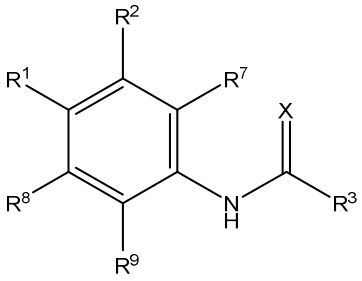
Claims

1. A compound for use in the treatment of a bacterial disease, said compound having a structure according to Formula I

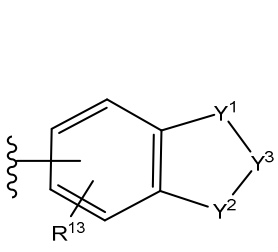


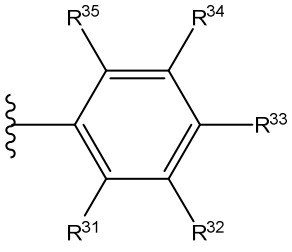
(I)

wherein

R^1, R^2, R^7, R^8, R^9 are each independently selected from the group consisting of hydrogen, halogen, cyano, $(C_1\text{-}C_6)$alkyl and $(C_1\text{-}C_6)$haloalkyl, preferably wherein R^7, R^8, R^9 are hydrogen and R^1 is selected from the group consisting of hydrogen, cyano and halogen, preferably hydrogen and halogen, and R^2 is $(C_1\text{-}C_6)$alkyl or $(C_1\text{-}C_6)$haloalkyl;

R^3 is $–NHR^4$ or $–NR^5R^6$;

R^4 is selected from the group consisting of 

, 

, and substituted or unsubstituted naphthyl;

R^5 and R^6 are each independently selected from the group consisting of substituted or unsubstituted $(C_1\text{-}C_6)$alkyl, substituted or unsubstituted $(C_1\text{-}C_6)$heteroalkyl, substituted or unsubstituted $(C_2\text{-}C_6)$alkenyl and substituted or unsubstituted $(C_6\text{-}C_{10})$aryl$(C_1\text{-}C_6)$alkyl;

wherein R^5 and R^6 join together with the nitrogen atom to which they are attached to form a ring, which is optionally substituted with one or more independently selected R^{51}, preferably wherein

the formed ring is a five, six or seven-membered ring, which is optionally substituted with one or more independently selected R^{51};

Y^1 and Y^2 are each independently selected from the group consisting of O, S, SO, SO_2 and CH_2;

Y^3 is $CR^{11}R^{12}$;

R^{11} and R^{12} are each independently selected from the group consisting of hydrogen and halogen;

R^{13} is selected from the group consisting of hydrogen, $(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$haloalkyl and halogen, preferably hydrogen;

R^{14} is selected from -O-$(C_1$-$C_6)$alkyl, -O-$(C_1$-$C_6)$haloalkyl, -NH-CH_3 and substituted or unsubstituted $(C_6$-$C_{14})$aryl;

R^{15} is selected from the group consisting of $(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$haloalkyl and unsubstituted $(C_6$-$C_{14})$aryl, preferably $(C_1$-$C_6)$alkyl and $(C_1$-$C_6)$haloalkyl;

R^{31}, R^{32}, R^{33}, R^{34} and R^{35} are each independently selected from the group consisting of hydrogen, substituted or unsubstituted $(C_1$-$C_6)$alkyl, -C(O)R^{14}, substituted or unsubstituted $(C_6$-$C_{14})$aryl$(C_1$-$C_6)$alkyl, -OR^{15} and -NH-C(O)-NH-B;

R^{51} is selected from the group consisting of hydrogen, substituted or unsubstituted $(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$heteroalkyl, $(C_1$-$C_6)$haloalkyl; substituted or unsubstituted $(C_2$-$C_6)$alkenyl, substituted or unsubstituted $(C_2$-$C_6)$alkynyl, substituted or unsubstituted $(C_3$-$C_8)$cycloalkyl, substituted or unsubstituted $(C_6$-$C_{10})$aryl, substituted or unsubstituted $(C_6$-$C_{10})$aryl$(C_1$-$C_6)$alkyl, substituted or unsubstituted $(C_3$-$C_{10})$heteroaryl, substituted or unsubstituted $(C_3$-$C_{10})$heteroaryl$(C_1$-$C_6)$alkyl, halogen, -CN, -NO_2, -OR^{61}, -N$(R^{62})(R^{63})$, -N$(R^{61})(OR^{61})$, -$S(O)_{0\text{-}2}R^{61}$, -$S(O)_{1\text{-}2}OR^{61}$, -$OS(O)_{1\text{-}2}R^{61}$, -$OS(O)_{1\text{-}2}OR^{61}$, -$S(O)_{1\text{-}2}N(R^{62})(R^{63})$, -$OS(O)_{1\text{-}2}N(R^{62})(R^{63})$, -$N(R^{61})S(O)_{1\text{-}2}R^{61}$, -$NR^{61}S(O)_{1\text{-}2}OR^{61}$, -$NR^{61}S(O)_{1\text{-}2}N(R^{62})(R^{63})$, -C(=W)$R^{61}$, -C(=W)$WR^{61}$, -WC(=W)$R^{61}$, and -WC(=W)$WR^{61}$;

R^{61} is, in each case, selected from the group consisting of -H, alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, and heterocyclyl;

R^{62} and R^{63} are, in each case, independently selected from the group consisting of -H, alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, and heterocyclyl;

R^{64} is independently selected from the group consisting of -H, alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, heterocyclyl, and –OR^{61};

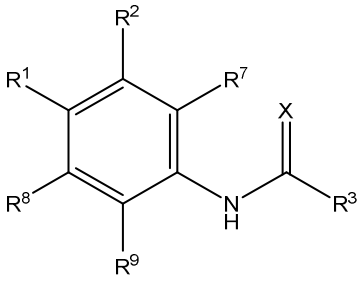
W is independently selected from O, S, and N(R^{64});

B is phenyl, optionally substituted with 1-3 substituents independently selected from the group consisting of hydrogen, (C_1-C_6)alkyl, (C_1-C_6)haloalkyl, halogen, cyano, nitro, -O-(C_1-C_6)alkyl and -O-(C_1-C_6)haloalkyl, preferably hydrogen, (C_1-C_6)alkyl, (C_1-C_6)haloalkyl and halogen;

X is selected from O or S;

or a pharmaceutically acceptable salt, solvate or hydrate thereof.

2. A pharmaceutical composition for use in the treatment of a bacterial disease, wherein said composition comprises a compound having a structure according to Formula I

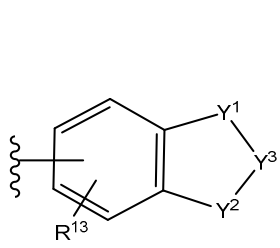
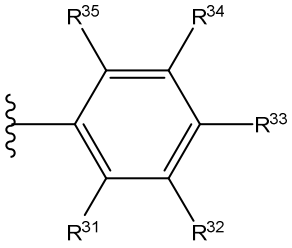


(I)

wherein

R^1, R^2, R^7, R^8, R^9 are each independently selected from the group consisting of hydrogen, halogen, cyano, (C_1-C_6)alkyl and (C_1-C_6)haloalkyl, preferably wherein R^7, R^8, R^9 are hydrogen and R^1 is selected from the group consisting of hydrogen, cyano and halogen, preferably hydrogen and halogen, and R^2 is (C_1-C_6)alkyl or (C_1-C_6)haloalkyl;

R^3 is –NHR^4 or –NR^5R^6;

R^4 is selected from the group consisting of , , and substituted or unsubstituted naphthyl;

R^5 and R^6 are each independently selected from the group consisting of substituted or unsubstituted $(C_1\text{-}C_6)$alkyl, substituted or unsubstituted $(C_1\text{-}C_6)$heteroalkyl, substituted or unsubstituted $(C_2\text{-}C_6)$alkenyl and substituted or unsubstituted $(C_6\text{-}C_{10})$aryl$(C_1\text{-}C_6)$alkyl;

wherein R^5 and R^6 join together with the nitrogen atom to which they are attached to form a ring, which is optionally substituted with one or more independently selected R^{51}, preferably wherein the formed ring is five, six or seven-membered ring, which is optionally substituted with one or more independently selected R^{51};

Y^1 and Y^2 are each independently selected from the group consisting of O, S, SO, SO_2 and CH_2;

Y^3 is $CR^{11}R^{12}$;

R^{11} and R^{12} are each independently selected from the group consisting of hydrogen and halogen;

R^{13} is selected from the group consisting of hydrogen, $(C_1\text{-}C_6)$alkyl, $(C_1\text{-}C_6)$haloalkyl and halogen, preferably hydrogen;

R^{14} is selected from -O-$(C_1\text{-}C_6)$alkyl, -O-$(C_1\text{-}C_6)$haloalkyl, -NH-CH_3 and substituted or unsubstituted $(C_6\text{-}C_{14})$aryl;

R^{15} is selected from the group consisting of $(C_1\text{-}C_6)$alkyl, $(C_1\text{-}C_6)$haloalkyl and unsubstituted $(C_6\text{-}C_{14})$aryl, preferably $(C_1\text{-}C_6)$alkyl and $(C_1\text{-}C_6)$haloalkyl;

R^{31}, R^{32}, R^{33}, R^{34} and R^{35} are each independently selected from the group consisting of hydrogen, substituted or unsubstituted $(C_1\text{-}C_6)$alkyl, -C(O)R^{14}, substituted or unsubstituted $(C_6\text{-}C_{14})$aryl$(C_1\text{-}C_6)$alkyl, -OR^{15} and -NH-C(O)-NH-B;

R^{51} is selected from the group consisting of hydrogen, substituted or unsubstituted $(C_1\text{-}C_6)$alkyl, $(C_1\text{-}C_6)$heteroalkyl, $(C_1\text{-}C_6)$haloalkyl; substituted or unsubstituted $(C_2\text{-}C_6)$alkenyl, substituted or unsubstituted $(C_2\text{-}C_6)$alkynyl, substituted or unsubstituted $(C_3\text{-}C_8)$cycloalkyl, substituted or

unsubstituted (C_6-C_{10})aryl, substituted or unsubstituted (C_6-C_{10})aryl(C_1-C_6)alkyl, substituted or unsubstituted (C_3-C_{10})heteroaryl, substituted or unsubstituted (C_3-C_{10})heteroaryl(C_1-C_6)alkyl, halogen, -CN, -NO_2, -OR^{61}, -$N(R^{62})(R^{63})$, -$N(R^{61})(OR^{61})$, -$S(O)_{0-2}R^{61}$, -$S(O)_{1-2}OR^{61}$, -$OS(O)_{1-2}R^{61}$, -$OS(O)_{1-2}OR^{61}$, -$S(O)_{1-2}N(R^{62})(R^{63})$, -$OS(O)_{1-2}N(R^{62})(R^{63})$, -$N(R^{61})S(O)_{1-2}R^{61}$, -$NR^{61}S(O)_{1-2}OR^{61}$, -$NR^{61}S(O)_{1-2}N(R^{62})(R^{63})$, -$C(=W)R^{61}$, -$C(=W)WR^{61}$, -$WC(=W)R^{61}$, and -$WC(=W)WR^{61}$;

R^{61} is, in each case, selected from the group consisting of -H, alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, and heterocyclyl;

R^{62} and R^{63} are, in each case, independently selected from the group consisting of -H, alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, and heterocyclyl;

R^{64} is independently selected from the group consisting of -H, alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl, heterocyclyl, and –OR^{61};

W is independently selected from O, S, and $N(R^{64})$;

B is phenyl, optionally substituted with 1-3 substituents independently selected from the group consisting of hydrogen, (C_1-C_6)alkyl, (C_1-C_6)haloalkyl, halogen, cyano, nitro, -O-(C_1-C_6)alkyl and -O-(C_1-C_6)haloalkyl, preferably hydrogen, (C_1-C_6)alkyl, (C_1-C_6)haloalkyl and halogen;

X is selected from O or S;

or a pharmaceutically acceptable salt, solvate or hydrate thereof.

3. The compound for use according to claim 1 or the pharmaceutical composition for use according to claim 2, wherein the compound having a structure according to Formula (I) is characterized in that

R^3 is –NR^4.

4. The compound for use or the pharmaceutical composition for use according to any one of claims 1-3, wherein the compound having a structure according to Formula (I) is characterized in that

R^{31}, R^{33}, R^{34} and R^{35} are hydrogen;

R^{32} is hydrogen or -NH-C(O)-NH-B;

R^{14} is selected from the group consisting of -O-(C_1-C_6)alkyl, -O-(C_1-C_6)haloalkyl and substituted or unsubstituted phenyl; and

R^{15} is (C_1-C_6)alkyl or (C_1-C_6)haloalkyl.

5. The compound for use or the pharmaceutical composition for use according to any one of claims 1-4, wherein the compound having a structure according to Formula (I) is characterized in that

R^{31}, R^{32}, R^{34} and R^{35} are hydrogen;

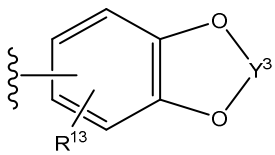
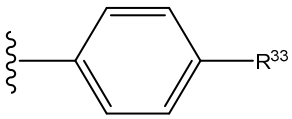
R^{33} is selected from the group consisting of hydrogen, (C_1-C_6)alkyl, -CH_2-R^{16} -C(O)-R^{14} and -OR^{15}, preferably hydrogen, (C_1-C_6)alkyl and -OR^{15};

R^{14} is substituted or unsubstituted phenyl, preferably unsubstituted phenyl;

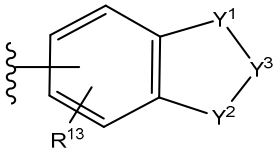
R^{15} is (C_1-C_6)alkyl or (C_1-C_6)haloalkyl, preferably (C_1-C_6)alkyl; and

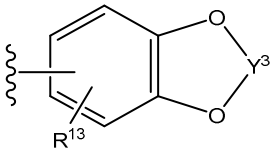
R^{16} is substituted or unsubstituted phenyl, preferably unsubstituted phenyl.

6. The compound for use or the pharmaceutical composition for use according to any one of claims 1-5, wherein the compound having a structure according to Formula (I) is characterized in that

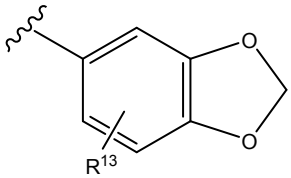
R^4 is  or .

7. The compound for use or the pharmaceutical composition for use according to any one of claims 1-6, wherein the compound having a structure according to Formula (I) is characterized in that



or


are selected from the group consisting of



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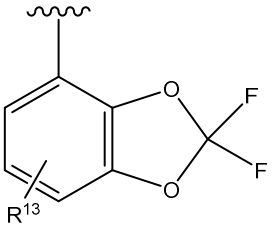

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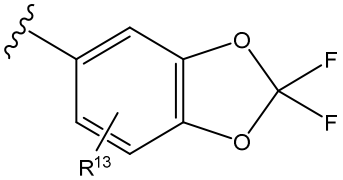
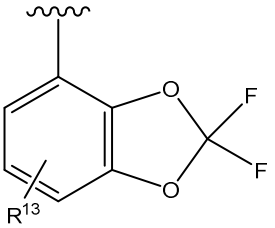


, preferably



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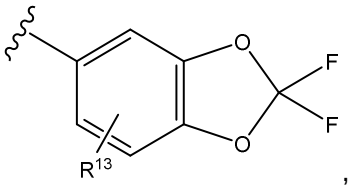
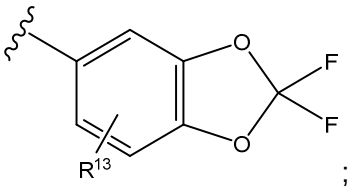


, more preferably



; and

R^{13} is hydrogen or halogen, preferably hydrogen.

8. The compound for use or the pharmaceutical composition for use according to any one of claims 1-7, wherein the compound having a structure according to Formula (I) is characterized in that

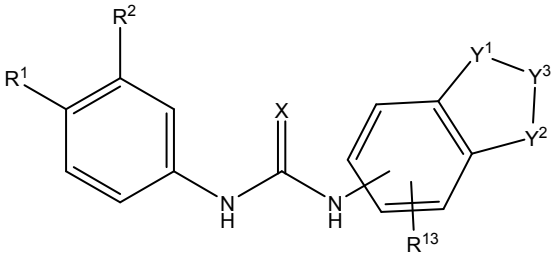
R^1 is halogen, preferably chlorine;

R^2 is $–CH_3$ or $–CF_3$, preferably $–CF_3$.

9. The compound for use or the pharmaceutical composition for use according to any one of claims 1-8, wherein the bacterial disease is caused by at least one bacteria selected from the group consisting of *Listeria monocytogenes, Listeria welshimeri, Staphylococcus aureus, MRSA*

and clinical isolates thereof; Vancomycin-intermediate Staphylococcus aureus, Vancomycin-resistant Staphylococcus aureus, Staphylococcus haemolyticus, Staphylococcus hominis, Staphylococcus epidermidis, Staphylococcus saprophyticus, Staphylococcus lugdunensis, Staphylococcus schleiferi, Staphylococcus caprae, Streptococcus pneumoniae, Streptococcus viridans, Streptococcus pyogenes, Streptococcus agalactiae, Enterococcus faecalis, Enterococcus faecium, Bacillus licheniformis, Bacillus subtilis, Bacillus anthracis, Bacillus cereus, Bacillus thuringiensis, Bacillus larvae, Mycobacterium tuberculosis, Mycobacterium bovis, Mycobacterium leprae, Mycobacterium ulcerans, Mycobacterium kanasasii, Mycobacterium avium, Mycobacterium paratuberculosis, Mycobacterium scrofulaceam, Mycobacterium microti, Mycobacterium africanum, Mycobacterium canettii, Mycobacterium intracellulare, Mycobacterium simiae, Mycobacterium szulgai, Mycobacterium xenopi, Mycobacterium fortuitum, Mycobacterium chelonei, Mycobacterium marinum, Nocardia asteroids, Rhodococcus equi and Burkholderia thailandensis, preferably wherein the bacterial disease is caused by gram positive bacteria.

10. A compound having a structure according to Formula II



(II)

wherein

R^1 is cyano or halogen, preferably halogen, more preferably chlorine;

R^2 is $(C_1\text{-}C_6)$alkyl or $(C_1\text{-}C_6)$haloalkyl, preferably $(C_1\text{-}C_6)$haloalkyl, more preferably $–CF_3$;

Y^1 and Y^2 are each independently selected from the group consisting of O, S, SO and SO_2, preferably O or S, more preferably O;

Y^3 is $CR^{11}R^{12}$;

R^{11} and R^{12} are each independently selected from the group consisting of hydrogen and halogen, preferably halogen, more preferably fluorine;

R^{13} is selected from the group consisting of hydrogen, $(C_1\text{-}C_6)$alkyl, $(C_1\text{-}C_6)$haloalkyl and halogen, preferably hydrogen;

X is O or S, preferably O;

or a pharmaceutically acceptable salt, solvate or hydrate thereof.

11. The compound according to claim 10, wherein said compound is selected from the group consisting of

1-(4-chloro-3-methylphenyl)-3-(2,2-difluorobenzo[d][1,3]dioxol-5-yl)urea,

1-(4-chloro-3-(trifluoromethyl)phenyl)-3-(2,2-difluorobenzo[d][1,3]dioxol-5-yl)urea,

1-(4-chloro-3-(trifluoromethyl)phenyl)-3-(2,2-difluorobenzo[d][1,3]dioxol-5-yl)thiourea,

1-(benzo[d][1,3]dioxol-5-yl)-3-(4-chloro-3-(trifluoromethyl)phenyl)urea, and

1-(4-chloro-3-(trifluoromethyl)phenyl)-3-(2,2-difluorobenzo[d][1,3]dioxol-4-yl)urea.

12. The compound according to any one of claims 10 and 11 for use in medicine.

13. The compound according to any one of claims 10 and 11 for use in the treatment of a bacterial disease, preferably wherein the bacterial disease is caused by gram positive bacteria, more preferably by a methicillin-resistant *Staphylococcus aureus* strain(MRSA).

14. A kit comprising a compound according to any one of claim 10 and 11 and at least one pharmaceutically acceptable carrier.

15. Use of a compound having a structure according to any one of claims 10 and 11 as a disinfectant.