsulfonylmethyl)-2,5-dihydroxybenzoic acid;
4-((2,5-Dihydroxy-4-sulfophenyl)methylsulfonylmethyl)-2,5-dihydroxybenzenesulfonic acid;
4-((2,5-Dihydroxy-4-carboxyphenyl)methoxymethyl)-2,5-dihydroxybenzoic acid;
4-((2,5-dihydroxy-4-sulfophenyl)methoxymethyl)-2,5-dihydroxybenzoic acid;
4-((2,5-dihydroxy-3-sulfophenyl)methoxymethyl)-2,5-dihydroxybenzoic acid;
4-((2,5-Dihydroxy-4-sulfophenyl)methoxymethyl)-2,5-dihydroxybenzenesulfonic acid;
Tris (4-carboxy-2,5-dihydroxyphenylmethyl)amine;
Tris (4-ethoxycarbonyl-2,5-dihydroxyphenylmethyl)amine;
Bis(3-carboxy-2,5-dihydroxyphenylmethyl)amine;
3-((2,5-Dihydroxy-3-sulfophenylmethylamino)methyl)-2,5-dihydroxybenzoic acid;
3-((2,5-Dihydroxy-4-sulfophenylmethylamino)methyl)-2,5-dihydroxybenzoic acid;
Bis(2,5-dihydroxy-3-sulfophenylmethyl)amine;
N,N-Bis(3-carboxy-2,5-dihydroxyphenylmethyl)acetamide;
N-(2,5-dihydroxy-3-sulfophenylmethyl) N-(3-carboxy-2,5-dihydroxyphenylmethyl)acetamide;
N-(2,5-dihydroxy-4-sulfophenylmethyl) N-(3-carboxy-2,5-dihydroxyphenylmethyl)acetamide;
N,N-Bis(2,5-dihydroxy-3-sulfophenylmethyl)acetamide;
3-((2,5-Dihydroxy-3-carboxyphenyl)methylthiomethyl)-2,5-dihydroxybenzoic acid;
3-((2,5-Dihydroxy-3-sulfophenyl)methylthiomethyl)-2,5-dihydroxybenzoic acid;
3-((2,5-Dihydroxy-4-sulfophenyl)methylthiomethyl)-2,5-dihydroxybenzoic acid;
3-((2,5-Dihydroxy-3-sulfophenyl)methylthiomethyl)-2,5-dihydroxybenzenesulfonic acid;
3-((2,5-Dihydroxy-3-carboxyphenyl)methylsulfonylmethyl)-2,5-dihydroxybenzoic acid;
3-((2,5-Dihydroxy-3-sulfophenyl)methylsulfonylmethyl)-2,5-dihydroxybenzoic acid;
3-((2,5-Dihydroxy-4-sulfophenyl)methylsulfonylmethyl)-2,5-dihydroxybenzoic acid;
3-((2,5-Dihydroxy-3-sulfophenyl)methylsulfonylmethyl)-2,5-dihydroxybenzenesulfonic acid;
3-((2,5-Dihydroxy-3-carboxyphenyl)methoxymethyl)-2,5-dihydroxybenzoic acid;
3-((2,5-dihydroxy-3-sulfophenyl)methoxymethyl)-2,5-dihydroxybenzoic acid;
3-((2,5-dihydroxy-4-sulfophenyl)methoxymethyl)-2,5-dihydroxybenzoic acid;
3-((2,5-Dihydroxy-3-sulfophenyl)methoxymethyl)-2,5-dihydroxybenzenesulfonic acid;
Methyl 3-((2,5-diacetoxy-3-methoxycarbonylphenyl)methylsulfonylmethyl)-2,5-diacetoxybenzoate;
Methyl 3-((2,5-dihydroxy-3-methoxycarbonylphenyl)methylsulfonylmethyl)-2,5-hydroxybenzoate;

2-Morpholinoethyl 3-((2,5-dihydroxy-3-(2-morpholinoethoxycarbonyl)phenyl)methylsulfonylmethyl)-2,5-hydroxybenzoate;

Tris (3-carboxy-2,5-dihydroxyphenylmethyl)amine; and

Tris (3-ethoxycarbonyl-2,5-dihydroxyphenylmethyl)amine.

17. The compound according to claim 2, having the formula (I):



(I)

wherein:

R_a, R_b = H;

R1 = $COOR_4$;

R_2 = H;

R_3 = R_8;

R_4 = H;

R_8 = $(CH_2)_mX(CH_2)_pR_9$;

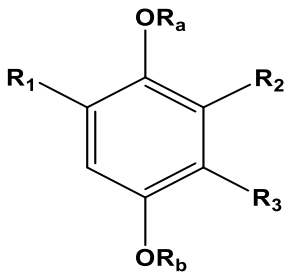
R_9 = phenyl substituted with $COOR_4$ and with OR_4;

X = $N(CH_2)_qR_9$; and

m, p and q = 1; and

wherein said compound is Tris (4-carboxy-2,5-dihydroxyphenylmethyl)amine.

18. The compound according to claim 2, having the formula (I):



(I)

wherein:

R_a, R_b = H;

$R_1 = COOR_4$;

$R_2 = (CH_2)_mX(CH_2)_pR_9$

$R_3 = H$;

R_9 = phenyl substituted with $COOR_4$ and with OR_4;

$R_4 = H$;

$X = SO_2$; and

m and p = 1;

and said compound is 3-((2,5-Dihydroxy-3-carboxyphenyl)methylsulfonylmethyl)-2,5-dihydroxybenzoic acid.

19. A pharmaceutical composition comprising a therapeutically effective amount of the compound according to any one of claims 1-18 or a pharmaceutically acceptable salt, or stereoisomer thereof, and a pharmaceutically acceptable excipient.

20. The compound according to any one of the claims 1-19 for use in a method of treating and/or preventing acute pancreatic, Pancreatic and Kidney cancer, Diabetic Retinopathy, peritonitis, diabetes and diabetic wound healing, diabetic retinopathy Diabetic Macular Edema and diabetic nephropathy, Diabetic Kidney Disease, and Pulmonary Fibrosis.

21. Intermediates in the synthesis of compounds according to claim 2, said intermediates being chosen among 2,5-bis(benzyloxy)-4-(ethoxycarbonyl)benzoic acid; 2,5-bis(benzyloxy)isophthalaldehyde; 2,5-bis(benzyloxy)isophthalic acid; ethyl 2,5-bis(benzyloxy)-4-(hydroxymethyl)benzoate; or ethyl 2,5-bis(benzyloxy)-3-(hydroxymethyl)benzoate.