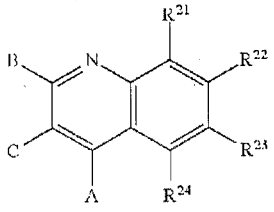
We claim:

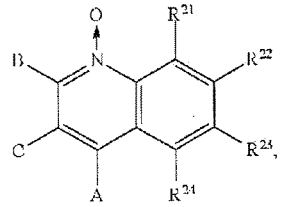
1. A compound having a structural Formula (IIIa) or (IIIa'),

(IIIa)



or

(IIIa')



or a tautomer, and/or salt thereof, wherein:

A is $—NH_2$;

B is hydrogen, alkyl, —CN, $—OR^4$, $—S(O)_aR^4$, $—NR^4R^5$, $—C(O)NR^4R^5$, $—CO_2R^4$, $—NR^4CO_2R^5$, $—NR^4C(O)NR^5R^6$, $—NR^4C(S)NR^5R^6$, $—NR^4C(=NH)NR^5R^6$, $—SO_2NR^4R^5$, $—NR^4SO_2R^5$, $—NR^4SO_2NR^5R^6$, $—B(OR^4)(OR^5)$, $—P(O)(OR^4)(OR^5)$, or $—P(O)(R^4)(OR^5)$;

C is $—CO_2R^7$;

a is 0, 1 or 2;

R^4, R^5, R^6, and R^7 are independently hydrogen, alkyl, substituted alkyl, aryl, substituted aryl, arylalkyl, substituted arylalkyl, acyl, substituted acyl, heteroalkyl, substituted heteroalkyl, heteroaryl, substituted heteroaryl, heteroarylalkyl or substituted heteroarylalkyl; or alternatively, R^4 and R^5, or $R^5$and R^6, together with the atoms to which they are bonded, form a cycloheteroalkyl or substituted cycloheteroalkyl ring

R^{21} is hydrogen;

R^{22} is hydrogen, alkyl, substituted alkyl, halo, —CN, or $—OR^{27}$;

R^{23} is hydrogen, alkyl, substituted alkyl, —CN, $—OR^{29}$, $—S(O)_fR^{29}$, $—OC(O)R^{29}$, $—NR^{29}R^{30}$, $—C(O)NR^{29}R^{30}$, $—C(O)R^{29}$, $—CO_2R^{29}$, $—SO_2NR^{29}R^{30}$, or $—NR^{29}SO_2R^{30}$;

R^{24} is $—O\text{-}L^1\text{-}L^2\text{-}R^{33}$ or $—OR^{33}$;

L^1 is alkylene or substituted alkylene;

L^2 is —NR^{34}—,—O—, —S—, —NR^{34}—C(O)—, —C(O)—NR^{34}—, —O—C(O)—, —C(O)—O—, —NR^{34}—C(O)—O—, —O—C(O)—NR^{34}—,—NR^{34}—C(O)—NR^{35}—, —O—C(O)—O—,-heterocyclylene-C(O)—, or -(substituted heterocyclylene)-C(O)—;

R^{33} is alkyl, substituted alkyl, carbocyclyl, substituted carbocyclyl; aryl, substituted aryl, arylalkyl, substituted arylalkyl, heterocyclyl, substituted heterocyclvl, heteroalkyl, substituted heteroalkyl, heteroaryl, substituted heteroaryl, heteroarylalkyl, or substituted heteroarylalkyl;

R^{34} and R^{35} are independently hydrogen, alkyl, substituted alkyl, carbocyclyl, substituted carbocyclyl; aryl, substituted aryl, arylalkyl, substituted arylalkyl, heterocyclyl, substituted heterocyclyl, heteroalkyl, substituted heteroalkyl, heteroaryl, substituted heteroaryl, heteroarylalkyl, or substituted heteroarylalkyl;

f and g are independently 0, 1 or 2; and

R^{27}, R^{29}, and R^{30} are independently hydrogen, or alkyl;

wherein heteroaryl is a monovalent heteroaromatic radical derived by the removal of one hydrogen atom from a single atom of a parent heteroaromatic ring systems;

wherein substituted, when used to modify a specified group or radical, means that one or more hydrogen atoms of the specified group or radical are each independently replaced with one or more substituent group(s);

wherein substituent groups on saturated carbon atoms in the substituted group or radical include one or more of —R^a, halo, —O^-, =O, —OR^b, —SR^b, —S^-, =S, —NR^cR^c, =NR^b, =N—OR^b, trihalomethyl, —CF_3, —CN, —OCN, —SCN, —NO, —NO_2, =N_2, —N_3, —$S(O)_2R^b$, —$S(O)_2NR^b$, —$S(O)_2O^-$, —$S(O)_2OR^b$, —$OS(O)_2R^b$, —$OS(O)_2O^-$, —$OS(O)_2OR^b$, —$P(O)(O^-)_2$, —$P(O)(OR^b)(O^-)$, —$P(O)(OR^b)(OR^b)$, —$C(O)R^b$, —$C(S)R^b$, —$C(NR^b)R^b$, —$C(O)O^-$, —$C(O)OR^b$, —$C(S)OR^b$, —$C(O)NR^cR^c$, —$C(NR^b)NR^cR^c$, —$OC(O)R^b$, —$OC(S)R^b$, —$OC(O)O^-$, —$OC(O)OR^b$, —$OC(S)OR^b$, —$NR^bC(O)R^b$, —$NR^bC(S)R^b$, —$NR^bC(O)O^-$, —$NR^bC(O)OR^b$, —$NR^bC(S)OR^b$, —$NR^bC(O)NR^cR^c$, —$NR^bC(NR^b)R^b$ or —$NR^bC(NR^b)NR^cR^c$,

wherein each R^a is independently selected from the group consisting of alkyl, cycloalkyl, heteroalkyl, cycloheteroalkyl, aryl, arylalkyl, heteroaryl and heteroarylalkyl; each R^b is independently hydrogen or R^a; and each R^c is independently R^b or alternatively, the two R^cs may be taken together with the nitrogen atom to which they are bonded form a 4-, 5-, 6- or 7-membered cycloheteroalkyl which may optionally include from 1 to 4 of the same or different additional heteroatoms selected from the group consisting of O, N and S;

wherein the one or more substituent groups, taken together with the atoms to which they are bonded, may form a cyclic ring including cycloalkyl and cycloheteroalkyl;

wherein substituent groups on unsaturated carbon atoms in the specified group or radical include —R^a, halo, —O^-, —OR^b, —SR^b, —S^-, —NR^cR^c, trihalomethyl, —CF_3, —CN, —OCN, —SCN, —NO, —NO_2, —N_3, —$S(O)_2R^b$, —$S(O)_2O^-$, —$S(O)_2OR^b$, —$OS(O)_2R^b$, —$OS(O)_2O^-$, —$OS(O)_2OR^b$, —$P(O)(O^-)_2$, —$P(O)(OR^b)(O^-)$, —$P(O)(OR^b)(OR^b)$, —$C(O)R^b$, —$C(S)R^b$, —$C(NR^b)R^b$, —$C(O)O^-$, —$C(O)OR^b$, —$C(S)OR^b$, —$C(O)NR^cR^c$, —$C(NR^b)NR^cR^c$, —$OC(O)R^b$, —$OC(S)R^b$, —$OC(O)O^-$, —$OC(O)OR^b$, —$OC(S)OR^b$, —$NR^bC(O)R^b$, —$NR^bC(S)R^b$, —$NR^bC(O)O^-$, —$NR^bC(O)OR^b$, —$NR^bC(S)OR^b$, —$NR^bC(O)NR^cR^c$, —$NR^bC(NR^b)R^b$ or —$NR^bC(NR^b)NR^cR^c$;

wherein substituent groups on nitrogen atoms in heteroatom-containing groups include —R^a, —O^-, —OR^b, —SR^b, —S^-, —NR^cR^c, trihalomethyl, —CF_3, —CN, —NO, —NO_2, —$S(O)_2R^b$, —$S(O)_2O^-$, —$S(O)_2OR^b$, —$OS(O)_2R^b$, —$OS(O)_2O^-$, —$OS(O)_2OR^b$, —$P(O)(O^-)_2$, —$P(O)(OR^b)(O^-)$, —$P(O)(OR^b)(OR^b)$, —$C(O)R^b$, —$C(S)R^b$, —$C(NR^b)R^b$, —$C(O)OR^b$, —$C(S)OR^b$, —$C(O)NR^cR^c$, —$C(NR^b)NR^cR^c$, —$OC(O)R^b$, —$OC(S)R^b$, —$OC(O)OR^b$, —$OC(S)OR^b$, —$NR^bC(O)R^b$, —$NR^bC(S)R^b$, —$NR^bC(O)OR^b$, —$NR^bC(S)OR^b$, —$NR^bC(O)NR^cR^c$, —$NR^bC(NR^b)R^b$ or —$NR^bC(NR^b)NR^cR^c$; and

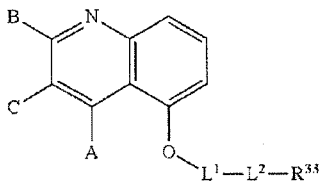
wherein substituents used to substitute a specified group can be further substituted with one or more of the same or different substituent groups.

2. The compound of claim 1, wherein R^{21}, R^{22}, and R^{23} are all hydrogen.

3. The compound of claim 1, wherein R^{21} and R^{22} are all hydrogen.

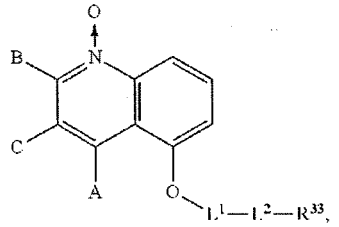
4. The compound of claim 1 having a structural Formula (IIIb) or (IIIb'),

(IIIb)



or

(IIIb')



or a tautomer, and/or salt thereof; wherein

L^1 is alkylene or substituted alkylene;

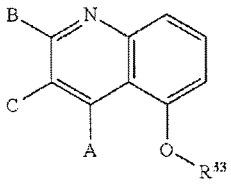
L^2 is —NR^{34}—, —O—, —S—, —NR^{34}—C(O)—, —C(O)—NR^{34}—, —O—C(O)—, —C(O)—O—, —NR^{34}—C(O)—O—, —O—C(O)—NR^{34}—,—NR^{34}—C(O)—NR^{35}—, —O—C(O)—O—, -heterocyclylene-C(O)—, or -(substituted heterocyclylene)-C(O)—;

R^{33} is alkyl, substituted alkyl, carbocyclyl, substituted carbocyclyl; aryl, substituted aryl, arylalkyl, substituted arylalkyl, heterocyclyl, substituted heterocyclyl, heteroalkyl, substituted heteroalkyl, heteroaryl, substituted heteroaryl, heteroarylalkyl, or substituted heteroarylalkyl; and

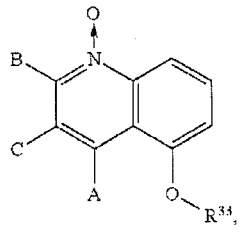
R^{34} and R^{35} are independently hydrogen, alkyl, substituted alkyl, carbocyclyl, substituted carbocyclyl; aryl, substituted aryl, arylalkyl, substituted arylalkyl, heterocyclyl, substituted heterocyclyl, heteroalkyl, substituted heteroalkyl, heteroaryl, substituted heteroaryl, heteroarylalkyl, or substituted heteroarylalkyl.

5. The compound of claim 1 having a structural Formula (IIIc), or (IIIc'),

(IIIc)



or



or a tautomer, and/or salt, thereof; wherein

R^{33} is alkyl, substituted alkyl, carbocyclyl, substituted carbocyclyl; aryl, substituted aryl, arylalkyl, substituted arylalkyl, heterocyclyl, substituted heterocyclyl, heteroalkyl, substituted heteroalkyl, heteroaryl, substituted heteroaryl, heteroarylalkyl, or substituted heteroarylalkyl.

6. The compound of claim 5, wherein

R^{33} is alkyl, substituted alkyl, carbocyclyl, substituted carbocyclyl; heterocyclyl, substituted heterocyclyl, heteroalkyl, or substituted heteroalkyl.

7. The compound of claim 4, wherein

A is $—NH_2$;

B is hydrogen, or alkyl;

C is $—CO_2R^7$;

L^1 is alkylene or substituted alkylene;

L^2 is $—NR^{34}—$, —O—, $—NR^{34}—C(O)—$, $—C(O)—NR^{34}—$, —O—C(O)—, —C(O)—O—, -hetercyclylene-C(O)—, or -(substituted hetercyclylene)-C(O)—;

R^{33} is alkyl, substituted alkyl, carbocyclyl, substituted carbocyclyl; aryl, substituted aryl, arylalkyl, substituted arylalkyl, heterocyclyl, substituted heterocyclyl, heteroalkyl, substituted heteroalkyl, heteroaryl, substituted heteroaryl, heteroarylalkyl, or substituted heteroarylalkyl; and

R^{34} and R^{35} are independently hydrogen, alkyl, or substituted alkyl.

8. The compound of claim 5, wherein

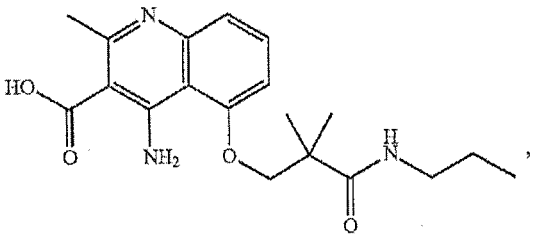
A is $—NH_2$;

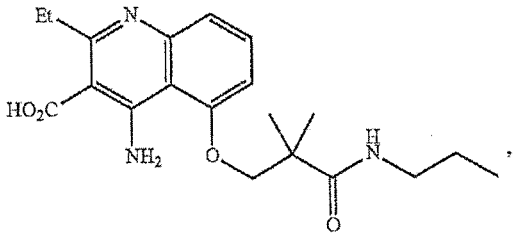
B is hydrogen, or alkyl;

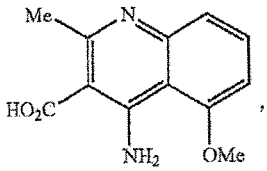
C is $—CO_2R^7$;

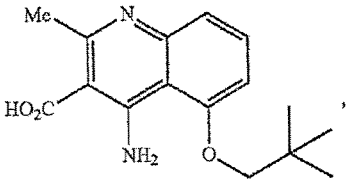
R^{33} is alkyl, substituted alkyl, carbocyclyl, substituted carbocyclyl; heterocyclyl, substituted heterocyclyl, heteroalkyl, or substituted heteroalkyl.

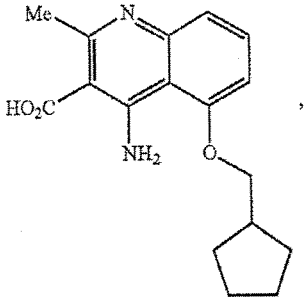
9. The compound of claim 1, which is selected from the group consisting of

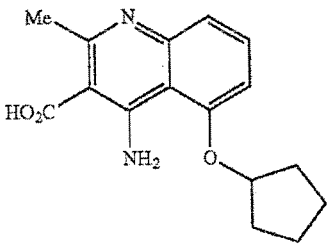


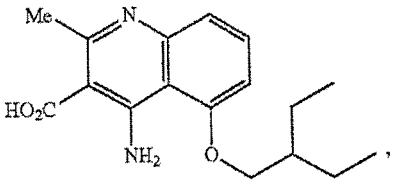


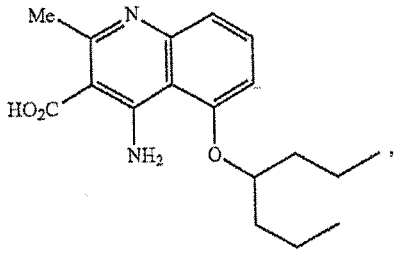


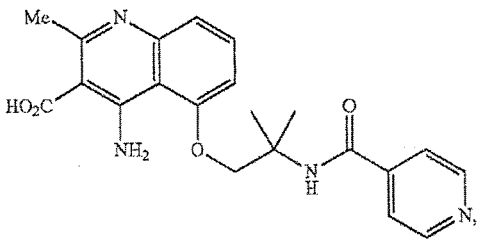


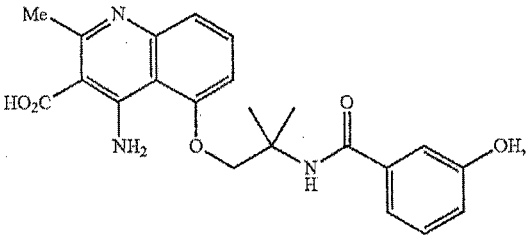


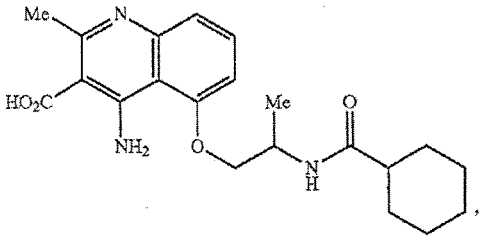


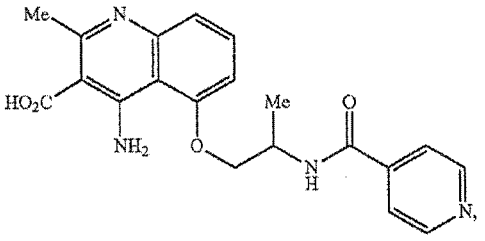


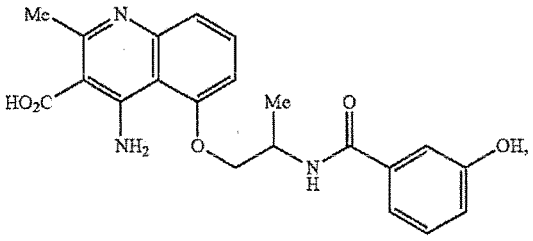


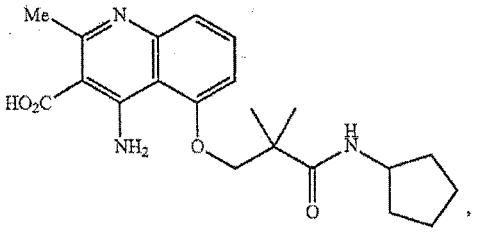


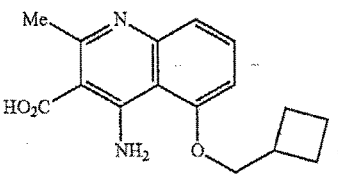


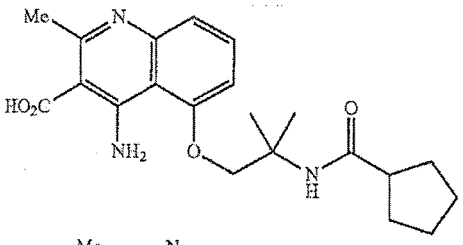


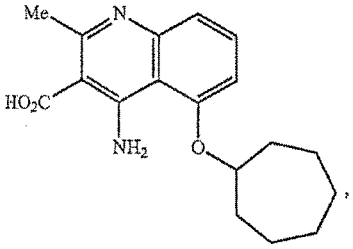


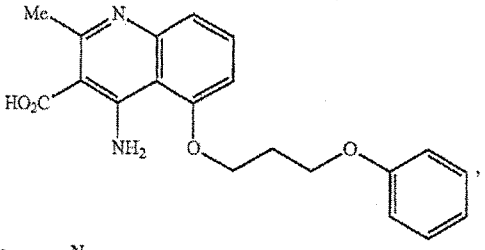


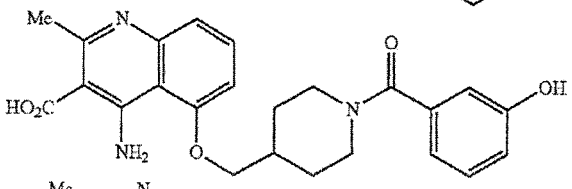


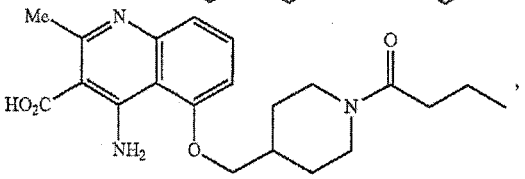


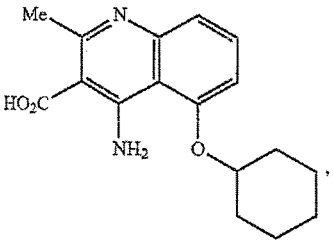


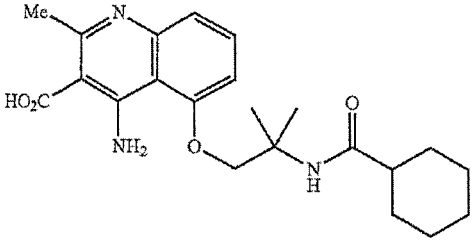


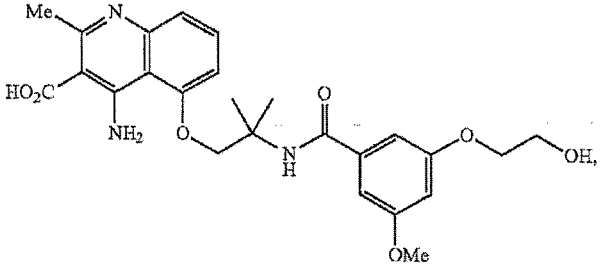


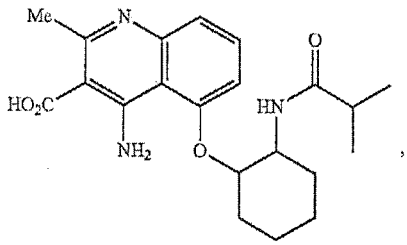


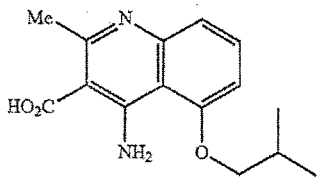


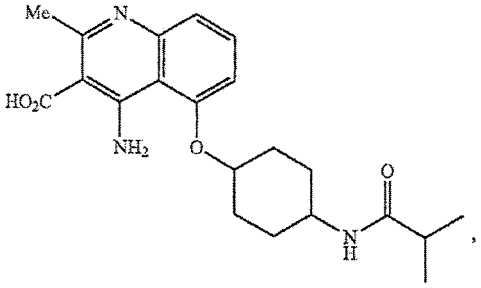


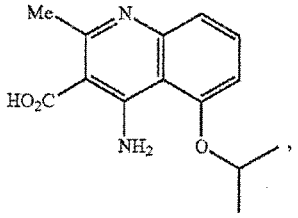


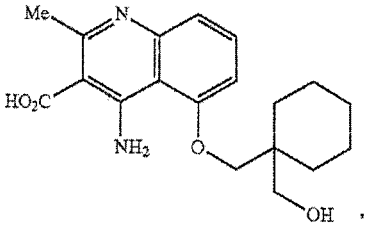


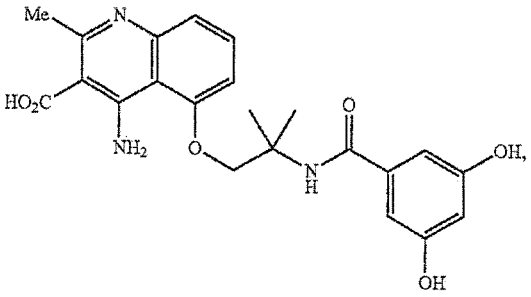


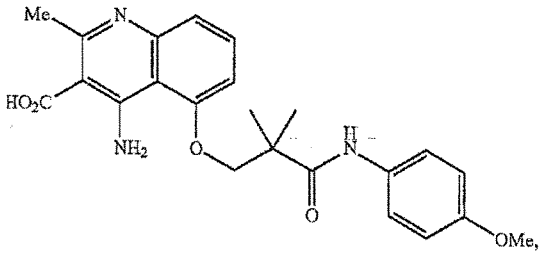


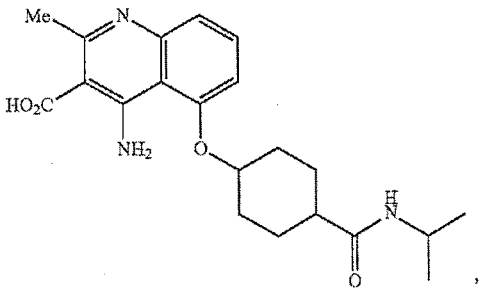


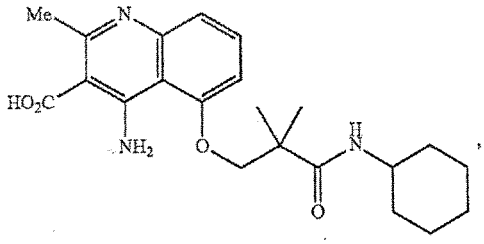


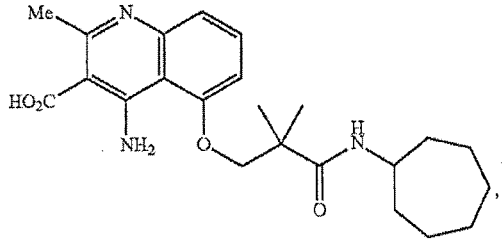


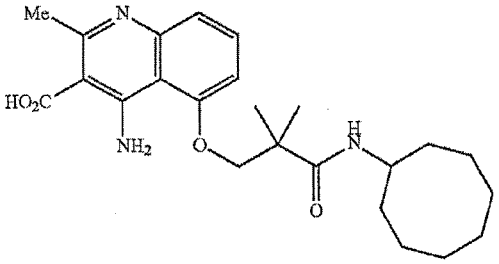


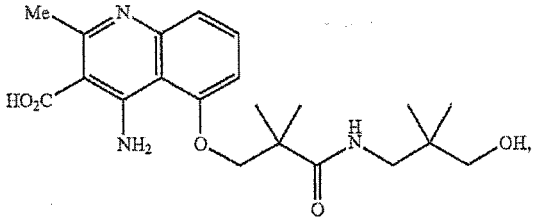


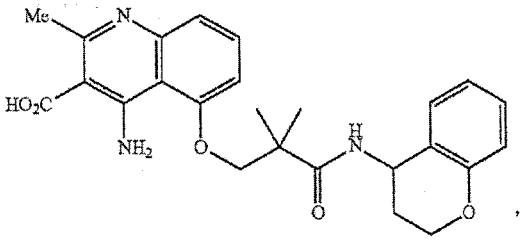


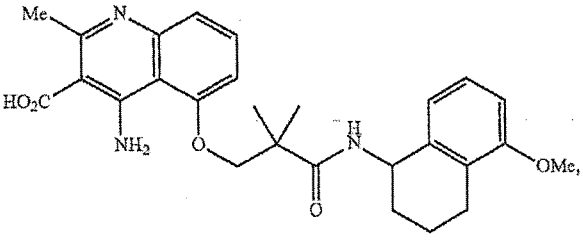


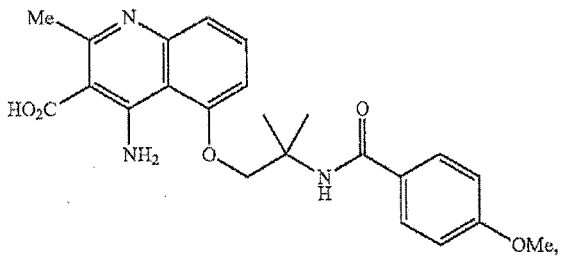


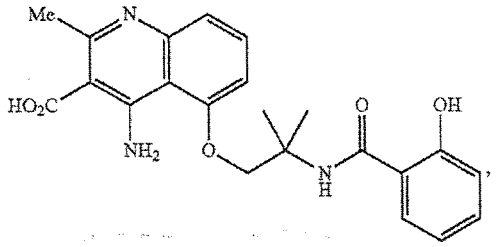


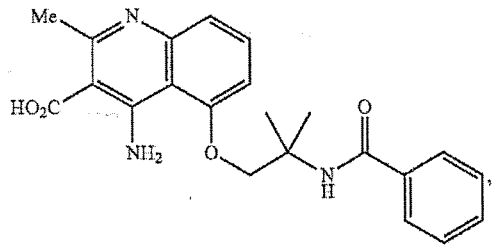


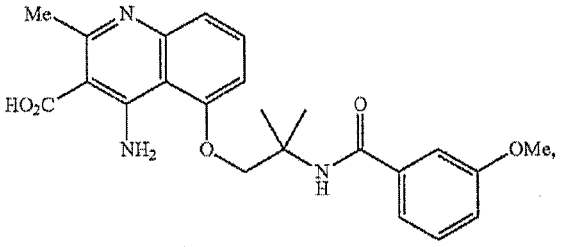


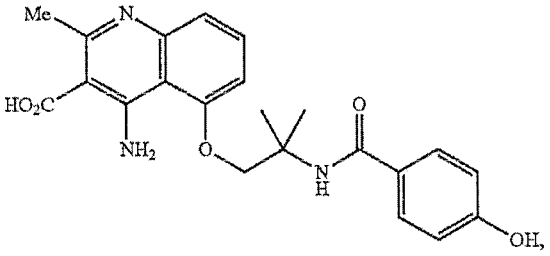


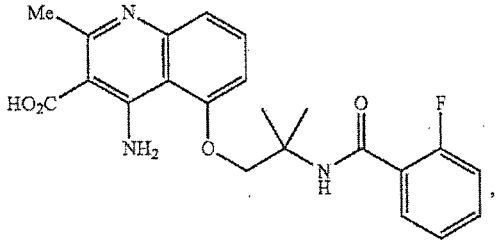


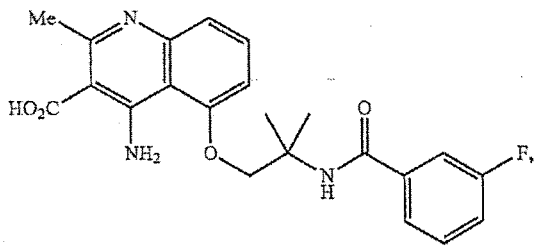


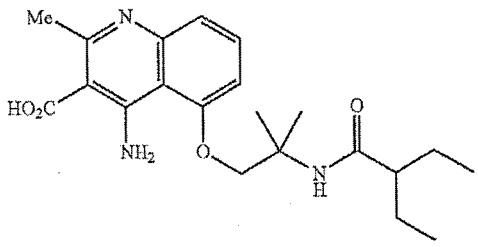


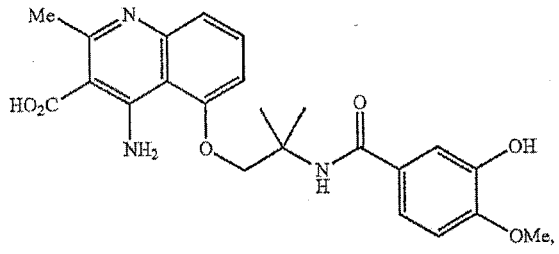


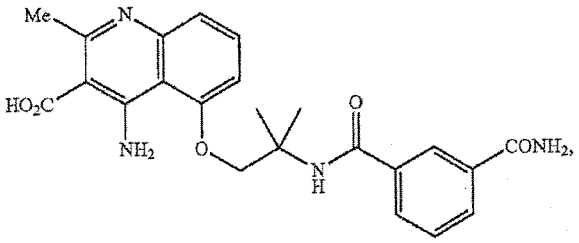


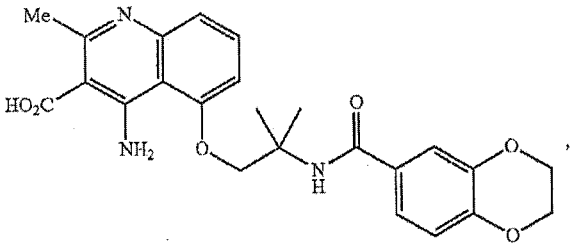


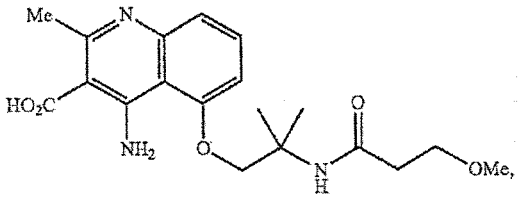


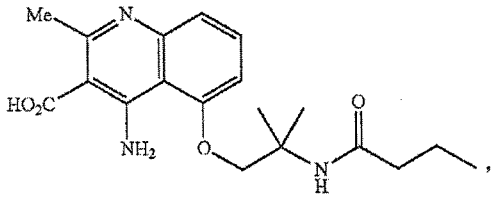


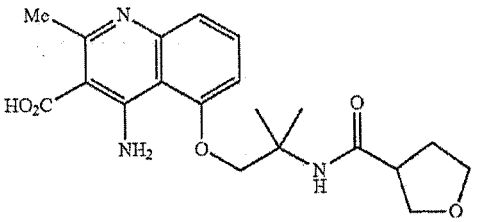


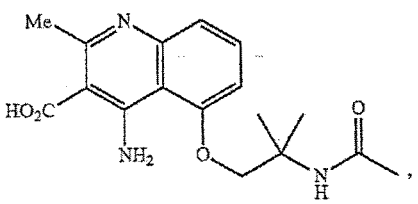


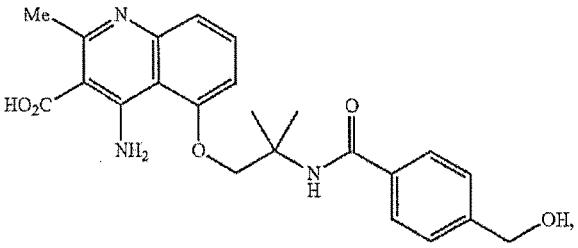


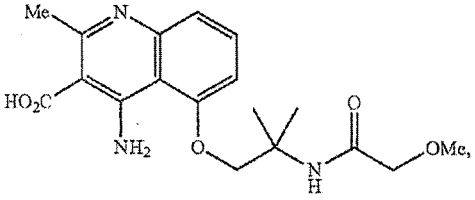


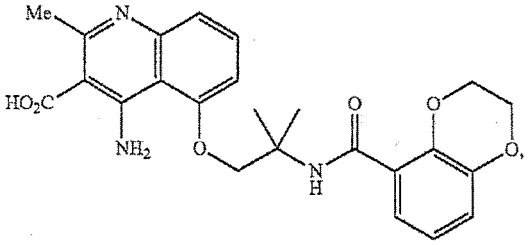


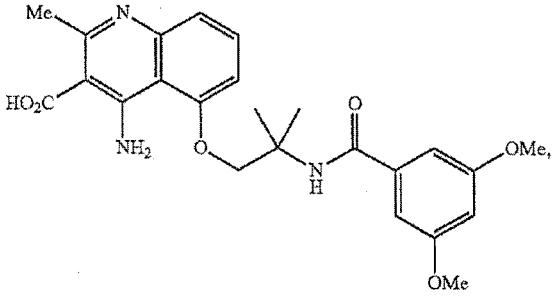


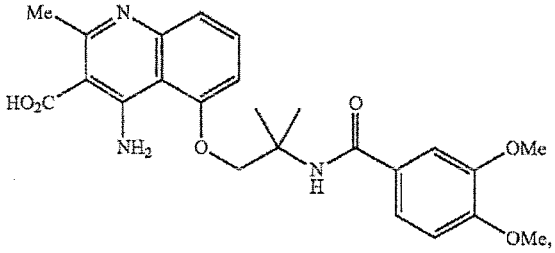


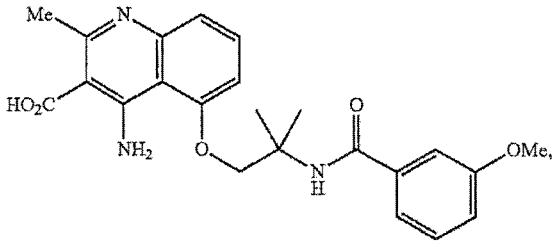


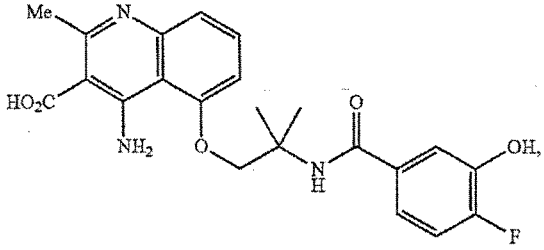


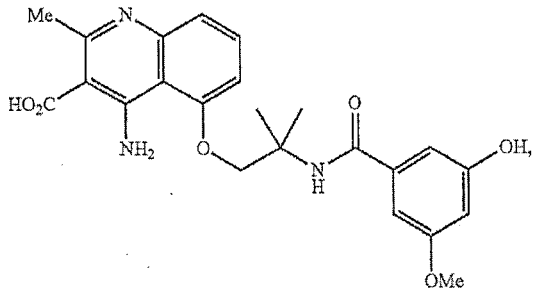


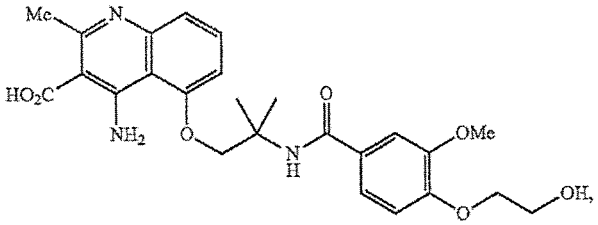


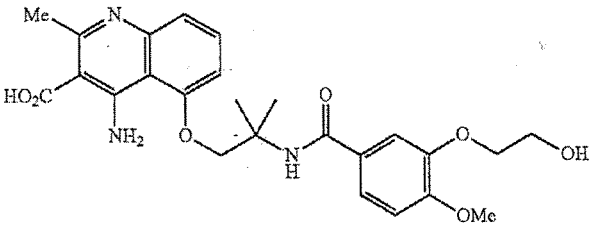


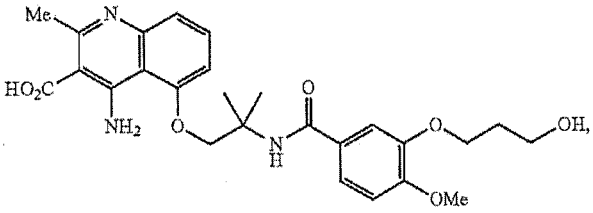


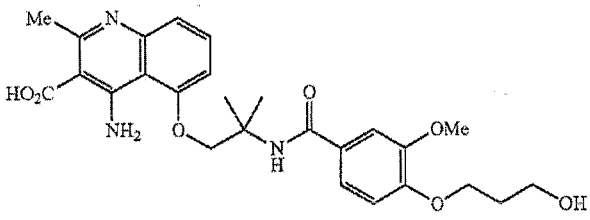


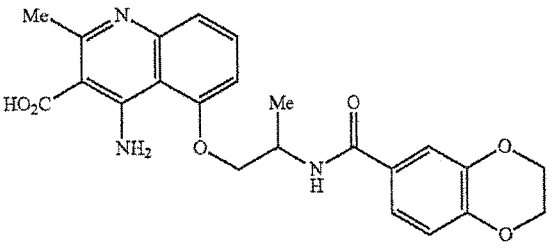


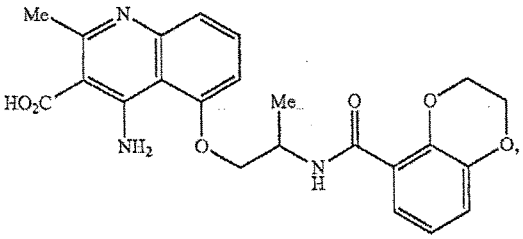


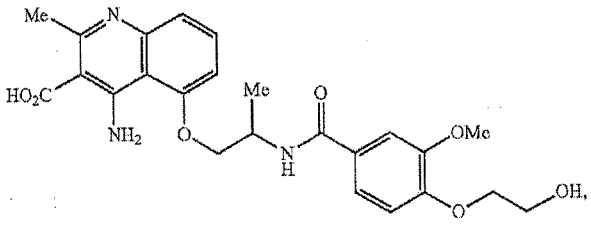


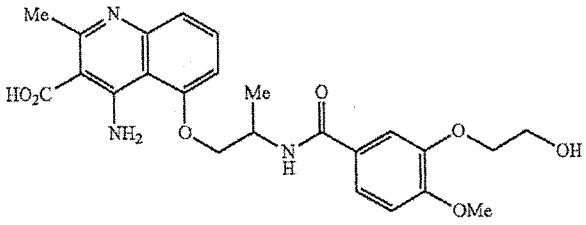


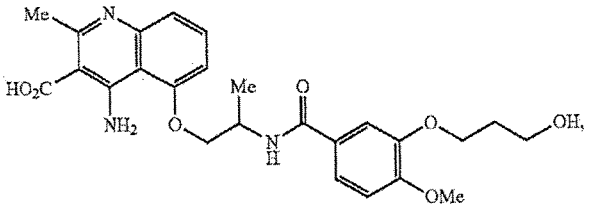


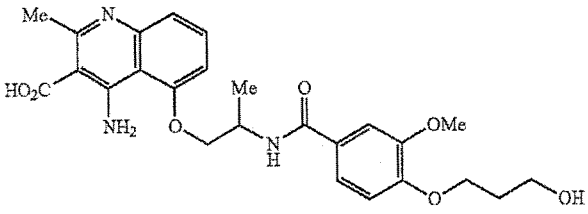


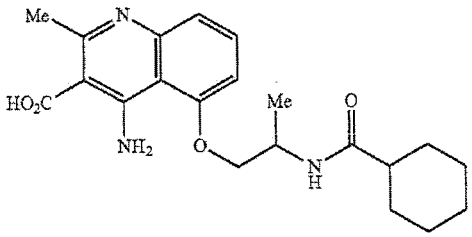


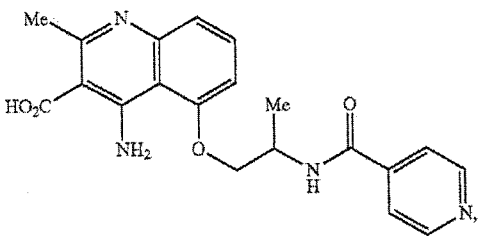


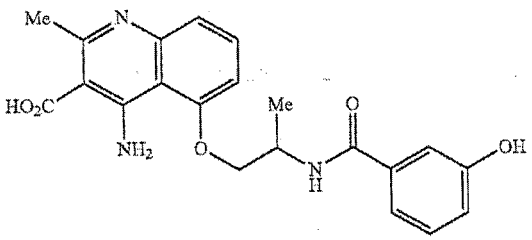


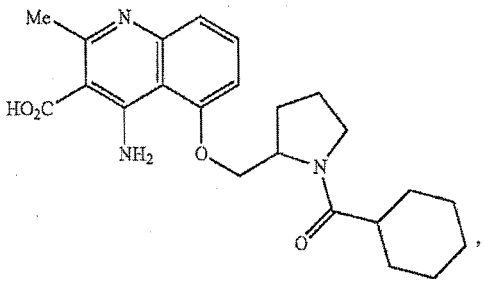


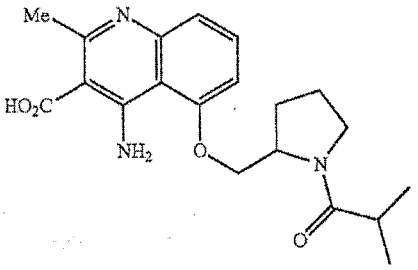


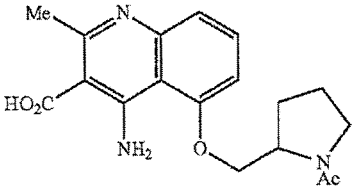


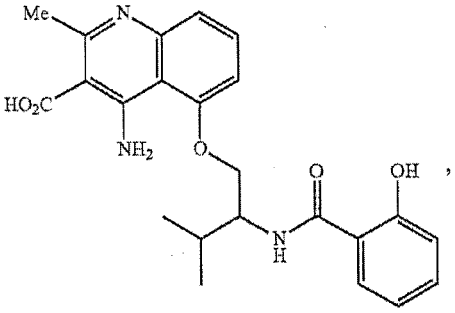


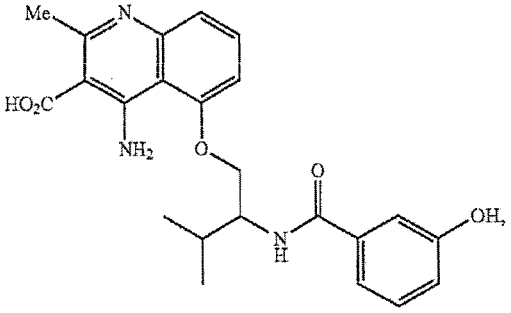


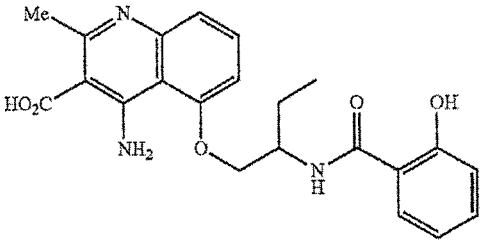


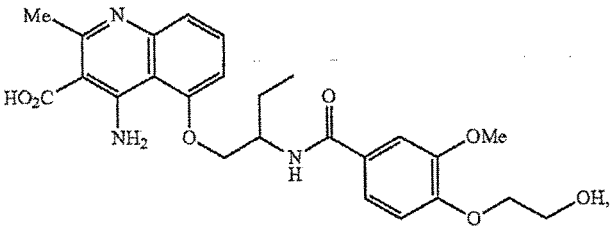


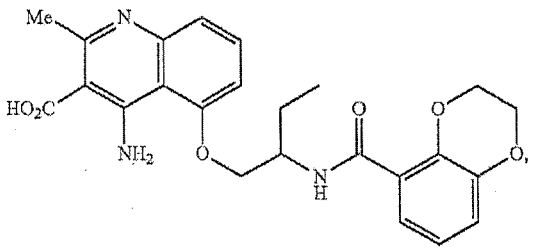


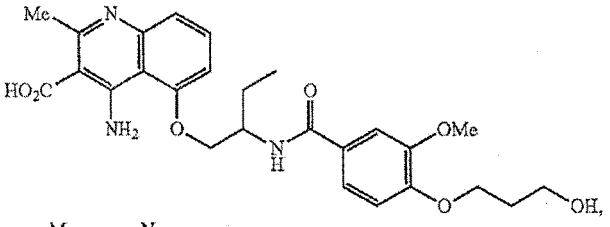


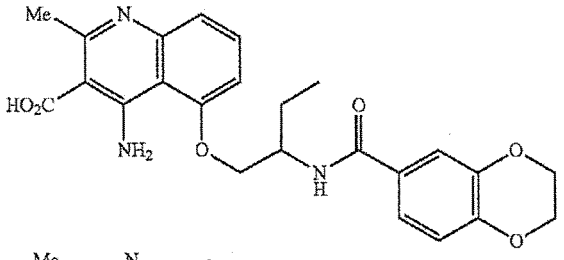


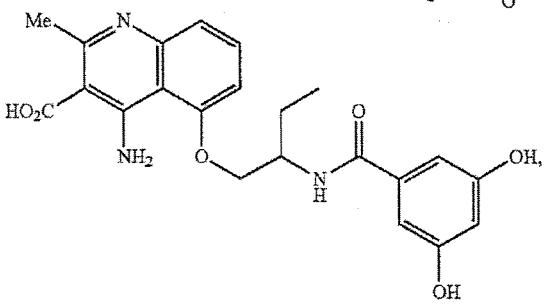


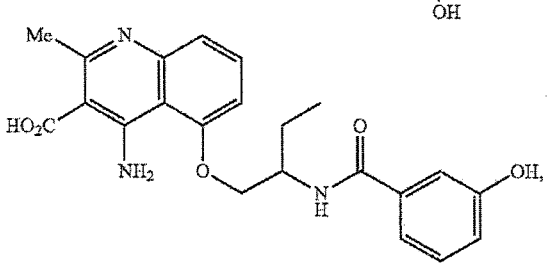


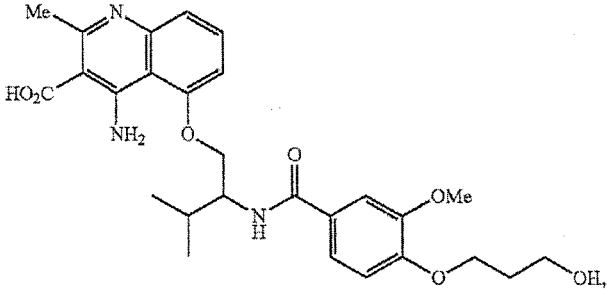


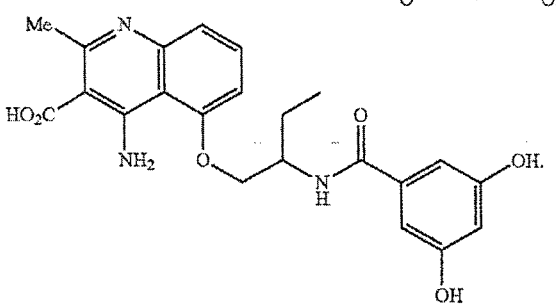


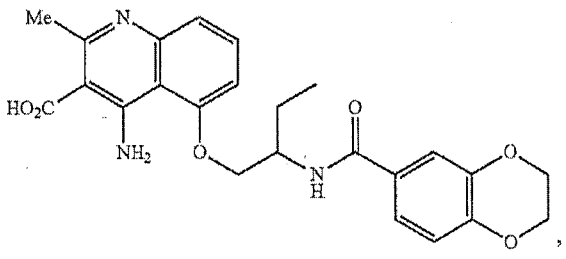


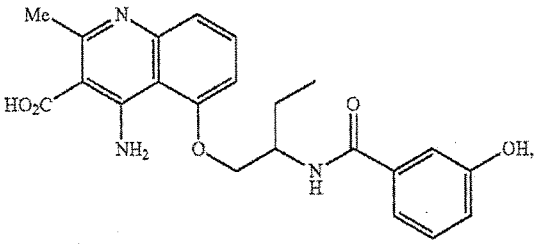


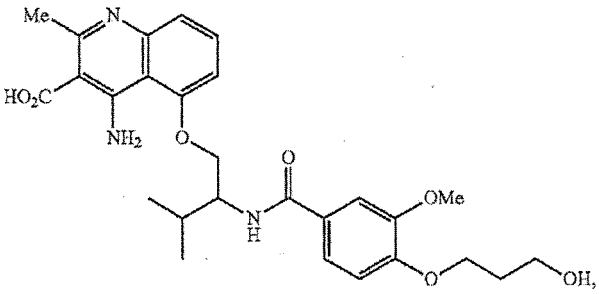


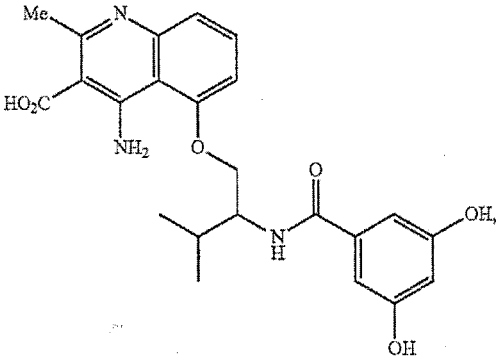


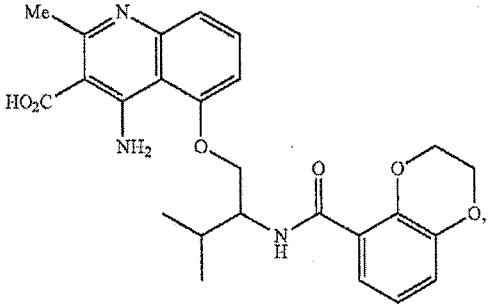


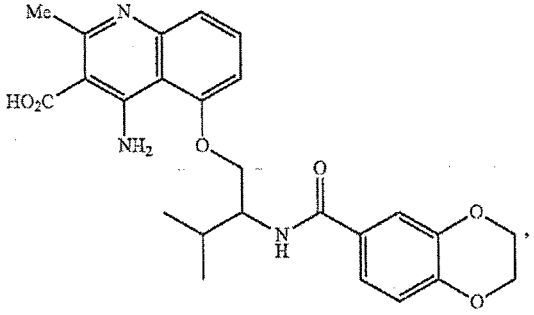


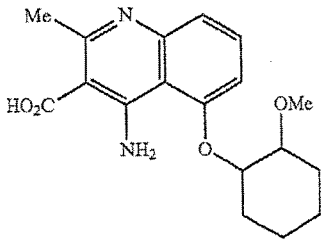


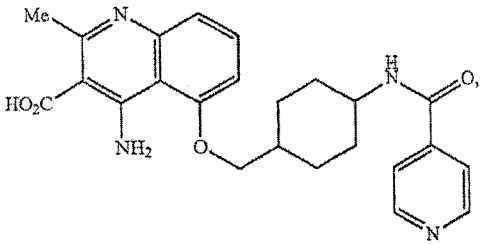


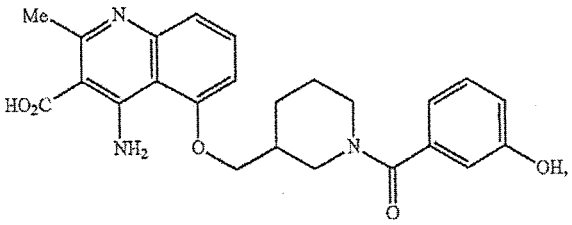


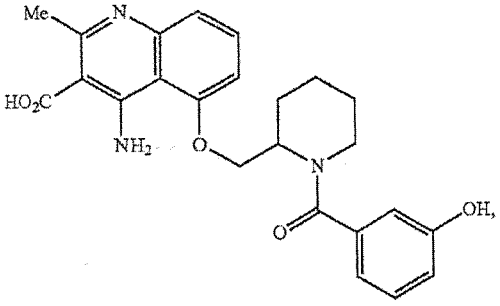


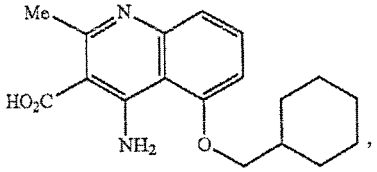


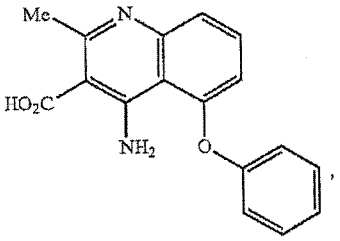


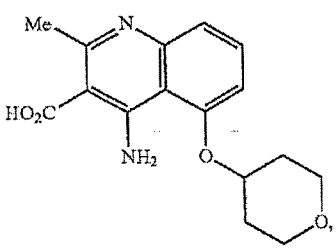


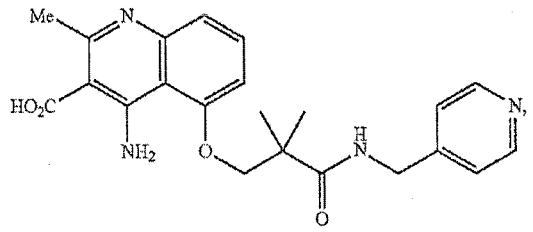


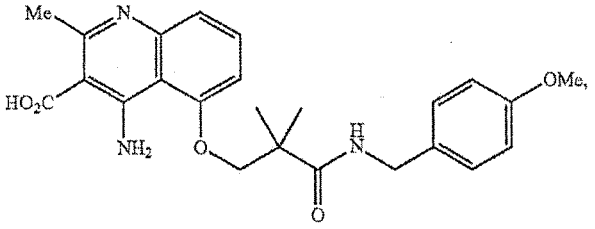


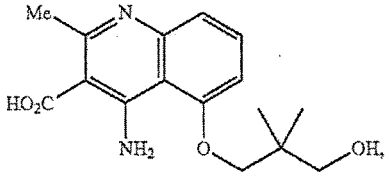


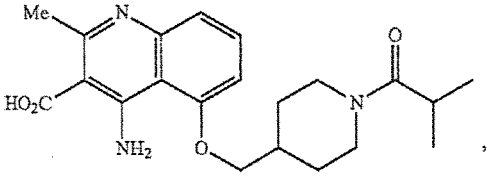


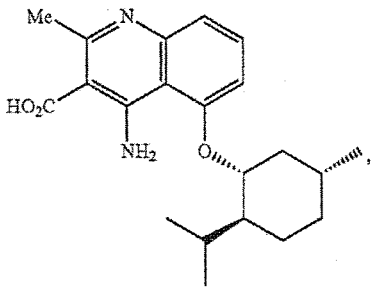


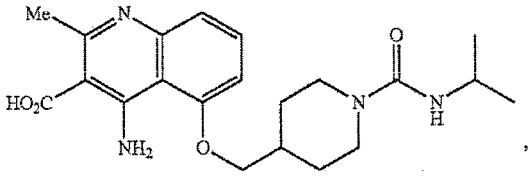


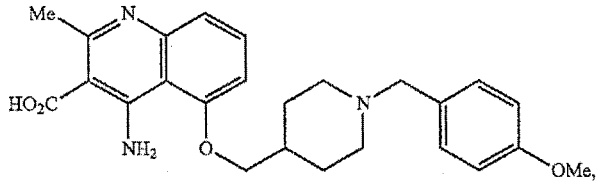


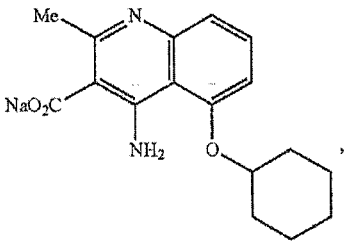


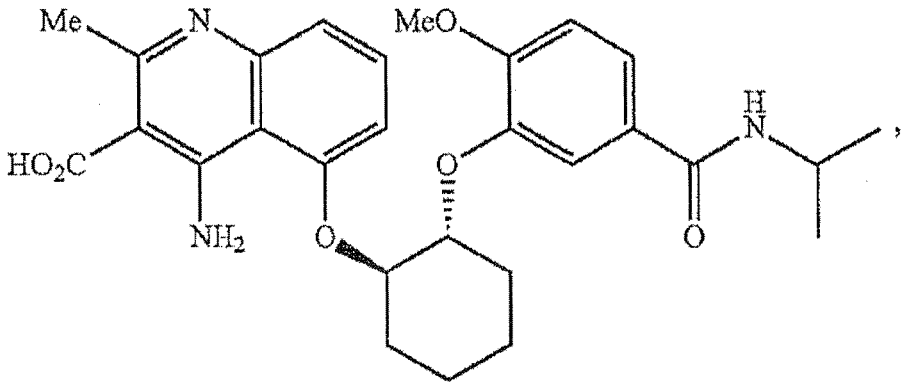


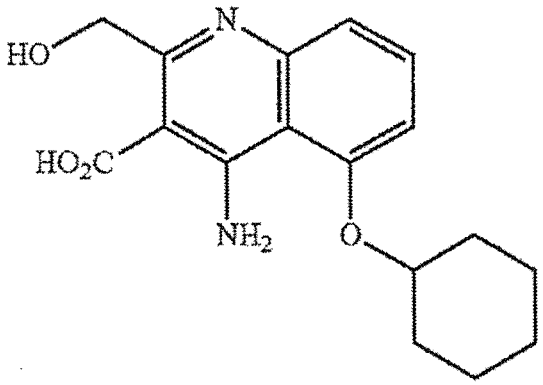


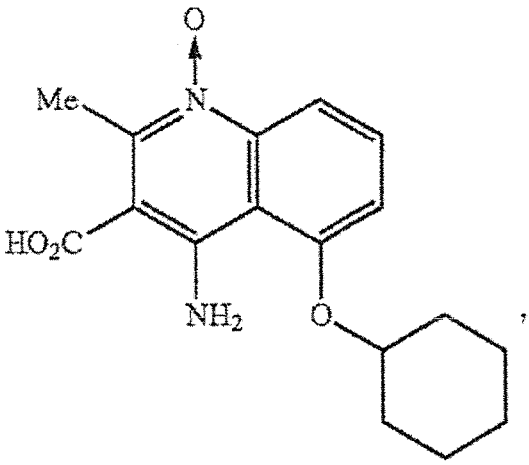


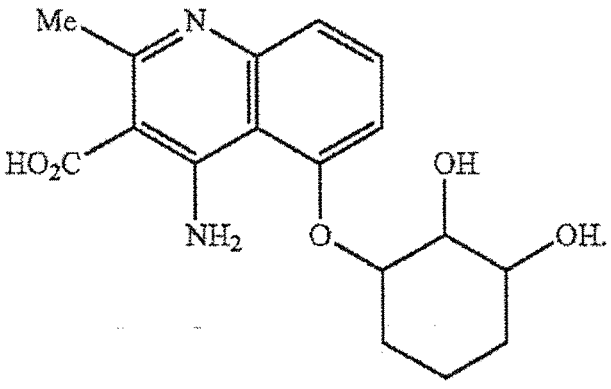




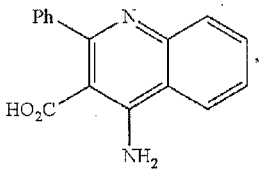


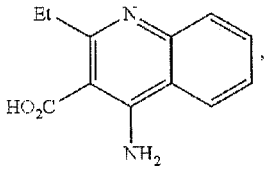


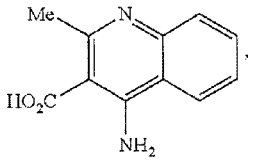


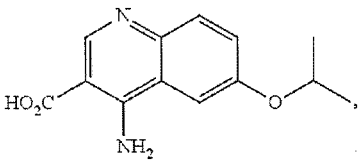


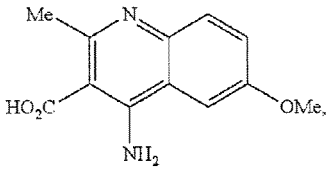
10. A compound selected from the group consisting of

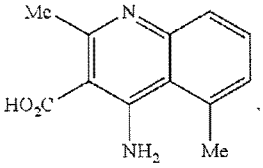


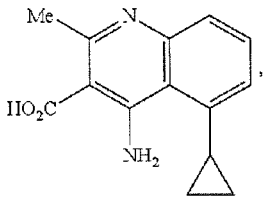


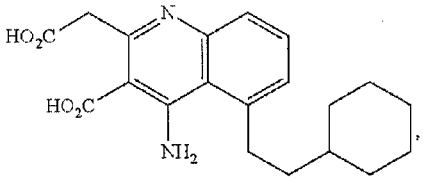


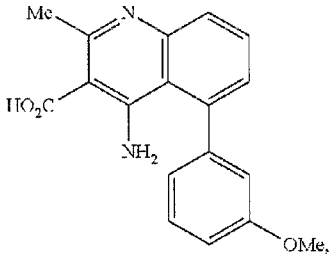


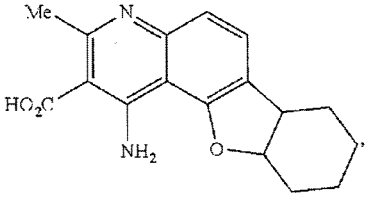


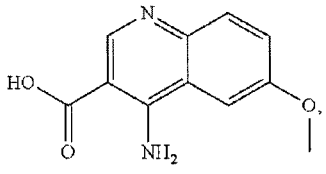


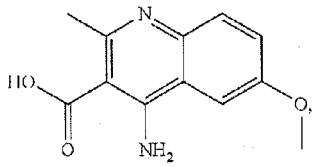


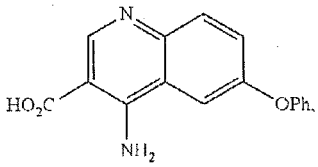


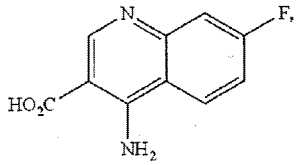


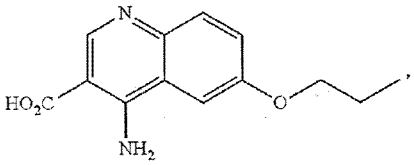


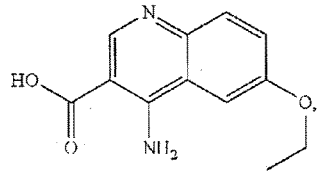


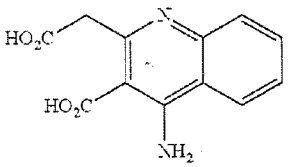


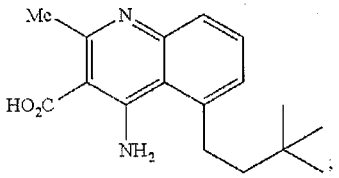








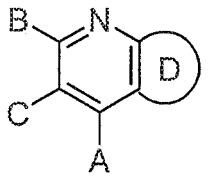

and



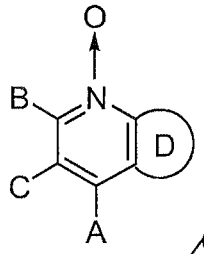
or a tautomer, and/or salt, thereof.

We claim:

1. A compound having structural Formula (I) or (I'):



(I) or



(I'),

or a tautomer, salt, and/or solvate, wherein:

A is $-OR^1$, $-NR^1C(O)R^2$, $-NHOR^1$, $-NR^1R^2$, $-NR^1CO_2R^2$, $-NR^1C(O)NR^2R^3$, $-NR^1C(S)NR^2R^3$ or $-NR^1C(=NH)NR^2R^3$;

B is hydrogen, alkyl, substituted alkyl, aryl, substituted aryl, arylalkyl, substituted arylalkyl, acyl, substituted acyl, heteroalkyl, substituted heteroalkyl, heteroaryl, substituted heteroaryl, heteroarylalkyl, substituted heteroarylalkyl, -CN, $-OR^4$, $-S(O)_aR^4$, $-NR^4R^5$, $-C(O)NR^4R^5$, $-CO_2R^4$, $-NR^4CO_2R^5$, $-NR^4C(O)NR^5R^6$, $-NR^4C(S)NR^5R^6$, $-NR^4C(=NH)NR^5R^6$, $-SO_2NR^4R^5$, $-NR^4SO_2R^5$, $-NR^4SO_2NR^5R^6$, $-B(OR^4)(OR^5)$, $-P(O)(OR^4)(OR^5)$, or $-P(O)(R^4)(OR^5)$;

C is $-OR^7$, $-S(O)_bR^7$, SO_3R^7, $-C(O)NR^7R^8$, $-CO_2R^7$, $-NR^7CO_2R^8$, $-NR^7C(O)NR^8R^9$, $-NR^7C(=NH)NR^8R^9$, $-SO_2NR^7R^8$, $-NR^7SO_2R^8$, $-NR^7SO_2NR^8R^9$, $-B(OR^7)(OR^8)$, $-P(O)(OR^7)(OR^8)$, $-P(O)(R^7)(OR^8)$, or heteroaryl;

D is an aryl, substituted aryl, heteroaryl, substituted heteroaryl, cycloalkyl, substituted cycloalkyl, cycloheteroalkyl or substituted cycloheteroalkyl ring wherein the ring is optionally fused to another aryl, substituted aryl, heteroaryl, substituted heteroaryl, cycloalkyl, substituted cycloalkyl, cycloheteroalkyl, or substituted cycloheteroalkyl ring;

a and b are independently 0, 1 or 2; and

R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^8, and R^9 are independently hydrogen, alkyl, substituted alkyl, aryl, substituted aryl, arylalkyl, substituted arylalkyl, acyl, substituted acyl, heteroalkyl, substituted heteroalkyl, heteroaryl, substituted heteroaryl, heteroarylalkyl or substituted heteroarylalkyl; or alternatively, R^1 and R^2, R^2 and R^3, R^4 and R^5, R^5 and R^6, R^7 and R^8, or R^8 and R^9, together with the atoms to which they are bonded, form a cycloheteroalkyl or substituted cycloheteroalkyl ring.

2. The compound of claim 1, wherein the Formula (I) is subject to the following provisos:

(a) when D is substituted phenyl; B is hydrogen; C is $-CO_2R^7$; R^7 is hydrogen or alkyl; A is $-NR^1R^2$; and one of R^1 and R^2 is hydrogen; then the other of R^1 and R^2 is not substituted arylalkyl; and

(b) when D is phenyl or substituted phenyl; C is $-CO_2R^7$; R^7 is alkyl; A is $-NR^1R^2$; and R^1 and R^2 are both hydrogen; then B is not $-CO_2R^4$; wherein R^4 is alkyl.

3. The compound of claim 1, wherein the Formula (I) does not include the following compounds:

8-Bromo-4-(4-methoxybenzyl)amino-5-methoxyquinoline-3-carboxylic acid ethyl ester;

4-(4-Methoxybenzyl)amino-5-methoxyquinoline-3-carboxylic acid ethyl ester;

4-(4-Methoxybenzyl)amino-5-methoxyquinoline-3-carboxylic acid;

4-(4-Methoxybenzyl)amino-8-methoxyquinoline-3-carboxylic acid ethyl ester;

4-(4-Methoxybenzyl)amino-8-methoxyquinoline-3-carboxylic acid;

4-Amino-3-ethoxycarbonyl-2-ethoxycarbonylmethylquinoline; and

4-Amino-3-ethoxycarbonyl-2-ethoxycarbonylmethyl-5-methoxyquinoline.

4. The compound of claim 1, wherein R^1 and R^2 are independently hydrogen, alkyl, substituted alkyl, aryl, substituted aryl, arylalkyl, acyl, substituted acyl, heteroalkyl, substituted heteroalkyl, heteroaryl, substituted heteroaryl, heteroarylalkyl or substituted heteroarylalkyl; or alternatively, R^1 and R^2, R^2 and R^3, R^4 and R^5, R^5 and R^6, R^7 and R^8, or R^8 and R^9, together with the atoms to which they are bonded, form a cycloheteroalkyl or substituted cycloheteroalkyl ring.

5. The compound of claim 1 or 4, wherein

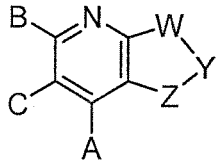
when B is substituted alkyl, then the substituent on the alkyl is not $-C(O)OR^b$; where R^b is alkyl.

6. The compound of claim 1 or 4, wherein

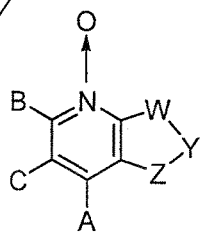
when B is substituted alkyl, then the substituent on the alkyl is selected from the group consisting of $-R^a$, halo, $-O^-$, =O, $-OR^b$, $-SR^b$, $-S^-$, =S, $-NR^cR^c$, $=NR^b$, $=N-OR^b$, trihalomethyl, $-CF_3$, -CN, -OCN, -SCN, -NO, $-NO_2$, $=N_2$, $-N_3$, $-S(O)_2R^b$, $-S(O)_2NR^b$, $-S(O)_2O^-$, $-S(O)_2OR^b$,

$-OS(O)_2R^b$, $-OS(O)_2O^-$, $-OS(O)_2OR^b$, $-P(O)(O^-)_2$, $-P(O)(OR^b)(O^-)$, $-P(O)(OR^b)(OR^b)$, $-C(O)R^b$, $-C(S)R^b$, $-C(NR^b)R^b$, $-C(O)O^-$, $-C(S)OR^b$, $-C(O)NR^cR^c$, $-C(NR^b)NR^cR^c$, $-OC(O)R^b$, $-OC(S)R^b$, $-OC(O)O^-$, $-OC(O)OR^b$, $-OC(S)OR^b$, $-NR^bC(O)R^b$, $-NR^bC(S)R^b$, $-NR^bC(O)O^-$, $-NR^bC(O)OR^b$, $-NR^bC(S)OR^b$, $-NR^bC(O)NR^cR^c$, $-NR^bC(NR^b)R^b$ and $-NR^bC(NR^b)NR^cR^c$, where R^a is selected from the group consisting of alkyl, cycloalkyl, heteroalkyl, cycloheteroalkyl, aryl, arylalkyl, heteroaryl and heteroarylalkyl; each R^b is independently hydrogen or R^a; and each R^c is independently R^b or alternatively, the two R^cs may be taken together with the nitrogen atom to which they are bonded form a 4-, 5-, 6- or 7-membered cycloheteroalkyl which may optionally include from 1 to 4 of the same or different additional heteroatoms selected from the group consisting of O, N and S.

7. The compound of any one of claims 1 to 6 having a structural Formula (II) or (II'),



(II) or



(II'),

or a tautomer, salt, and/or solvate, wherein:

Y forms a single bond with either W or Z and a double bond with the other of W or Z;

W is $-C(R^{10})-$, -S-, -N-, $-N(R^{11})-$, or -O-;

Y is $-C(R^{12})-$ or -N-;

Z is $-C(R^{13})-$, -S-, -N-, $-N(R^{14})-$, or -O-;

R^{10} is hydrogen, alkyl, substituted alkyl, aryl, substituted aryl, arylalkyl, substituted arylalkyl, acyl, substituted acyl, heteroalkyl, substituted heteroalkyl, heteroaryl, substituted heteroaryl, heteroarylalkyl, substituted heteroarylalkyl, halo, -CN, $-OR^{15}$, $-S(O)_cR^{15}$, $-NR^{15}R^{16}$, $-C(O)NR^{15}R^{16}$, $-CO_2R^{15}$, $-SO_2NR^{15}R^{16}$, $-NR^{15}SO_2R^{16}$, $-P(O)(OR^{15})(OR^{16})$ or $-P(O)(R^{15})(OR^{16})$;

R^{12} is hydrogen, alkyl, substituted alkyl, aryl, substituted aryl, arylalkyl, substituted arylalkyl, acyl, substituted acyl, heteroalkyl, substituted heteroalkyl, heteroaryl, substituted heteroaryl, heteroarylalkyl, substituted heteroarylalkyl, halo, -CN, $-OR^{17}$, $-S(O)_dR^{17}$, $-OC(O)R^{17}$, $-NR^{17}R^{18}$, $-C(O)NR^{17}R^{18}$, $-CO_2R^{17}$, $-SO_2NR^{17}R^{18}$, $-NR^{17}SO_2R^{18}$, $-P(O)(OR^{17})(OR^{18})$ or $-P(O)(R^{17})(OR^{18})$;

R^{13} is hydrogen, alkyl, substituted alkyl, aryl, substituted aryl, arylalkyl, substituted arylalkyl, acyl, substituted acyl, heteroalkyl, substituted heteroalkyl, heteroaryl, substituted heteroaryl, heteroarylalkyl, substituted heteroarylalkyl, halo, -CN, , $-OR^{19}$, $-S(O)_eR^{19}$, $-OC(O)R^{19}$, $-NR^{19}R^{20}$, $-C(O)NR^{19}R^{20}$, $-C(O)R^{19}$, $-CO_2R^{19}$, $-SO_2NR^{19}R^{20}$, $-NR^{19}SO_2R^{20}$, $-P(O)(OR^{19})(OR^{20})$ or $-P(O)(R^{19})(OR^{20})$; or alternatively R^{10} and R^{12}, or R^{12} and R^{13}, together with the atoms to which they are attached, form a cycloalkyl, substituted cycloalkyl, cycloheteroalkyl or substituted cycloheteroalkyl ring;

c, d and e are independently 0, 1, or 2;

R^{11} and R^{14} are independently hydrogen, alkyl, substituted alkyl, aryl, substituted aryl, arylalkyl, substituted arylalkyl, acyl, substituted acyl, heteroalkyl, substituted heteroalkyl, heteroaryl, substituted heteroaryl, heteroarylalkyl or substituted heteroarylalkyl; and

R^{15}, R^{16}, R^{17}, R^{18}, R^{19}, and R^{20} are independently hydrogen, alkyl, substituted alkyl, aryl, substituted aryl, arylalkyl, substituted arylalkyl, acyl, substituted acyl, heteroalkyl, substituted heteroalkyl, heteroaryl, substituted heteroaryl, heteroarylalkyl or substituted heteroarylalkyl; or alternatively R^{15} and R^{16}, R^{17} and R^{18}, or R^{19} and R^{20}, together with the atoms to which they are attached, form a cycloheteroalkyl or substituted cycloheteroalkyl ring; and

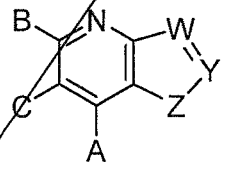
with the following provisos:

(a) when W is -O- or -S- or $-NR^{11}$-, then Z is $-C(R^{13})$- or -N-;

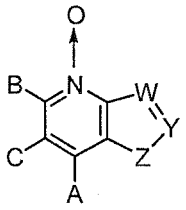
(b) when Z is -O- or -S- or $-NR^{14}$-, then W is $-C(R^{10})$- or -N-; and

(c) when W is $-C(R^{10})$- or -N-, then Z cannot be $-C(R^{13})$- or -N-.

8. The compound of claim 7 having a structural Formula (IIa) or (IIa'),



(IIa) or



(IIa'),

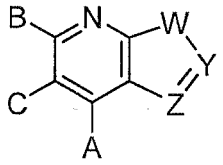
or a tautomer, salt, and/or solvate, wherein,

W is $-C(R^{10})$-, or -N-;

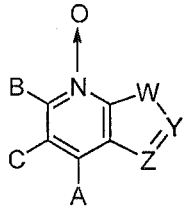
Y is $-C(R^{12})$- or -N-; and

Z is -S-, $-N(R^{14})$-, or -O-.

9. The compound of claim 7 having a structural Formula (IIb) or (IIb'),



(IIb) or



(IIb'),

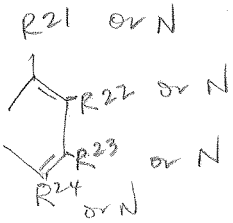
or a tautomer, salt, and/or solvate, wherein,

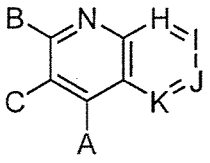
W is -S-, -N(R^{11})-, or -O-;

Y is -C(R^{12})- or -N-; and

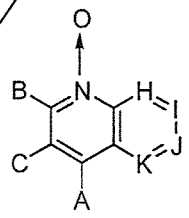
Z is -C(R^{13})-, or -N-.

10. The compound of claim 1 having a structural Formula (III) or (III'),





(III) or



(III'),

or a tautomer, salt, and/or solvate, wherein:

H is -C(R^{21})- or -N-;

I is -C(R^{22}) or -N-;

J is -C(R^{23})- or -N-;

K is -C(R^{24})- or -N-;

R^{21} is hydrogen, alkyl, substituted alkyl, halo, -CN, -OR^{25};

R^{22} is hydrogen, alkyl, substituted alkyl, halo, -CN, -OR^{27};

R^{23} is hydrogen, alkyl, substituted alkyl, aryl, substituted aryl, arylalkyl, substituted arylalkyl, acyl, substituted acyl, halo, heteroalkyl, substituted heteroalkyl, heteroaryl, substituted heteroaryl, heteroarylalkyl, substituted heteroarylalkyl ,-CN, -OR^{29}, -$S(O)_fR^{29}$, -$OC(O)R^{29}$, -$NR^{29}R^{30}$, -$C(O)NR^{29}R^{30}$, -CO_2R^{29}, -$SO_2NR^{29}R^{30}$, -$NR^{29}SO_2R^{30}$, -$B(OR^{29})(OR^{30})$, -$P(O)(OR^{29})(OR^{30})$ or -$P(O)(R^{29})(OR^{30})$;

R^{24} is hydrogen, alkyl, substituted alkyl, aryl, substituted aryl, arylalkyl, substituted arylalkyl, acyl, substituted acyl, halo, heteroalkyl, substituted heteroalkyl, heteroaryl, substituted heteroaryl, heteroarylalkyl, substituted heteroarylalkyl, -CN, -OR^{31}, -$S(O)_gR^{31}$, -$OC(O)R^{31}$,

$-NR^{31}R^{32}$, $-C(O)NR^{31}R^{32}$, $-C(O)R^{31}$, $-CO_2R^{31}$, $-SO_2NR^{31}R^{32}$, $-NR^{31}SO_2R^{32}$, $-B(OR^{31})(OR^{32})$, $-P(O)(OR^{31})(OR^{32})$ or $-P(O)(R^{31})(OR^{32})$; or alternatively R^{23} and R^{24}, taken together with the atoms to which they are attached, form a cycloalkyl, substituted cycloalkyl, cycloheteroalkyl, or substituted cycloheteroalkyl ring;

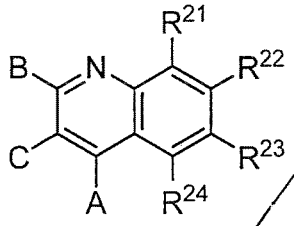
f and g are independently 0, 1 or 2; and

R^{25}, R^{26}, R^{27}, R^{28}, R^{29}, R^{30}, R^{31}, and R^{32} are independently hydrogen, alkyl, substituted alkyl, aryl, substituted aryl, arylalkyl, substituted arylalkyl, acyl, substituted acyl, heteroalkyl, substituted heteroalkyl, heteroaryl, substituted heteroaryl, heteroarylalkyl, or substituted heteroarylalkyl; or alternatively R^{25} and R^{26}, R^{27} and R^{28}, R^{29} and R^{30}, or R^{31} and R^{32}, together with the atoms to which they are attached, form a cycloheteroalkyl or substituted cycloheteroalkyl ring;

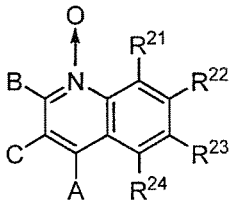
with the proviso that at most, two of H, I, J and K are -N-.

11. The compound of claim 10, wherein one or two of H, I, J and K are -N-.

12. The compound of claim 10 having a structural Formula (IIIa) or (IIIa'),



(IIIa) or



(IIIa'),

or a tautomer, salt, and/or solvate thereof.

13. The compound of claim 12, wherein two or three of R^{21}, R^{22}, R^{23}, and R^{24} are hydrogen.

14. The compound of claim 12, wherein

R^{21} is hydrogen;

R^{22} is hydrogen, alkyl, substituted alkyl, halo, -CN, or $-OR^{27}$;

R^{23} is hydrogen, alkyl, substituted alkyl, -CN, $-OR^{29}$, $-S(O)_fR^{29}$, $-OC(O)R^{29}$, $-NR^{29}R^{30}$, $-C(O)NR^{29}R^{30}$, $-C(O)R^{29}$, $-CO_2R^{29}$, $-SO_2NR^{29}R^{30}$, or $-NR^{29}SO_2R^{30}$;

R^{24} is hydrogen, alkyl, substituted alkyl, -CN, $-OR^{31}$, $-S(O)_gR^{31}$, $-OC(O)R^{31}$, $-NR^{31}R^{32}$,

$-C(O)NR^{31}R^{32}$, $-C(O)R^{31}$, $-CO_2R^{31}$, $-SO_2NR^{31}R^{32}$, or $-NR^{31}SO_2R^{32}$; or alternatively R^{23} and R^{24}, taken together with the atoms to which they are attached, form a cycloalkyl, substituted cycloalkyl, cycloheteroalkyl, or substituted cycloheteroalkyl ring; and

R^{27}, R^{29}, R^{30}, R^{31}, and R^{32} are independently hydrogen, alkyl, substituted alkyl, aryl, substituted aryl, arylalkyl, substituted arylalkyl, acyl, substituted acyl, heteroalkyl, substituted heteroalkyl, heteroaryl, substituted heteroaryl, heteroarylalkyl, or substituted heteroarylalkyl; or alternatively R^{25} and R^{26}, R^{27} and R^{28}, R^{29} and R^{30}, or R^{31} and R^{32}, together with the atoms to which they are attached, form a cycloheteroalkyl or substituted cycloheteroalkyl ring.

15. The compound of claim 14, wherein R^{21}, R^{22}, R^{23}, and R^{24} are all hydrogen.

16. The compound of claim 14, wherein R^{21} and R^{22} are all hydrogen.

17. The compound of claim 16, wherein R^{23} and R^{24}, taken together with the atom to which they are attached, form a cycloalkyl, substituted cycloalkyl, cycloheteroalkyl, or substituted cycloheteroalkyl ring.

18. The compound of claim 17, wherein R^{23} and R^{24}, taken together with the atom to which they are attached, form a substituted cycloheteroalkyl ring containing one or more substituents selected from the group consisting of $-R^a$, halo, $-O^-$, =O, $-OR^b$, $-SR^b$, $-S^-$, =S, $-NR^cR^c$, $=NR^b$, $=N-OR^b$, trihalomethyl, $-CF_3$, -CN, -OCN, -SCN, -NO, $-NO_2$, $=N_2$, $-N_3$, $-S(O)_2R^b$, $-S(O)_2NR^b$, $-S(O)_2O^-$, $-S(O)_2OR^b$, $-OS(O)_2R^b$, $-OS(O)_2O^-$, $-OS(O)_2OR^b$, $-P(O)(O^-)_2$, $-P(O)(OR^b)(O^-)$, $-P(O)(OR^b)(OR^b)$, $-C(O)R^b$, $-C(O)OR^b$, $-C(S)R^b$, $-C(NR^b)R^b$, $-C(O)O^-$, $-C(S)OR^b$, $-C(O)NR^cR^c$, $-C(NR^b)NR^cR^c$, $-OC(O)R^b$, $-OC(S)R^b$, $-OC(O)O^-$, $-OC(O)OR^b$, $-OC(S)OR^b$, $-NR^bC(O)R^b$, $-NR^bC(S)R^b$, $-NR^bC(O)O^-$, $-NR^bC(O)OR^b$, $-NR^bC(S)OR^b$, $-NR^bC(O)NR^cR^c$, $-NR^bC(NR^b)R^b$ and $-NR^bC(NR^b)NR^cR^c$, where R^a is selected from the group consisting of alkyl, cycloalkyl, heteroalkyl, cycloheteroalkyl, aryl, arylalkyl, heteroaryl and heteroarylalkyl; each R^b is independently hydrogen or R^a; and each R^c is independently R^b or alternatively, the two R^cs may be taken together with the nitrogen atom to which they are bonded form a 4-, 5-, 6- or 7-membered cycloheteroalkyl which may optionally include from 1 to 4 of the same or different additional heteroatoms selected from the group consisting of O, N and S; or alternatively, two of

the substituents on the cycloheteroalkyl ring, together with the atoms to which they are bonded, form a cycloalkyl, substituted cycloalkyl, cycloheteroalkyl, or substituted cycloheteroalkyl ring.

19. The compound of any one of claims 1 to 18, wherein

A is $-OR^1$, $-NR^1C(O)R^2$, $-NHOR^1$, $-NR^1R^2$, $-NR^1CO_2R^2$, $-NR^1C(O)NR^2R^3$, $-NR^1CSNR^2R^3$, or $-NR^1C(=NH)NR^2R^3$.

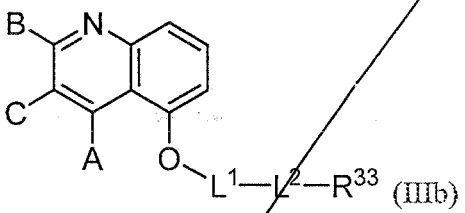
20. The compound of any one of claims 1 to 19, wherein

C is $-S(O)_bR^7$, SO_3R^7, $-C(O)NR^7R^8$, $-CO_2R^7$, $-NR^7CO_2R^8$, $-NR^7C(O)NR^8R^9$, $-NR^7C(S)NR^8R^9$, $-NR^7C(=NH)NR^8R^9$, $-SO_2NR^7R^8$, $-NR^7SO_2R^8$, $-NR^7SO_2NR^8R^9$, $-B(OR^7)(OR^8)$, $-P(O)(OR^7)(OR^8)$, or $-P(O)(R^7)(OR^8)$.

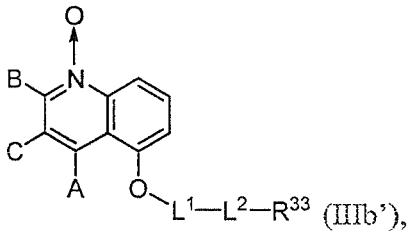
21. The compound of any one of claims 1 to 20, wherein

B is hydrogen, alkyl, substituted alkyl, aryl, substituted aryl, arylalkyl, substituted arylalkyl, acyl, substituted acyl, heteroalkyl, substituted heteroalkyl, heteroaryl, substituted heteroaryl, heteroarylalkyl, or substituted heteroarylalkyl.

22. The compound of claim 12 having a structural Formula (IIIb) or (IIIb'),


(IIIb)

or


(IIIb'),

or a tautomer, salt, and/or solvate thereof; wherein

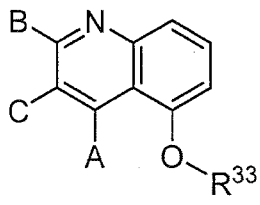
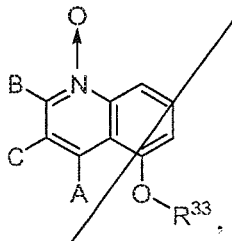
L^1 is alkylene or substituted alkylene;

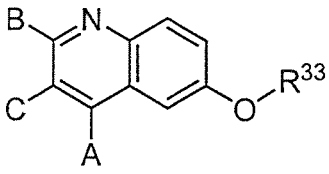
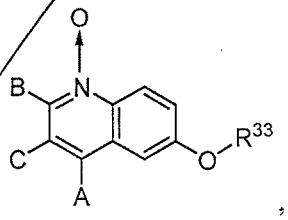
L^2 is $-NR^{34}-$, -O-, -S-, $-NR^{34}-C(O)-$, $-C(O)-NR^{34}-$, -O-C(O)-, -C(O)-O-, $-NR^{34}-C(O)-O-$, $-O-C(O)-NR^{34}-$, $-NR^{34}-C(O)-NR^{35}-$, -O-C(O)-O-, –heterocyclylene–C(O)-, or –(substituted heterocyclylene)-C(O)-;

R^{33} is alkyl, substituted alkyl, carbocyclyl, substituted carbocyclyl; aryl, substituted aryl, arylalkyl, substituted arylalkyl, heterocyclyl, substituted heterocyclyl, heteroalkyl, substituted heteroalkyl, heteroaryl, substituted heteroaryl, heteroarylalkyl, or substituted heteroarylalkyl; and

R^{34} and R^{35} are independently hydrogen, alkyl, substituted alkyl, carbocyclyl, substituted carbocyclyl; aryl, substituted aryl, arylalkyl, substituted arylalkyl, heterocyclyl, substituted heterocyclyl, heteroalkyl, substituted heteroalkyl, heteroaryl, substituted heteroaryl, heteroarylalkyl, or substituted heteroarylalkyl.

23. The compound of claim 12 having a structural Formula (IIIc), (IIIc'), (IIId), or (IIId'),


(IIIc) or

,


(IIId) or

,

or a tautomer, salt, and/or solvate thereof; wherein

R^{33} is alkyl, substituted alkyl, carbocyclyl, substituted carbocyclyl; aryl, substituted aryl, arylalkyl, substituted arylalkyl, heterocyclyl, substituted heterocyclyl, heteroalkyl, substituted heteroalkyl, heteroaryl, substituted heteroaryl, heteroarylalkyl, or substituted heteroarylalkyl.

24. The compound of claim 23, wherein

R^{33} is alkyl, substituted alkyl, carbocyclyl, substituted carbocyclyl; heterocyclyl, substituted heterocyclyl, heteroalkyl, or substituted heteroalkyl.

25. The compound of claim 22 or 23, wherein

A is $-OR^1$, $-NR^1C(O)R^2$, $-NHOR^1$, $-NR^1R^2$, $-NR^1CO_2R^2$, $-NR^1C(O)NR^2R^3$, $-NR^1CSNR^2R^3$, or $-NR^1C(=NH)NR^2R^3$.

26. The compound of any one of claims 22, 23, and 25, wherein

C is $-S(O)_bR^7$, SO_3R^7, $-C(O)NR^7R^8$, $-CO_2R^7$, $-NR^7CO_2R^8$, $-NR^7C(O)NR^8R^9$, $-NR^7C(S)NR^8R^9$, $-NR^7C(=NH)NR^8R^9$, $-SO_2NR^7R^8$, $-NR^7SO_2R^8$, $-NR^7SO_2NR^8R^9$,

$-B(OR^7)(OR^8)$, $-P(O)(OR^7)(OR^8)$, or $-P(O)(R^7)(OR^8)$.

27. The compound of any one of claims 22, 23, 25, and 26, wherein

B is hydrogen, alkyl, substituted alkyl, aryl, substituted aryl, arylalkyl, substituted arylalkyl, acyl, substituted acyl, heteroalkyl, substituted heteroalkyl, heteroaryl, substituted heteroaryl, heteroarylalkyl, or substituted heteroarylalkyl.

28. The compound of claim 22, wherein

A is $-OR^1$, $-NHOR^1$, or $-NR^1R^2$;

B is hydrogen, alkyl, substituted alkyl, aryl, or substituted aryl;

C is $-SO_3R^7$, $-C(O)NR^7R^8$, $-CO_2R^7$, $-SO_2NR^7R^8$, $-B(OR^7)(OR^8)$, $-P(O)(OR^7)(OR^8)$, or $-P(O)(R^7)(OR^8)$;

L^1 is alkylene or substituted alkylene;

L^2 is $-NR^{34}-$, -O-, $-NR^{34}-C(O)-$, $-C(O)-NR^{34}-$, $-O-C(O)-$, $-C(O)-O-$, –heterocyclylene–C(O)-, or –(substituted heterocyclylene)-C(O)-;

R^{33} is alkyl, substituted alkyl, carbocyclyl, substituted carbocyclyl; aryl, substituted aryl, arylalkyl, substituted arylalkyl, heterocyclyl, substituted heterocyclyl, heteroalkyl, substituted heteroalkyl, heteroaryl, substituted heteroaryl, heteroarylalkyl, or substituted heteroarylalkyl; and

R^{34} and R^{35} are independently hydrogen, alkyl, or substituted alkyl.

29. The compound of claim 23, wherein

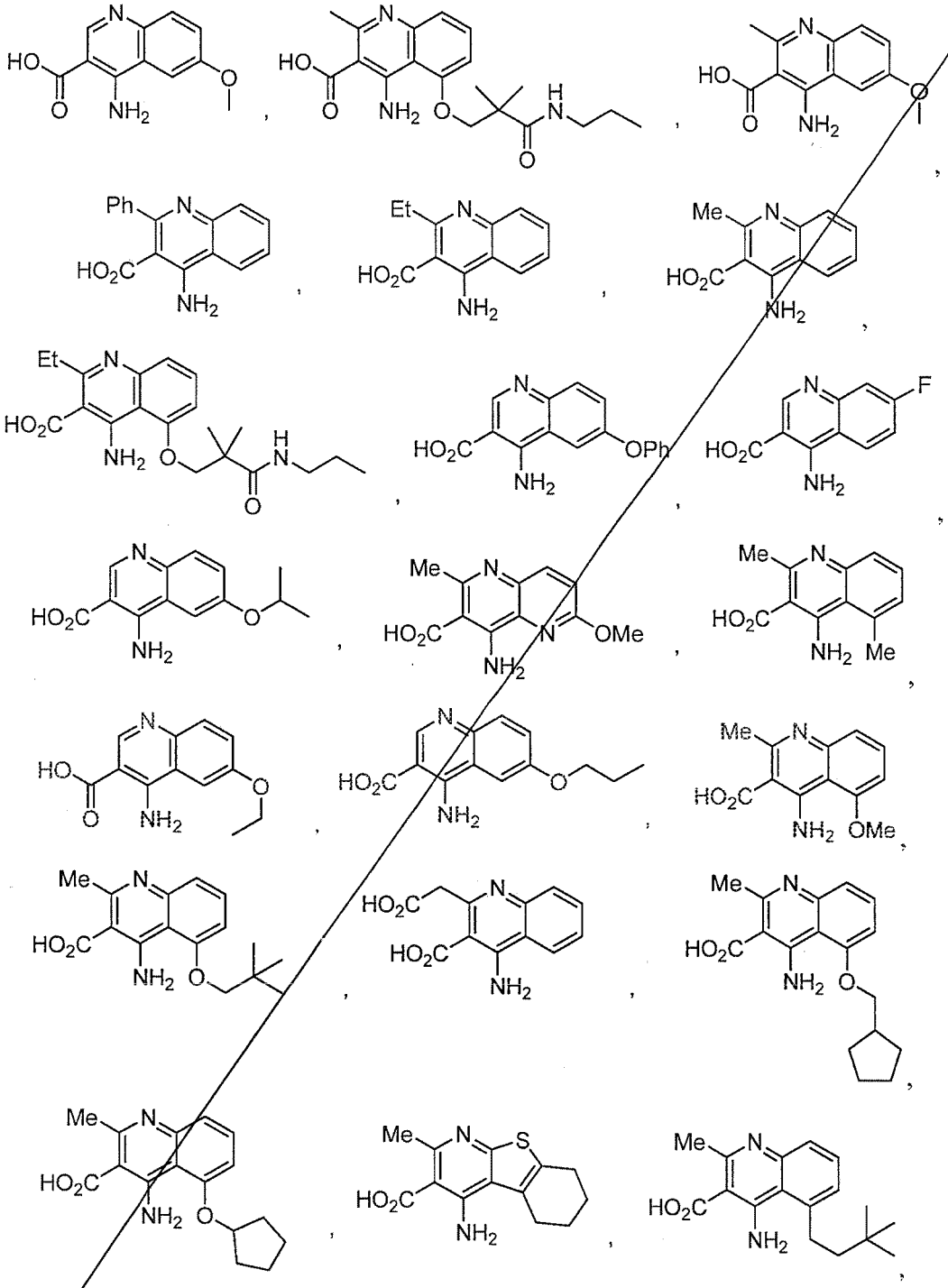
A is $-OR^1$, $-NHOR^1$, or $-NR^1R^2$;

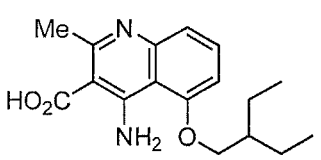
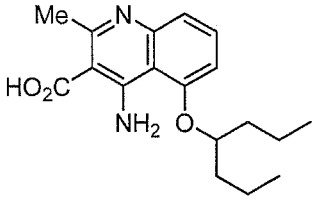
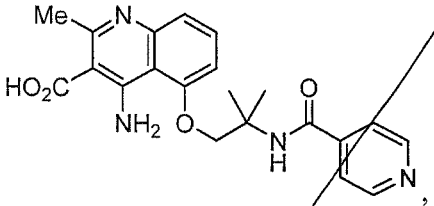
B is hydrogen, alkyl, substituted alkyl, aryl, or substituted aryl;

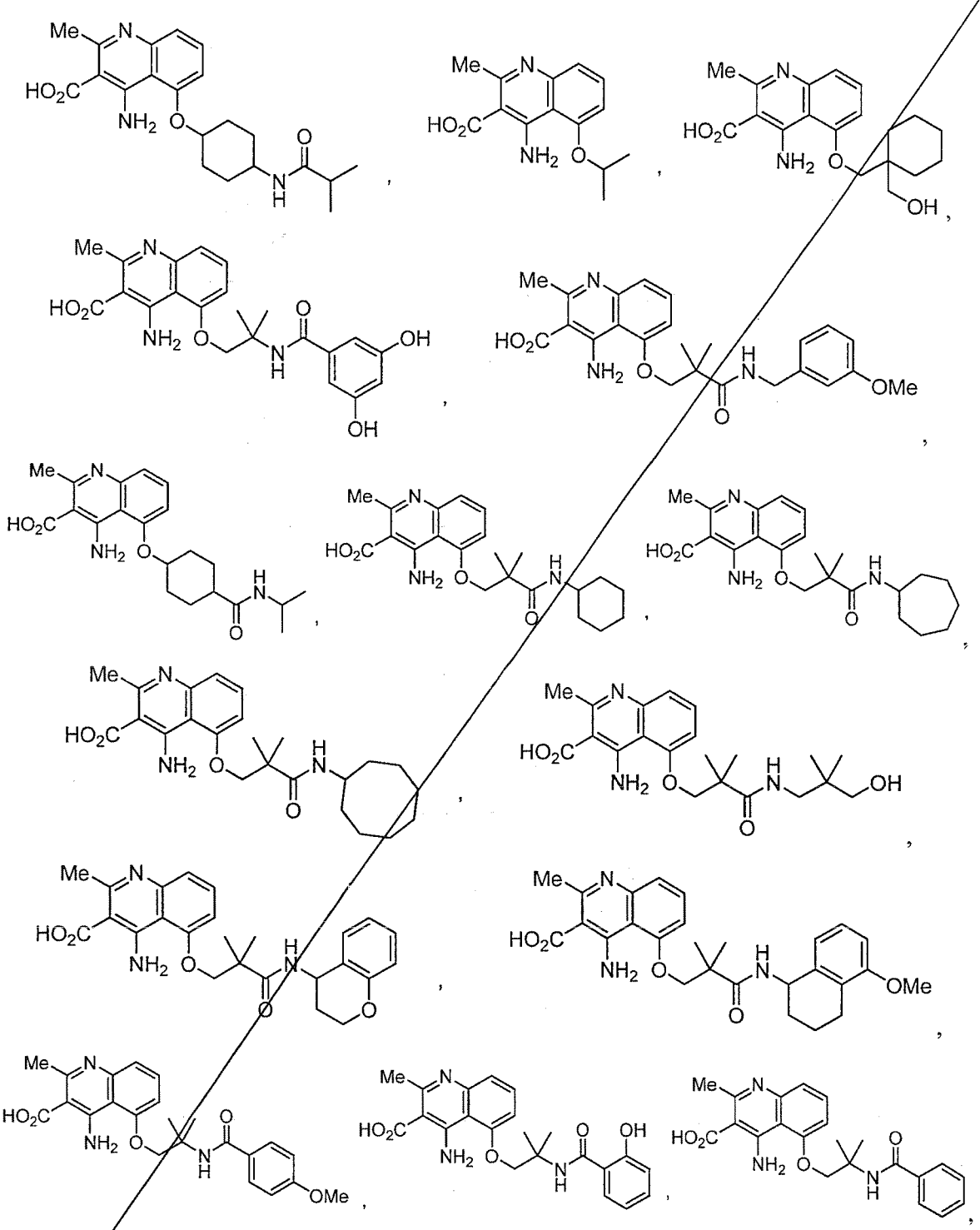
C is $-SO_3R^7$, $-C(O)NR^7R^8$, $-CO_2R^7$, $-SO_2NR^7R^8$, $-B(OR^7)(OR^8)$, $-P(O)(OR^7)(OR^8)$, or $-P(O)(R^7)(OR^8)$;

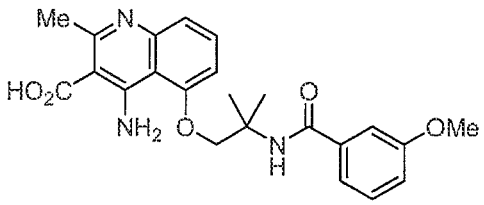
R^{33} is alkyl, substituted alkyl, carbocyclyl, substituted carbocyclyl; heterocyclyl, substituted heterocyclyl, heteroalkyl, or substituted heteroalkyl.

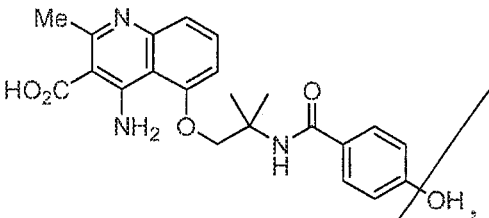
30. The compound of claim 1, which is selected from the group consisting of

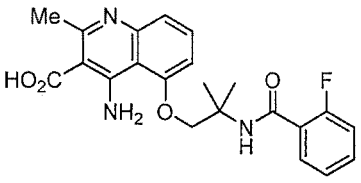


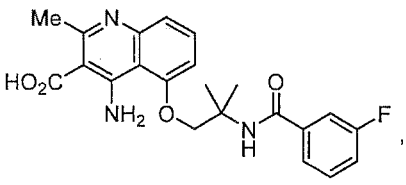

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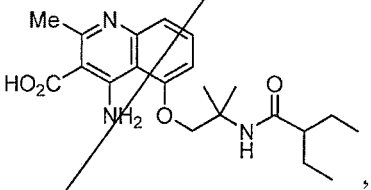


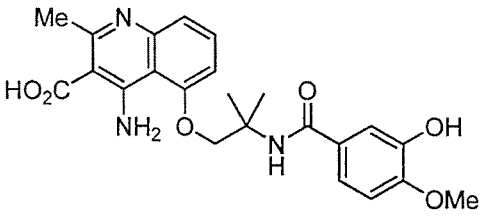


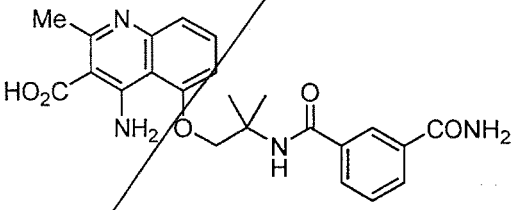


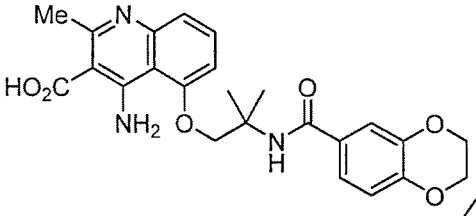


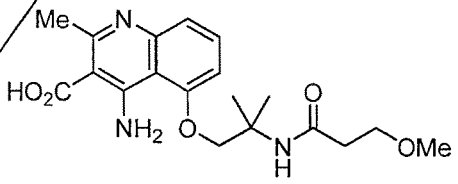


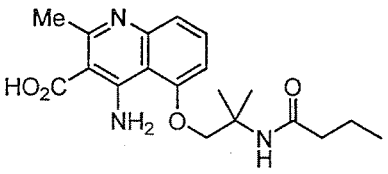


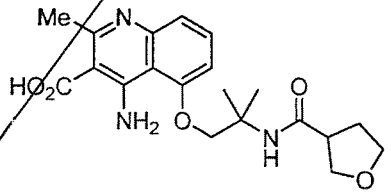


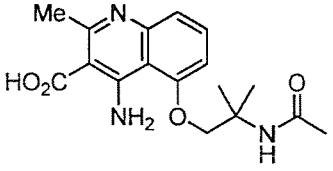


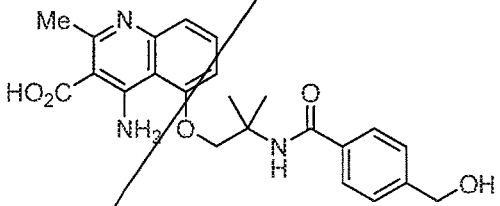


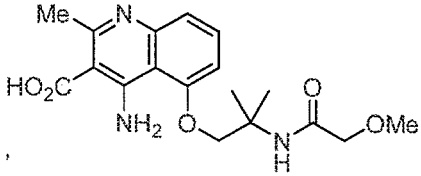


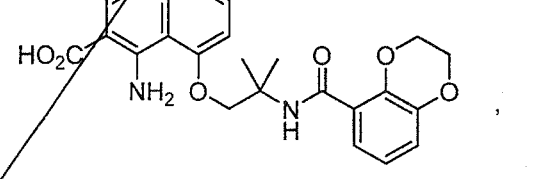


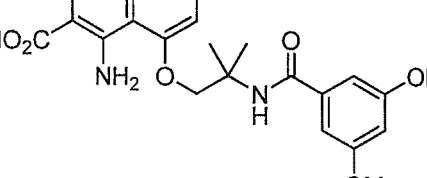


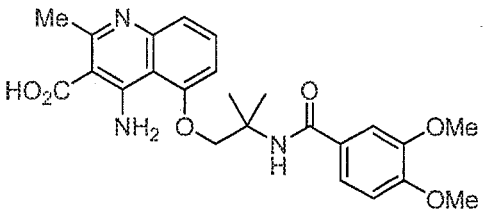


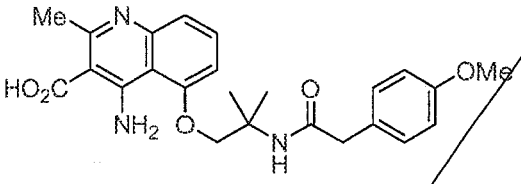


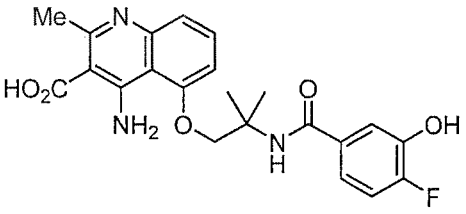


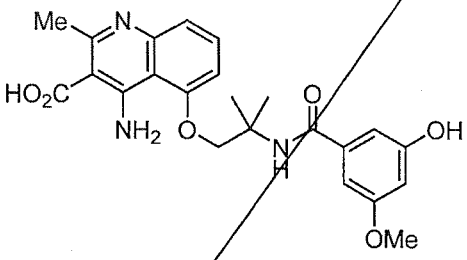


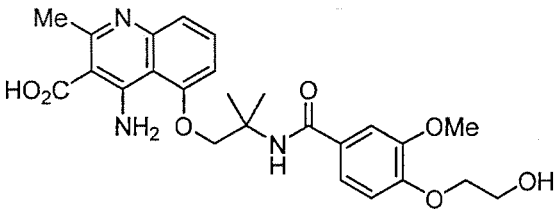


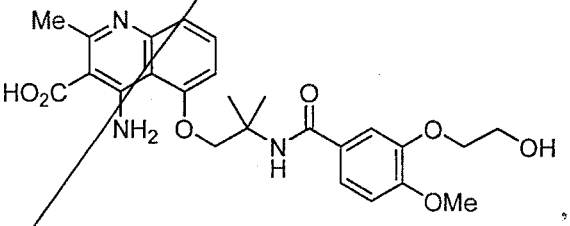


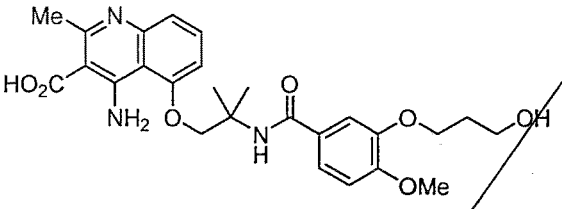


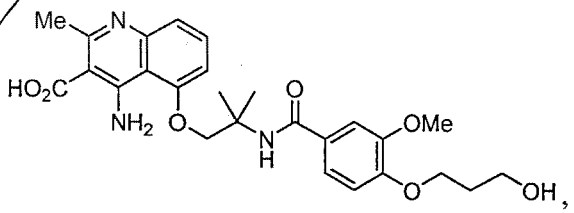


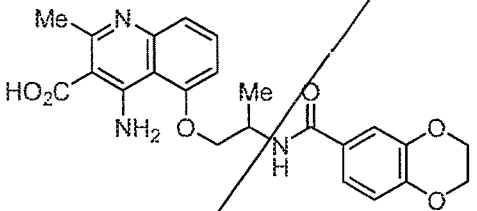


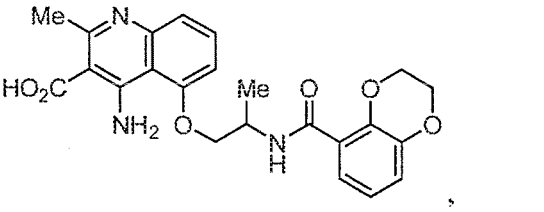


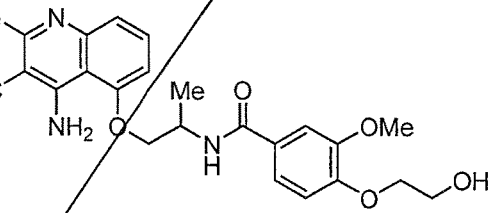


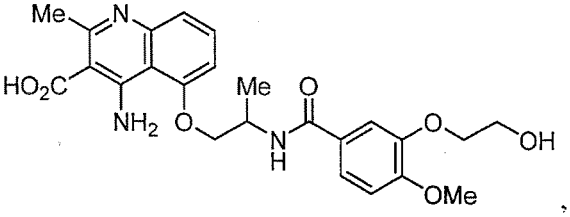


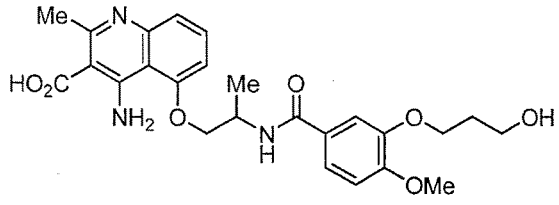


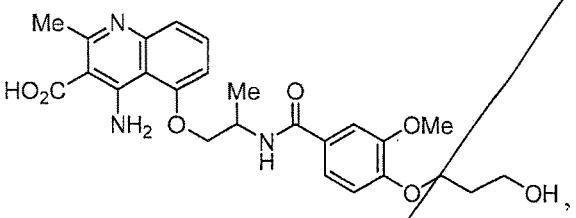


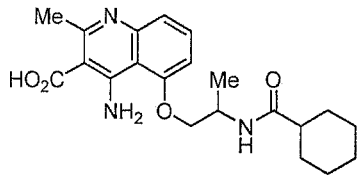


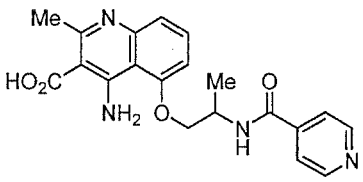


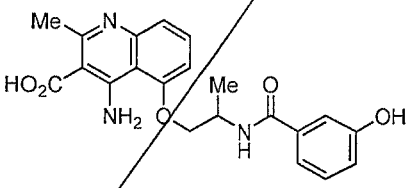


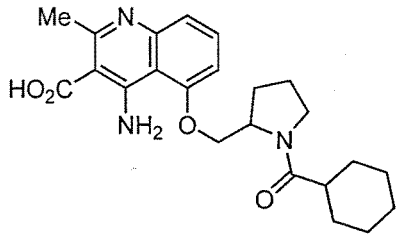


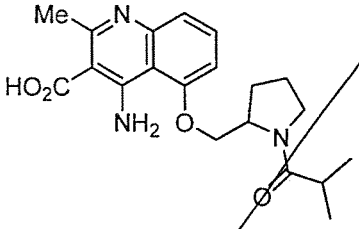


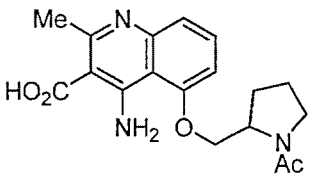


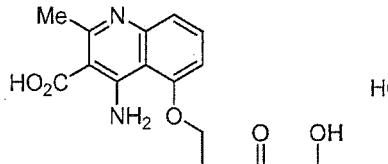


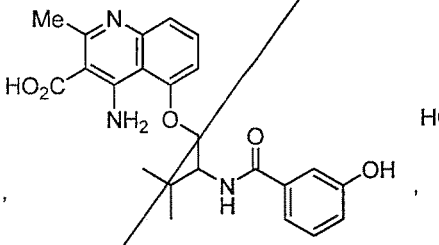


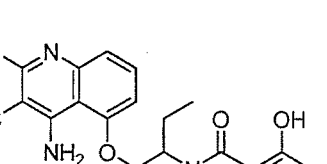


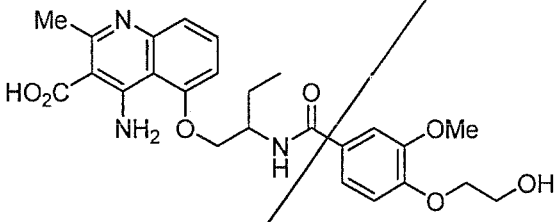


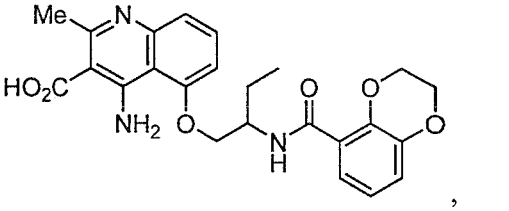


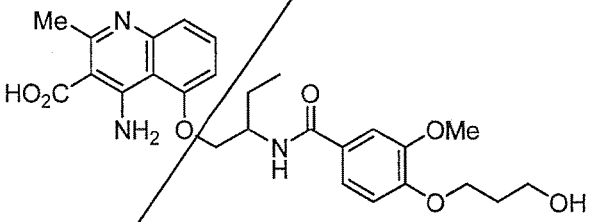


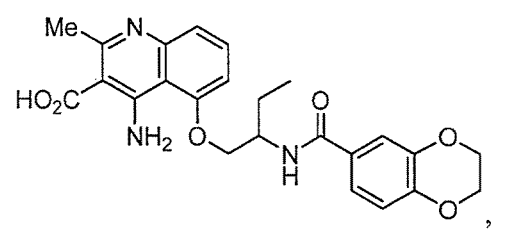


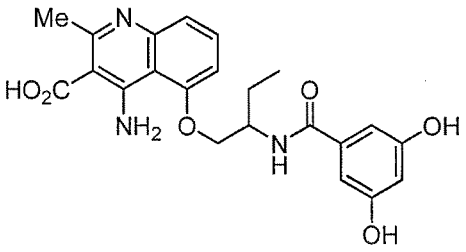


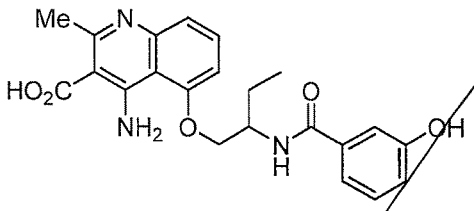


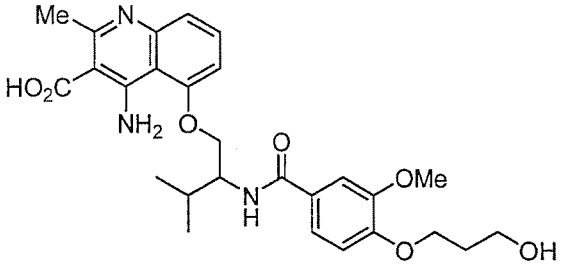


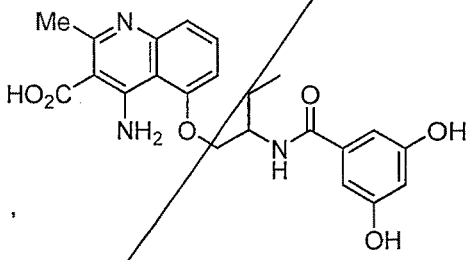


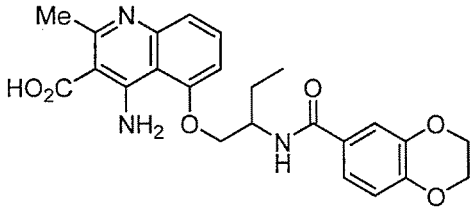


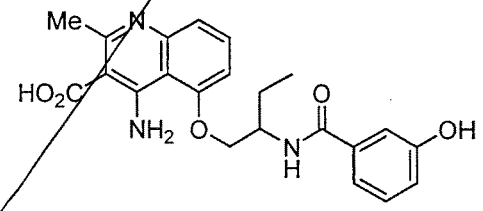


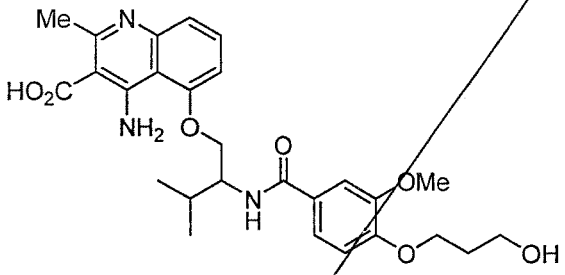


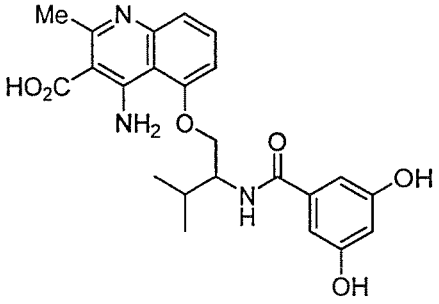


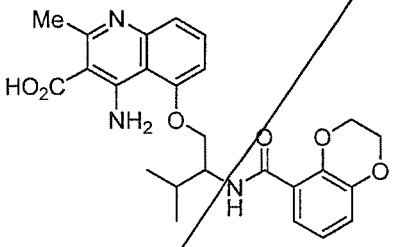


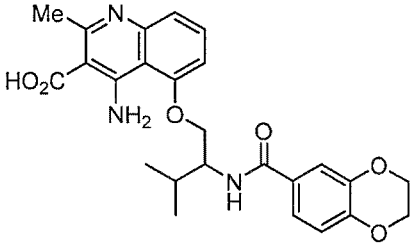


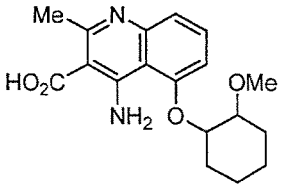


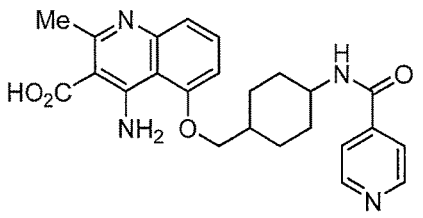


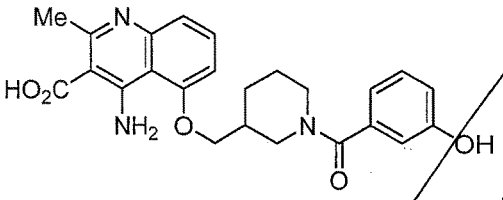


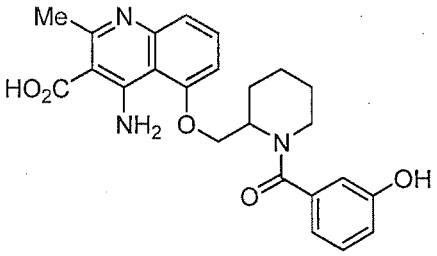


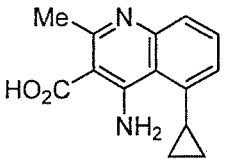


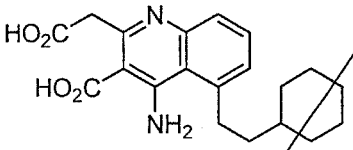


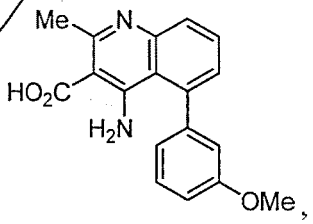


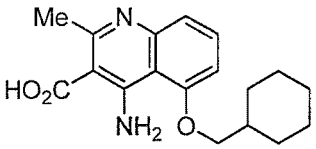


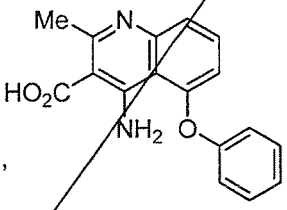


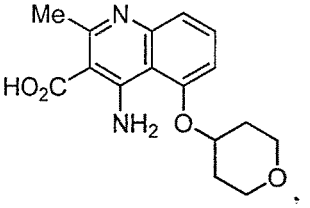


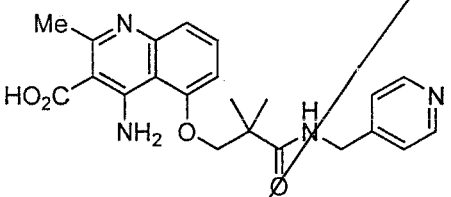


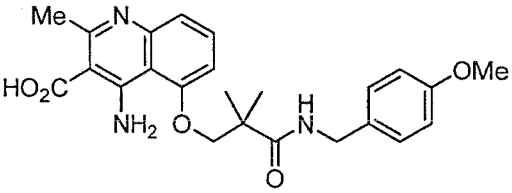


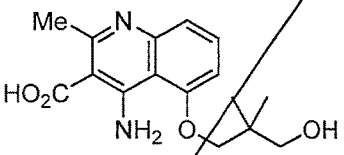


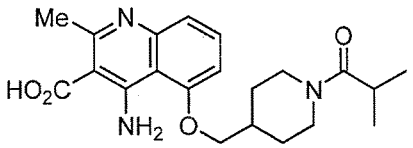


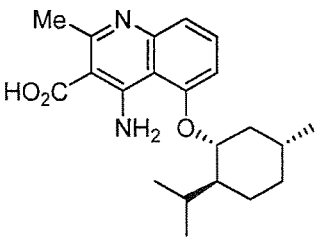


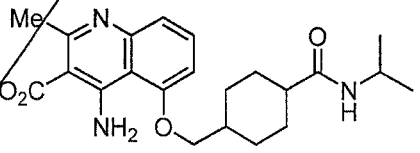


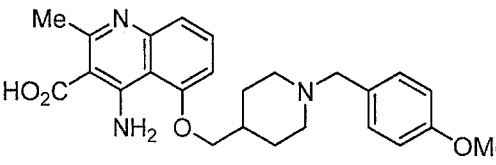


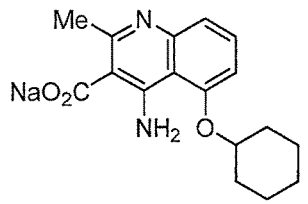
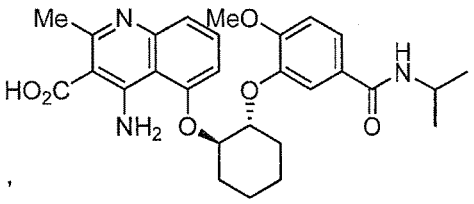
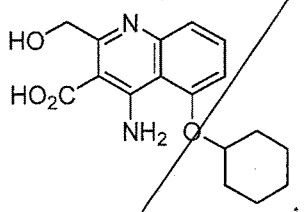
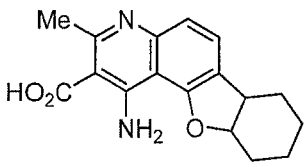
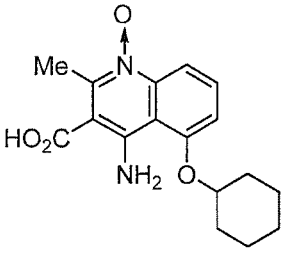
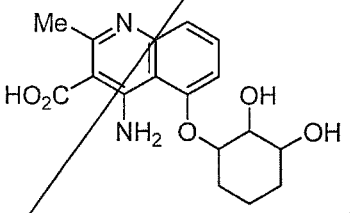










31. An ingestible composition comprising
a compound of claim 1; and
an ingestibly acceptable excipient.

32. The ingestible composition of claim 31, further comprising one or more sweeteners.

33. The ingestible composition of claim 32, wherein the sweetener is selected from the group consisting of sucrose, fructose, glucose, galactose, mannose, lactose, tagatose, maltose, corn syrup (including high fructose corn syrup), D-tryptophan, glycine, erythritol, isomalt, lactitol, mannitol, sorbitol, xylitol, maltodextrin, maltitol, isomalt, hydrogenated glucose syrup (HGS), hydrogenated starch hydrolyzate (HSH), stevioside, rebaudioside A, other sweet *Stevia*-based glycosides, carrelame, other guanidine-based sweeteners, saccharin, acesulfame-K, cyclamate, sucralose, alitame, mogroside, neotame, aspartame, other aspartame derivatives, and combinations thereof.

34. The ingestible composition of claim 31, which has an increased sweet taste as compared to the ingestible composition not containing the compound of claim 1, as judged by a majority of a panel of at least eight human taste testers.

35. The ingestible composition of claim 31, which is in form of a food or beverage product, a pharmaceutical composition, a nutritional product, a dietary supplement, over-the-counter medication, or oral care product.

36. The ingestible composition of claim 35, wherein the food or beverage product is for human or animal consumption.

37. The ingestible composition of claim 31, wherein the food or beverage product is selected from the group consisting of the Soup category; the Dried Processed Food category; the Beverage category; the Ready Meal category; the Canned or Preserved Food category; the Frozen Processed Food category; the Chilled Processed Food category; the Snack Food category; the Baked Goods category; the Confectionary category; the Dairy Product category; the Ice Cream category; the Meal Replacement category; the Pasta and Noodle category; the Sauces, Dressings, Condiments category; the Baby Food category; the Spreads category; sweet coatings, frostings, or glazes; and combinations thereof.

38. A method of enhancing the sweet taste of an ingestible composition comprising contacting the ingestible composition thereof with a compound of claim 1 to form a modified ingestible composition.

39. A sweet enhancing composition, comprising a compound of claim 1 in an amount effective to provide sweetening in combination with a first amount of sweetener, wherein the sweetening is more than the sweetening provided by the first amount of sweetener without the compound.

40. An ingestible composition comprising the sweet enhancing composition of claim 39.

41. The ingestible composition of claim 40, which is in form of a food or beverage product, a pharmaceutical composition, a nutritional product, a dietary supplement, over-the-counter medication, or oral care product.

42. A flavoring concentrate formulation comprising

i) as flavor modifying ingredient, a compound of claim 1;

ii) a carrier; and

iii) optionally at least one adjuvant.

43. The flavoring concentrate formulation of claim 42, wherein the at least one adjuvant comprises one or more flavoring agents.

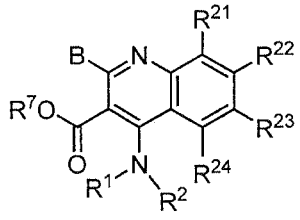
44. The flavoring concentrate formulation of claim 42 or 43, wherein the at least one adjuvant comprises one or more sweeteners.

45. The flavoring concentrate formulation of any one of claims 42 to 44, wherein the at least one adjuvant comprises one or more ingredients selected from the group consisting of a emulsifier, a stabilizer, an antimicrobial preservative, an antioxidant, vitamins, minerals, fats, starches, protein concentrates and isolates, salts, a freezing point depressant, nucleating agent, and combinations thereof.

46. The flavoring concentrate formulation of any one of claims 42 to 45, which is in a form selected from the group consisting of liquid, solid, semi-solid, foamy material, paste, gel, cream, lotion, and combinations thereof.

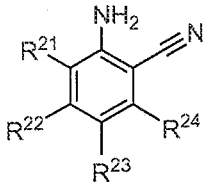
47. The flavoring concentrate formulation of any one of claims 42 to 46, wherein the compound of claim 1 is in a concentration that is at least 2 times of the concentration in a ready-to-use composition.

48. A method for preparing a compound of Formula (IV):



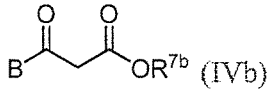
(IV),

comprising reacting a compound of Formula (IVa):



(IVa)

with a compound of Formula (IVb):



(IVb)

in the presence of a Lewis acid in an anhydrous and non-polar solvent;

wherein

B is hydrogen, alkyl, substituted alkyl, aryl, substituted aryl, arylalkyl, substituted arylalkyl, acyl, substituted acyl, heteroalkyl, substituted heteroalkyl, heteroaryl, substituted heteroaryl, heteroarylalkyl, substituted heteroarylalkyl;

R^1, R^2, and R^7 are independently hydrogen, alkyl, substituted alkyl, aryl, substituted aryl, arylalkyl, substituted arylalkyl, heteroalkyl, substituted heteroalkyl, heteroaryl, substituted heteroaryl, heteroarylalkyl or substituted heteroarylalkyl; or alternatively, R^1 and R^2, together with the atoms to which they are bonded, form a cycloheteroalkyl or substituted cycloheteroalkyl ring;

R^{7b} is alkyl, substituted alkyl, aryl, substituted aryl, arylalkyl, substituted arylalkyl, heteroalkyl, substituted heteroalkyl, heteroaryl, substituted heteroaryl, heteroarylalkyl or substituted heteroarylalkyl;

R^{21} is hydrogen, alkyl, substituted alkyl, halo, -CN, $-OR^{25}$;

R^{22} is hydrogen, alkyl, substituted alkyl, halo, -CN, $-OR^{27}$;

R^{23} is hydrogen, alkyl, substituted alkyl, aryl, substituted aryl, arylalkyl, substituted arylalkyl, acyl, substituted acyl, halo, heteroalkyl, substituted heteroalkyl, heteroaryl, substituted heteroaryl, heteroarylalkyl, substituted heteroarylalkyl, $-OR^{29}$, $-S(O)_tR^{29}$, $-OC(O)R^{29}$, $-NR^{29}R^{30}$, $-C(O)NR^{29}R^{30}$, $-CO_2R^{29}$, $-SO_2NR^{29}R^{30}$, $-NR^{29}SO_2R^{30}$, $-B(OR^{29})(OR^{30})$, $-P(O)(OR^{29})(OR^{30})$ or $-P(O)(R^{29})(OR^{30})$;

R^{24} is hydrogen, alkyl, substituted alkyl, aryl, substituted aryl, arylalkyl, substituted arylalkyl, acyl, substituted acyl, halo, heteroalkyl, substituted heteroalkyl, heteroaryl, substituted heteroaryl, heteroarylalkyl, substituted heteroarylalkyl, $-OR^{31}$, $-S(O)_gR^{31}$, $-OC(O)R^{31}$, $-NR^{31}R^{32}$, $-C(O)NR^{31}R^{32}$, $-C(O)R^{31}$, $-CO_2R^{31}$, $-SO_2NR^{31}R^{32}$, $-NR^{31}SO_2R^{32}$, $-B(OR^{31})(OR^{32})$,

-P(O)(OR^{31})(OR^{32}) or -P(O)(R^{31})(OR^{32}); or alternatively R^{23} and R^{24}, taken together with the atom to which they are attached, form a cycloalkyl, substituted cycloalkyl, cycloheteroalkyl, or substituted cycloheteroalkyl ring;

f and g are independently 0, 1 or 2; and

R^{25}, R^{26}, R^{27}, R^{28}, R^{29}, R^{30}, R^{31}, and R^{32} are independently hydrogen, alkyl, substituted alkyl, aryl, substituted aryl, arylalkyl, substituted arylalkyl, acyl, substituted acyl, heteroalkyl, substituted heteroalkyl, heteroaryl, substituted heteroaryl, heteroarylalkyl, or substituted heteroarylalkyl; or alternatively R^{25} and R^{26}, R^{27} and R^{28}, R^{29} and R^{30}, or R^{31} and R^{32}, together with the atoms to which they are attached, form a cycloheteroalkyl or substituted cycloheteroalkyl ring.

49. The method of claim 48, wherein the Lewis acid is a metal halide.

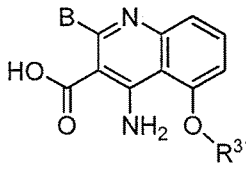
50. The method of claim 48 or 49, wherein the reaction of the compound of Formula (IVa) and the compound of Formula (IVb) is conducted at least in part at a temperature of about 60°C or higher.

51. The method of any one of claims 48 to 50, wherein R^1, R^2, and R^7 are hydrogen.

52. The method of any one of claims 48 to 51, wherein B is alkyl or substituted alkyl.

53. The method of any one of claims 48 to 52, wherein R^{24} is $-OR^{31}$, and R^{31} is alkyl, substituted alkyl, carbocyclyl, substituted carbocyclyl; aryl, substituted aryl, arylalkyl, substituted arylalkyl, heterocyclyl, substituted heterocyclyl, heteroalkyl, substituted heteroalkyl, heteroaryl, substituted heteroaryl, heteroarylalkyl, or substituted heteroarylalkyl.

54. The method of any one of claims 48 to 53, wherein the compound of Formula (IV) is represented by Formula (IVc):



(IVc),

wherein

B is alkyl or substiuted alkyl; and

R^{31} is alkyl, substituted alkyl, carbocyclyl, and substituted carbocyclyl.