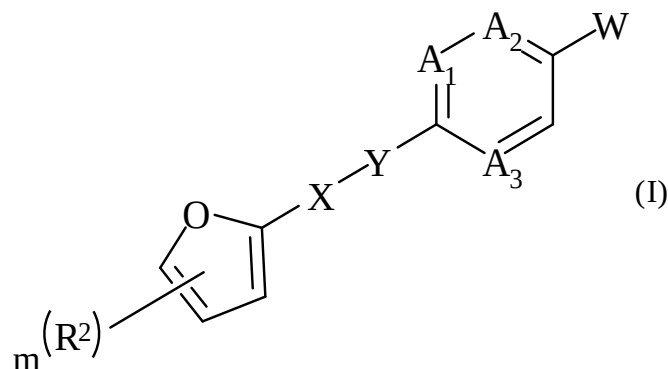
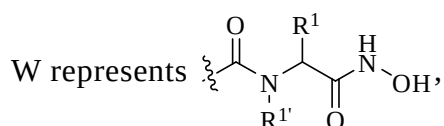


Claims

1. A compound represented by the general formula (I), a pharmaceutically acceptable salt thereof, an ester thereof, a prodrug thereof, a solvate thereof, or a deuterated analog thereof, or a stereoisomer thereof:



wherein,



R^1 is selected from a group consisting of $-(CH_2)_{0-4}C(R^{1a}, R^{1b})(CH_2)_{0-4}OR^3$, and $-(CH_2)_{0-4}C(R^{1a}, R^{1b})(CH_2)_{0-4}S(O)_{0-2}R^6$,

wherein, R^{1a} , R^{1b} , R^3 , and R^6 are each independently selected from a group consisting of H, C_{1-6} alkyl and OH;

$R^{1'}$ is selected from a group consisting of hydrogen and C_{1-6} alkyl;

A_1 , A_2 , and A_3 are each independently selected from a group consisting of CH and N;

X and Y are each independently selected from a group consisting of a benzene ring group, an alkenyl group, an alkynyl group and $-\zeta- \equiv N - \zeta-$;

R^2 is $\zeta-B-C$,

B represents $-(C_{1-8}\text{alkyl})-$, wherein 0-2 carbon atoms in said $-(C_{1-8}\text{alkyl})-$ are replaced with -O- or $-NR^8-$,

C is selected from a group consisting of $-OR^9$, $-NR^9R^{9'}$, and

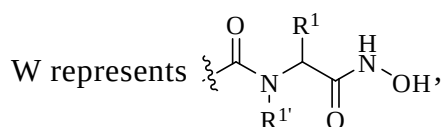
Q is a group selected from a group consisting of NR^c and O;

R^8 , R^9 and $R^{9'}$ are each independently selected from hydrogen atom, and C_{1-6} alkyl; and

m is 1, 2 or 3.

2. The compound according to claim 1, a pharmaceutically acceptable salt thereof, an ester thereof, a prodrug thereof, a solvate thereof, or a deuterated analog thereof, or a stereoisomer thereof:

wherein,



R^1 is $-C(R^{1a}, R^{1b})OR^3$, wherein, R^{1a} , R^{1b} , and R^3 are each independently selected from a group consisting of hydrogen atom, methyl and hydroxyl;

$R^{1'}$ is selected from a group consisting of hydrogen and C_{1-4} alkyl;

A_1 , A_2 , and A_3 are each independently selected from a group consisting of CH and N;

X and Y are each independently selected from a group consisting of a benzene ring group, an alkenyl group, an alkynyl group and $-\zeta- \equiv N-\zeta-$;

R^2 is $-\zeta-B-C$,

B represents $-(C_{1-4}alkyl)-$,

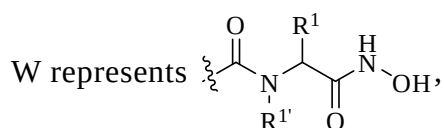
C is selected from a group consisting of $-OR^9$ and $-NR^9R^{9'}$,

R^9 and $R^{9'}$ are each independently selected from hydrogen atom, methyl, ethyl, isopropyl; and

m is 1 or 2.

3. The compound according to claim 1 or 2, a pharmaceutically acceptable salt thereof, an ester thereof, a prodrug thereof, a solvate thereof, or a deuterated analog thereof, or a stereoisomer thereof:

wherein,



R^1 is $-C(H, CH_3)OH$;

R¹ is selected from a group consisting of H, methyl, and ethyl;

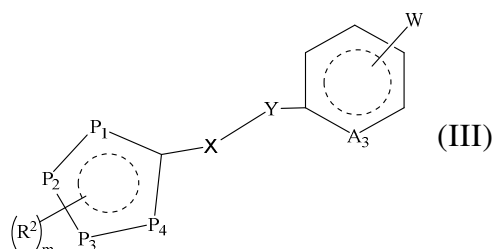
A₁, A₂, and A₃ are each independently selected from a group consisting of CH and N;

X and Y are each independently selected from a group consisting of a benzene ring group, an alkenyl group, an alkynyl group, and $-\zeta- \equiv N - \zeta-$.

R² is -CH₂OH; and

m is 1.

4. A compound represented by the general formula (III), a pharmaceutically acceptable salt thereof, an ester thereof, a prodrug thereof, a solvate thereof, or a deuterated analog thereof, or a stereoisomer thereof:



wherein,

W represents -(C₀₋₈alkyl)-C(O)-N(R¹)-(C₁₋₈alkyl optionally substituted by R¹)-C(O)-N(H)-OH;

R¹ is each independently selected from a group consisting of C₁₋₈alkyl optionally substituted by OH and -(C₀₋₈alkyl)S(O)₁₋₂R³, wherein, R³ is selected from a group consisting of hydrogen atom and C₁₋₈alkyl optionally substituted by a substituent group;

R¹ is selected from a group consisting of hydrogen atom, hydroxyl, methyl, ethyl, propyl, isopropyl, butyl, sec-butyl and tert-butyl, or R¹ and the carbon atom in the C₀₋₈alkyl in the group W, together with the groups N and C(O), form a 6-membered unsaturated heterocyclic group;

A₃ is selected from a group consisting of CR^aR^a and NR^c;

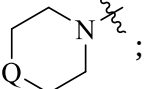
X and Y are each independently selected from a group consisting of a benzene ring group optionally substituted by a substituent group, -(C=C)-, -(C≡C)-, =N-, and -C(O)-NR^c-, wherein X and Y are not simultaneously each a benzene ring group optionally substituted by a substituent group;

the five-membered ring moiety containing P₁, P₂, P₃, and P₄ as shown in general formula (III) is selected from a group consisting of a furan group, a pyrrole group, a pyrazole group, a triazole group and a thiophene group;

m represents 1, 2 or 3;

in each occurrence, R² each independently represents $\cdot\text{B}-\text{C}$;

in each occurrence, B independently represents a bond, or is each independently selected from a group consisting of C₁₋₈alkyl optionally in which at least one carbon atom is replaced with at least one group of O and NR^c;

in each occurrence, C independently represents -OR^c, -NR^cR^c, or ;

Q is a group selected from a group consisting of NR^c and O;

R^a either is absent or in each occurrence are each independently selected from a group consisting of hydrogen atom and;

R^c either is absent or in each occurrence are each independently selected from a group consisting of hydrogen atom and

said substituent group in "optionally substituted by a substituent group" is each independently selected from a group consisting of hydroxyl and

 in the five-membered ring and the six-membered ring represents a double bond optionally present in the ring;

provided that:

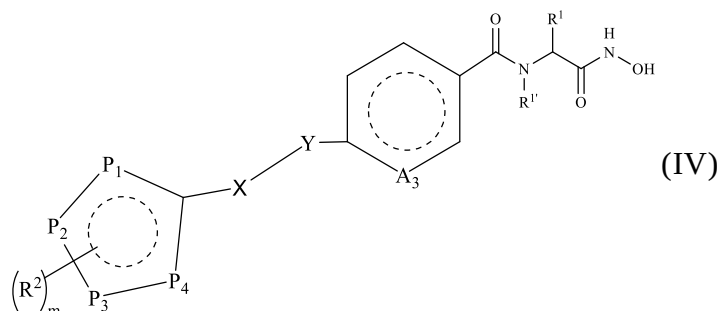
when R¹ represents the C₁₋₈alkyl substituted by a substituent, and the substituent contains hydroxyl, each carbon atom of the C₁₋₈alkyl carries at least one hydrogen;

when R¹ represents the C₁₋₈alkyl substituted by a substituent, and the substituent contains amino, C₁₋₈alkylamino or (C₁₋₈alkyl)₂amino, at least one of X and Y represents a benzene ring group optionally substituted by a substituent group; and

when the five-membered ring contains one nitrogen atom, the five-membered ring is bonded to X through a non-nitrogen atom.

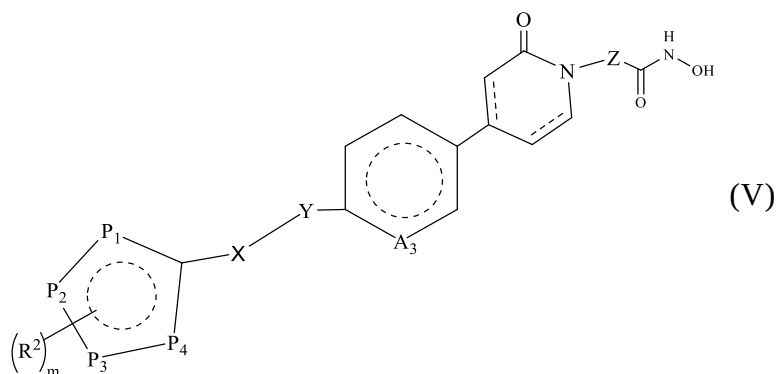
5. The compound according to claim 4, a pharmaceutically acceptable salt thereof, an ester thereof, a prodrug thereof, a solvate thereof, or a deuterated analog thereof, or a

stereoisomer thereof, which compound is a compound represented by the following general formula (IV):



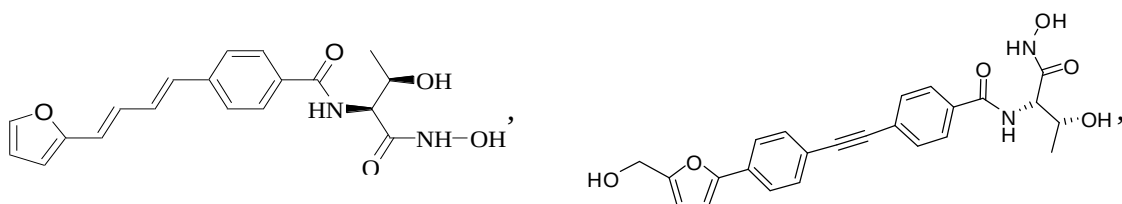
wherein each group is defined as in claim 4.

6. The compound according to claim 4, a pharmaceutically acceptable salt thereof, an ester thereof, a prodrug thereof, a solvate thereof, or a deuterated analog thereof, or a stereoisomer thereof, which compound is a compound represented by the following general formula (V):

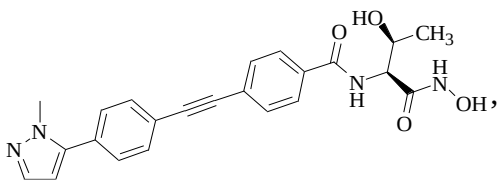
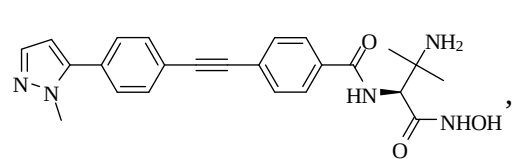
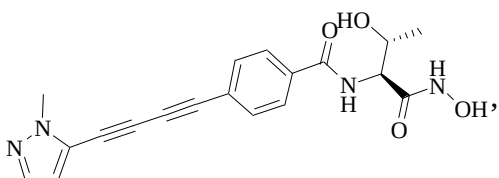
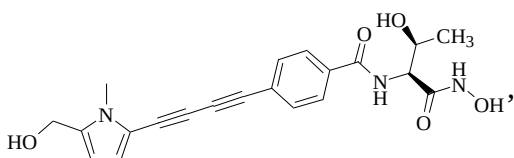
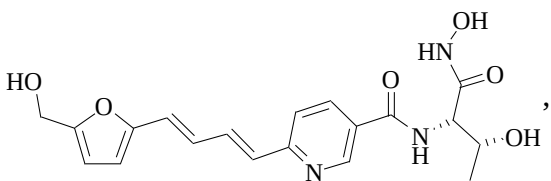
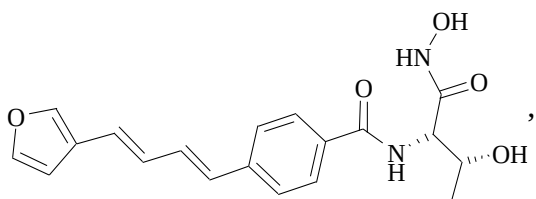
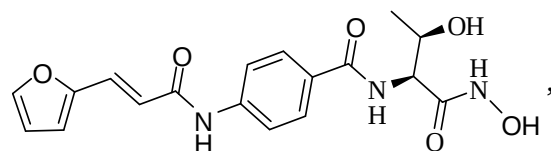
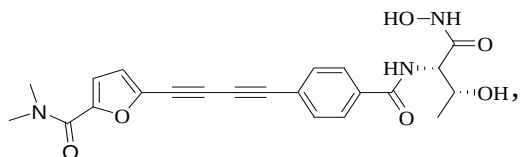
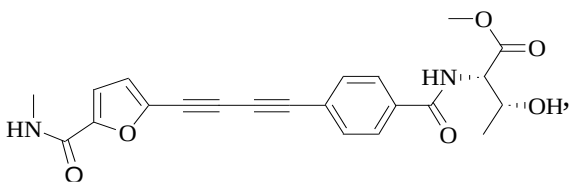
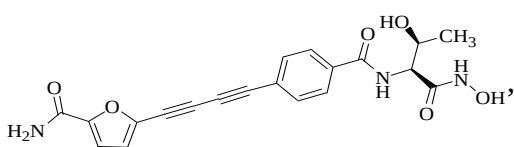
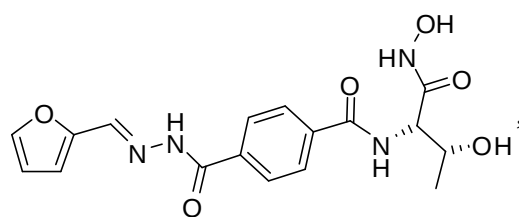
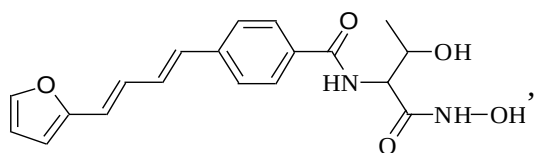
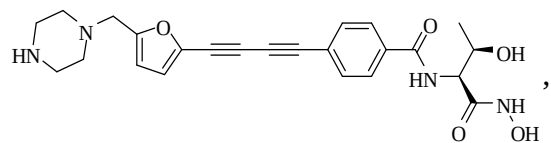
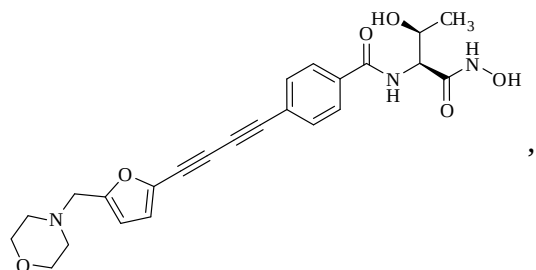
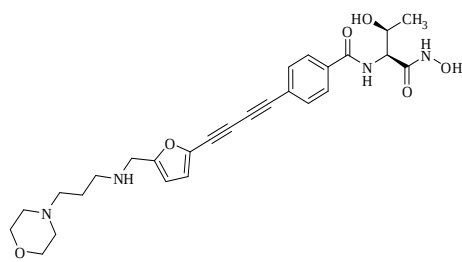
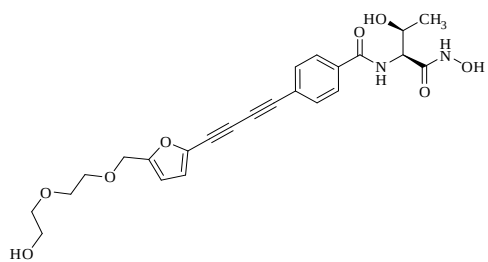


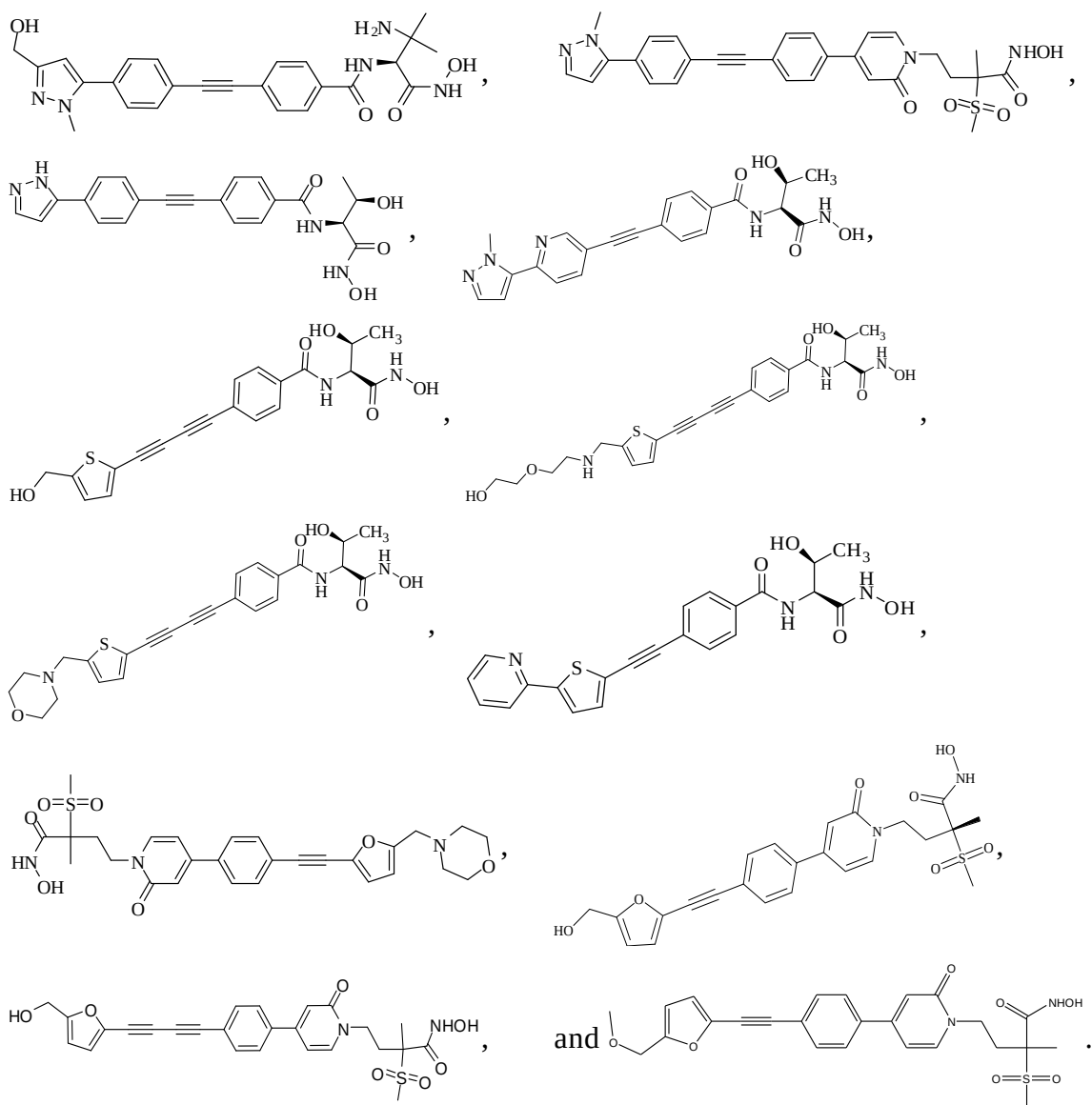
wherein each group is defined as in claim 4, Z represents C₁₋₈alkyl optionally substituted by R¹, == represents a double bond.

7. A compound, a pharmaceutically acceptable salt thereof, an ester thereof, a prodrug thereof, a solvate thereof, or a deuterated analog thereof, or a stereoisomer thereof, which compound is selected from a group consisting of the following compounds:









8. A pharmaceutical composition, comprising the compound according to claim 1, a pharmaceutically acceptable salt thereof, an ester thereof, a prodrug thereof, a solvate thereof, or a deuterated analog thereof, or a stereoisomer thereof.

9. The compound according to claim 1, a pharmaceutically acceptable salt thereof, an ester thereof, a prodrug thereof, a solvate thereof, or a deuterated analog thereof, or a stereoisomer thereof, or a pharmaceutical composition comprising the compound according to claim 1 for use in the treatment of infectious diseases caused by Gram-negative bacteria.

10. A pharmaceutical composition, comprising the compound according to claim 4, a pharmaceutically acceptable salt thereof, an ester thereof, a prodrug thereof, a solvate thereof, or a deuterated analog thereof, or a stereoisomer thereof.

11. The compound according to claim 4, a pharmaceutically acceptable salt thereof, an ester thereof, a prodrug thereof, a solvate thereof, or a deuterated analog thereof, or a stereoisomer thereof, or a pharmaceutical composition comprising the compound according to claim 4 for use in the treatment of infectious diseases caused by Gram-negative bacteria.

12. A pharmaceutical composition, comprising the compound according to claim 7, a pharmaceutically acceptable salt thereof, an ester thereof, a prodrug thereof, a solvate thereof, or a deuterated analog thereof, or a stereoisomer thereof.

13. The compound according to claim 7, a pharmaceutically acceptable salt thereof, an ester thereof, a prodrug thereof, a solvate thereof, or a deuterated analog thereof, or a stereoisomer thereof, or a pharmaceutical composition comprising the compound according to claim 7 for use in the treatment of infectious diseases caused by Gram-negative bacteria.