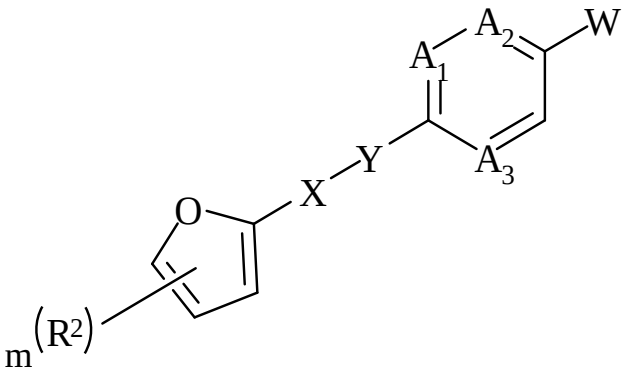
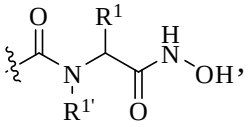
Claims

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:



(I)

wherein,

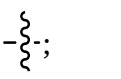
W represents ,

R^1 is selected from a group consisting of $-(CH_2)_{0-4}C(R^{1a},R^{1b})(CH_2)_{0-4}OR^3$, ~~$-(CH_2)_{0-4}C(O)NR^4R^5$, $-(CH_2)_{0-4}C(R^{1a},R^{1b})NR^4R^5$, $-(CH_2)_{0-4}C(R^{1a},R^{1b})(CH_2)_{0-4}S(O)_{0-2}R^6$~~ and $-(CH_2)_{0-4}C(R^{1a},R^{1b})(CH_2)_{0-4}$~~$SC_4$~~S(O)~~$R^7$~~$_{0-2}R^6$,

wherein, R^{1a}, R^{1b}, R^3, ~~R^4, R^5, R^6,~~ and ~~R^7~~R^6 are each independently selected from a group consisting of H, C_{1-6}~~alkyl~~$_6$ alkyl and OH;

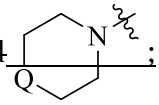
$R^{1'}$ is selected from a group consisting of hydrogen and C_{1-6}alkyl;

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

X and Y are each independently selected from a group consisting of a benzene ring group, ~~a 3-8 membered unsaturated heterocyclic group,~~ an alkenyl group, an alkynyl group and ;

R^2 is ,

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

C is selected from a group consisting of ~~C_{1-6}alkyl,~~ -OR^9, -$NR^9R^{9'}$, ~~phenyl~~ and ~~3-8 membered saturated~~ ;

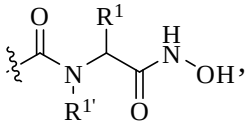
Q is a group selected from a group consisting of NR^c and~~/or unsaturated heterocyclyl,~~ O;

R^8, R^9 and $R^{9'}$ are each independently selected from hydrogen atom, and C_{1-6}alkyl~~,~~; and ~~C_{3-6}cycloalkyl;~~

m is ~~0,~~ 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:

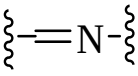
wherein,

W represents ,

R^1 is ~~selected from a group consisting of -C(R^{1a},R^{1b})OR^3 and -C(O)NR^4R^5~~, wherein, R^{1a}, R^{1b}, and R^3~~, R^4 and R^5~~ 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, ~~5-6 membered unsaturated heterocyclic group,~~ an alkenyl group, an alkynyl group and ;

R^2 is ,

B ~~is absent or~~ represents -(C_{1-4}alkyl)-,

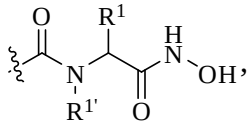
C is selected from a group consisting of -OR^9 and -$NR^9R^{9'}$,

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

m is ~~0,~~ 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:

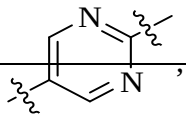
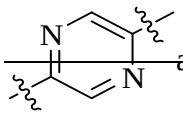
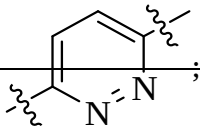
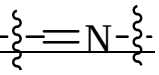
wherein,

W represents ,

R^1 is ~~selected from a group consisting of~~ -$C(H,CH_3)OH$ ~~and -C(O)NHCH$_3$;~~;

$R^{1'}$ is selected from a group consisting of H, methyl, and ethyl;

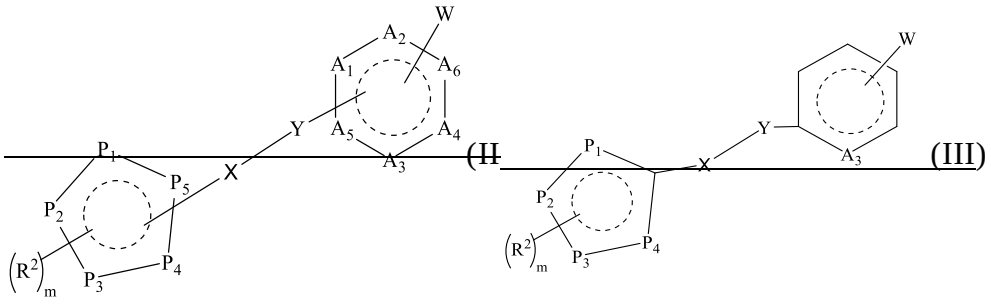
A_1, A_2, and A_3 are each independently selected from a group consisting of CH and N;

X and Y are each independently selected from a group consisting of a benzene ring group, ~~a pyrrole ring group, an imidazole ring group, a pyrazole ring group, a 1,2,3-triazole ring group, a 1,2,4-triazole ring group, a tetrazole ring group, a furan ring group, an oxazole ring group, an isoxazole ring group, a 1,2,4-oxadiazole ring group, a pyridine ring group, an alkenyl group, an alkynyl group,~~ , ,  ~~and~~ ;an alkenyl group, an alkynyl group, and 

R^2 is -CH_2OH; and

m is ~~0 or~~ 1.

4. A compound represented by the general formula (~~H~~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 -(C_{0-8}alkyl~~ optionally substituted by a substituent group~~)-C(O)-N($R^{1'}$)-(C_{1-8}alkyl optionally substituted by R^1)-C(O)-N(H)-OH;

R^1 is each independently selected from a group consisting of C_{1-8}alkyl optionally substituted by ~~a substituent group, -(C_{0-8}alkyl optionally substituted by a substituent group)C(O)NR^4R^5, -(C_{0-8}alkyl optionally substituted by a substituent group)S(O)$_{1-2}R^3$~~OH and -(C_{0-8}alkyl)S(O)$_{1-2}R^3$~~ optionally substituted by a substituent group)S(O)$_{1-2}$NR^4R^5~~, wherein, R^3~~, R^4~~, and R^5~~ are each independently~~ is selected from a group consisting of hydrogen atom~~, halogen atom,~~ and C_{1-8}alkyl optionally substituted by a substituent group~~, C_{2-8}alkenyl optionally substituted by a substituent group and C_{2-8}alkynyl optionally substituted by a substituent group~~;

$R^{1'}$ is selected from a group consisting of hydrogen atom, hydroxyl, ~~halogen atom, carboxyl, C_{1-8}alkyl optionally substituted by a substituent group, C_{2-8}alkenyl optionally substituted by a substituent group and C_{2-8}alkynyl optionally substituted by a substituent group, or $R^{1'}$ and the carbon atom in the C_{0-8}alkyl optionally substituted by a substituent group in the group W, together with the groups N and C(O), form a 5-6 membered heterocyclic group; preferably $R^{1'}$ is selected from a group consisting of hydrogen atom, hydroxyl, halogen atom and C_{1-8}alkyl, or $R^{1'}$ and the carbon atom in the C_{0-8}alkyl optionally substituted by a substituent group in the group W, together with the groups N and C(O), form a 5-6 membered unsaturated heterocyclic group; more preferably $R^{1'}$ is selected from a group consisting of hydrogen atom, methyl, ethyl, propyl, isopropyl, butyl, sec-butyl and tert-butyl, or $R^{1'}$ and the carbon atom in the C_{0-8}alkyl optionally substituted by a substituent group in the group W, together with the groups N and C(O), form a 6 membered unsaturated heterocyclic group;~~methyl, ethyl, propyl, isopropyl, butyl, sec-butyl and tert-butyl, or $R^{1'}$ and the carbon atom in the C_{0-8}alkyl in the group W, together with the groups N and C(O), form a 6-membered unsaturated heterocyclic group;

~~A_1, A_2, A_3, A_4, A_5, and A_6 are each independently~~ is selected from a group consisting of CR^aR^a~~,~~ and NR^c~~, O, and S~~;

X and Y are each independently selected from a group consisting of a ~~bond, a 5-14 membered heteroaryl group optionally substituted by a substituent group, a 6-14 membered aryl~~benzene ring group optionally substituted by a substituent group, -(C=C)-, -(C≡C)-, =N-, and -C(O)-NR^c-, wherein ~~at least one of X and Y is not a bond; preferably, X~~simultaneously benzene ring group optionally substituted by a substituent

~~group~~ X and Y are not simultaneously ~~a 6-14 membered aryl~~each a benzene ring group optionally substituted by a substituent group; ~~preferably, when one of X and Y represents a bond,~~

~~the other does not represent a 6-14 membered aryl group optionally substituted by a substituent group;~~

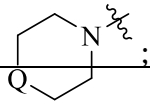
the five-membered ring moiety containing P_1, P_2, P_3, and P_4~~, and P_5 are each independently~~ as shown in general formula (III) is selected from a group consisting of ~~CR^aR^a, NR^e, O, and S; preferably, at least one of P_1, P_2, P_3, P_4, and P_5 is a~~a furan group, a pyrrole group, a pyrazole group, a triazole group ~~selected from~~and a thiophene group ~~consisting of NR^e, O, and S; more preferably, the group X is bonded to the carbon atom of the 5-membered ring; ~~;

m represents ~~an integer of 0-4, preferably 0,~~ 1, 2 or 3;

in each occurrence, R^2 each independently represents ;

in each occurrence, B independently represents a bond, or is each independently selected from a group consisting of C_{1-8}alkyl optionally in which at least one carbon atom is replaced with at least one group of ~~S, O and NR^e and/or optionally substituted by a substituent group, C_{2-8}alkenyl optionally in which at least one carbon atom is replaced with at least one group of S, O and NR^e and/or optionally substituted by a substituent group and C_{2-8}alkynyl optionally in which at least one carbon atom is replaced with at least one group of S, O and NR^e and/or optionally substituted by a substituent group~~O and NR^c;

~~in each occurrence, C independently represents hydrogen atom, cyano, mercapto, halogen atom, carboxyl, nitro, C_{1-8}alkyl optionally substituted by a substituent group, C_{1-8}alkyloxy optionally substituted by a substituent group, $-OR^e$, $-NR^eR^e$, 3-12 membered cycloalkyl optionally substituted by a substituent group, 3-12 membered heterocyclyl optionally substituted by a substituent group, 5-14 membered heteroaryl optionally substituted by a substituent group and 6-14 membered aryl optionally substituted by a substituent group;~~

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~~, cyano, mercapto, halogen atom, carboxyl, nitro, -OR^e, -NR^eR^e, -$N(OH)R^e$, -$C(O)R^d$, -$C(O)OR^e$, -$C(O)NR^eR^e$, -$OC(O)NR^eR^e$, -$NR^eC(O)OR^e$, -$NR^eC(O)R^d$, -$S(O)_{1-2}NR^eR^e$, -$S(O)_{1-2}R^d$, -$NR^eS(O)_{1-2}R^d$, -$S(O)_{1-2}OR^e$, C_{1-8}alkyl optionally substituted by a substituent group, -(C_{1-8}alkyl optionally substituted by a substituent group)OR^e, -(C_{1-8}alkyl optionally substituted by a substituent group)NR^eR^e, C_{1-8}alkyloxy optionally substituted by a substituent group, C_{2-8}alkenyl optionally substituted by a substituent group, C_{2-8}alkynyl optionally substituted by a substituent group, 3-12 membered cycloalkyl optionally substituted by a substituent group, 3-12 membered heterocyclyl optionally substituted by a substituent group, 6-14 membered aryl optionally substituted by a substituent group and 5-14 membered heteroaryl optionally substituted by a substituent group;~~ and;

R^c either is absent or in each occurrence are each independently selected from a group consisting of hydrogen atom~~, halogen atom, carboxyl, -$C(O)R^d$, -$C(O)OR^b$, -$C(O)NR^bR^b$, -$S(O)_{1-2}NR^bR^b$, -$S(O)_{1-2}R^d$, -$S(O)_{1-2}OR^b$, C_{1-8}alkyl optionally substituted by a substituent group, -(C_{1-8}alkyl optionally substituted by a substituent group)OR^b, -(C_{1-8}alkyl optionally substituted by a substituent group)NR^bR^b, C_{2-8}alkenyl optionally substituted by a substituent group, C_{2-8}alkynyl optionally substituted by a substituent group, 3-12 membered cycloalkyl optionally substituted by a substituent group, 3-12 membered heterocyclyl optionally substituted by a substituent group, 6-14 membered aryl optionally substituted by a substituent group and 5-14 membered heteroaryl optionally substituted by a substituent group; or in case that two R^c groups are attached to the same atom, two R^c groups, together with the atom attached thereto, form 3-12 membered heterocycle optionally substituted by a substituent group;~~

~~R^b, in each occurrence, is each independently selected from a group consisting of hydrogen atom, halogen atom, carboxyl, sulfonic acid group, C_{1-8}alkyl optionally substituted by a substituent group, C_{1-8}alkylsulfonyl optionally substituted by a substituent group, C_{1-8}alkylsulfinyl optionally substituted by a substituent group, 3-12 membered cycloalkyl optionally substituted by a substituent group, 3-12 membered heterocyclyl optionally substituted by a substituent group, 6-14 membered aryl optionally substituted by a substituent group and 5-14 membered heteroaryl optionally substituted by a substituent group; or in case that two R^b groups are attached to the~~

~~same atom, two R^b groups, together with the atom attached thereto, form 3-12 membered heterocycle optionally substituted by a substituent group;~~

~~R^d, in each occurrence, is each independently selected from a group consisting of hydrogen atom, hydroxyl, mercapto, halogen atom, carboxyl, nitro, amino, C_{1-8}alkylamino optionally substituted by a substituent group, (C_{1-8}alkyl optionally substituted by a substituent group)$_2$amino, sulfonic acid group, C_{1-8}alkyl optionally substituted by a substituent group, C_{1-8}alkyloxy optionally substituted by a substituent group, C_{1-8}alkylsulfonyl optionally substituted by a substituent group, C_{1-8}alkylsulfinyl optionally substituted by a substituent group, 3-12 membered cycloalkyl optionally substituted by a substituent group, 3-12 membered heterocyclyl optionally substituted by a substituent group, 6-14 membered aryl optionally substituted by a substituent group and 5-14 membered heteroaryl optionally substituted by a substituent group;~~ and

said substituent group in "optionally substituted by a substituent group" is each independently selected from a group consisting of hydroxyl~~, mercapto, carboxyl, cyano, nitro, amino, halogen atom, sulfonic acid group, C_{1-8}alkyl, C_{1-8}alkoxyC_{1-8}alkyl, hydroxyC_{1-8}alkyl, aminoC_{1-8}alkyl, carboxyC_{1-8}alkyl, ester group-C_{1-8}alkyl, C_{1-8}alkyloxy, hydroxyC_{1-8}alkyloxy, aminoC_{1-8}alkyloxy, carboxyC_{1-8}alkyloxy, C_{1-8}alkylC_{1-8}alkyloxy, C_{1-8}alkoxyC_{1-8}alkyloxy, ester group-C_{1-8}alkyloxy, C_{1-8}alkylamino, (C_{1-8}alkyl)$_2$amino, aminoC_{1-8}alkylamino, (aminoC_{1-8}alkyl)$_2$amino, C_{1-8}alkyl-ester group, aminocarbonyl, C_{1-8}alkylaminocarbonyl, (C_{1-8}alkyl)$_2$aminocarbonyl, C_{1-8}alkylcarbonyl, C_{1-8}alkylcarbonyloxy, C_{1-8}alkylcarbonylamino, C_{1-8}alkylsulfamido, haloC_{1-8}alkyl, haloC_{1-8}alkyloxy, C_{1-8}alkylsulfonyl, C_{1-8}alkylsulfinyl, C_{1-8}alkylthio, 3-12 membered cycloalkyl, 6-14 membered aryl, 3-12 membered heterocyclyl, 5-14 membered heteroaryl and oxo,~~ and

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

provided that~~-~~:

when R^1 represents the C_{1-8}alkyl substituted by a substituent, and the substituent contains hydroxyl, each carbon atom of the C_{1-8}alkyl carries at least one hydrogen;

when R^1 represents the C_{1-8}alkyl substituted by a substituent, and the substituent contains ~~hydroxyl, the five-membered ring does not represent the imidazole~~

~~ring group;~~amino, C_{1-8}alkylamino or $(C_{1-8}alkyl)_2$amino, at least one of X and Y represents a benzene ring group optionally substituted by a substituent group; and

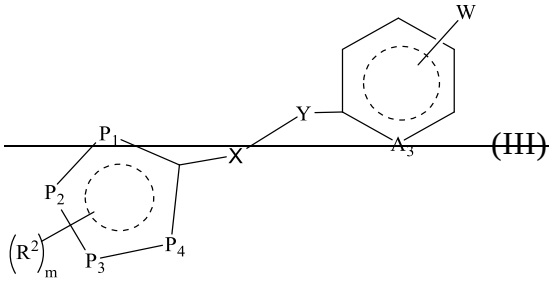
~~when R^1 represents the C_{1-8}alkyl substituted by a substituent, and the substituent contains amino, C_{1-8}alkylamino or $(C_{1-8}alkyl)_2$amino, at least one of X and Y represents 6-14 membered aryl group optionally substituted by a substituent group;~~

~~when the five-membered ring is the thiophene ring group, m is not 0;~~

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

~~when R^1 represents -(C_{0-8}alkyl optionally substituted by a substituent group)C(O)NR^4R^5, neither X nor Y is a bond, the five-membered ring represents the furan ring group, and m is not 0.~~

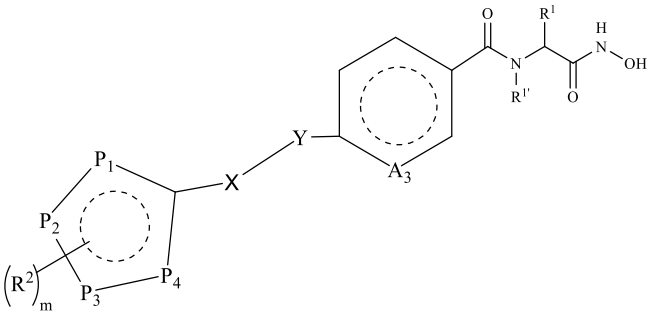
~~5. The compound according to claim 4, a pharmaceutically acceptable salt thereof, an ester thereof, a prodrug thereof, a solvate thereof, or a deuterated analog thereof, or a stereoisomer thereof, which compound is a compound represented by the following general formula (III):~~



~~(III)~~

~~wherein each group is defined as in claim 4.~~

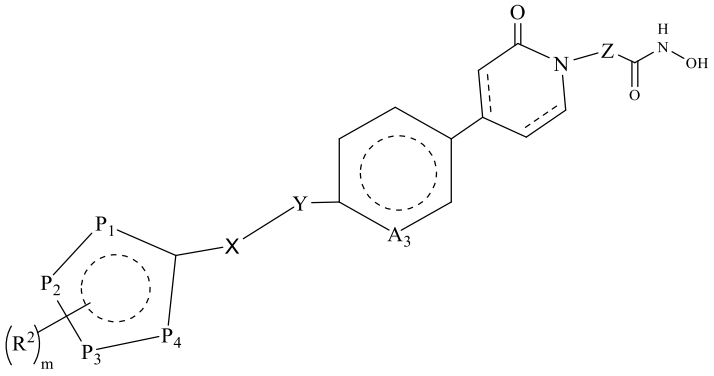
~~6~~5. The compound according to claim 4~~ or 5~~, a pharmaceutically acceptable salt thereof, an ester thereof, a prodrug thereof, a solvate thereof, or a deuterated analog thereof, or a stereoisomer thereof, which compound is a compound represented by the following general formula (IV):



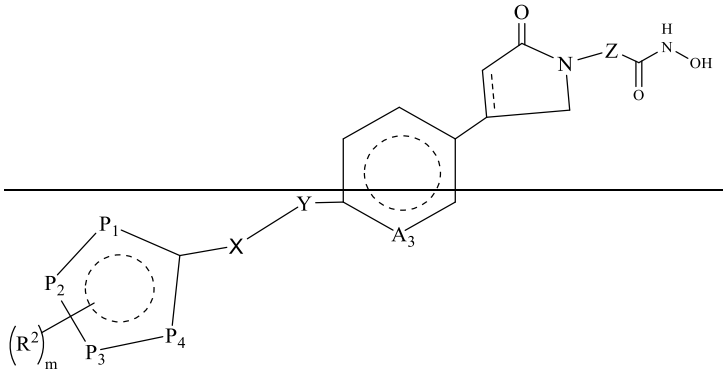
(IV)

wherein each group is defined as in claim 4.

~~7~~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~~) or (VI~~):



(V)

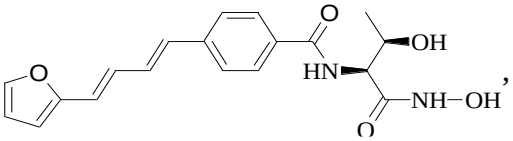


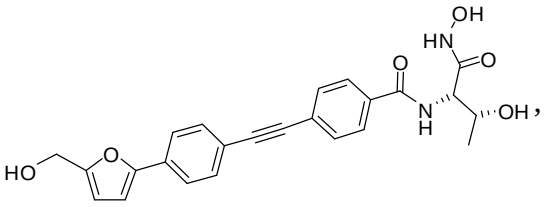
~~(VI)~~

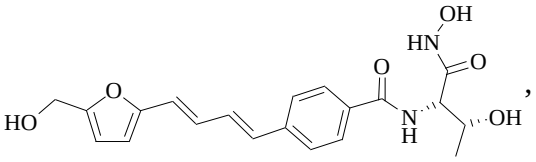
wherein each group is defined as in claim 4, Z represents $C_{1\text{-}8}$alkyl optionally substituted by R^1, ═ ┄ represents ~~a single bond or~~ a double bond.

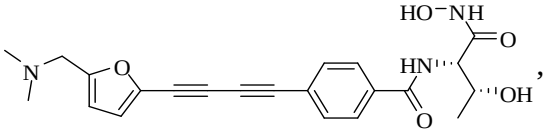
~~8~~7. ~~The~~ A ~~-~~compound ~~according to claim 1 or 4~~, a pharmaceutically acceptable salt thereof, an ester thereof, a prodrug thereof, a solvate thereof, or a deuterated analog

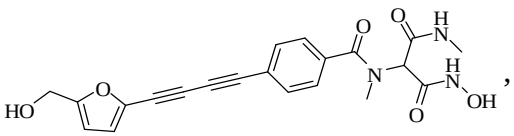
thereof, or a stereoisomer thereof, which compound is selected from a group consisting of the following compounds:

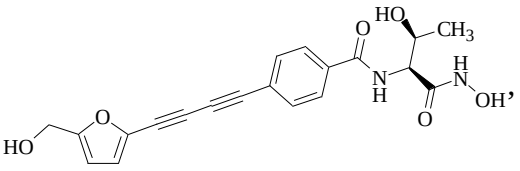

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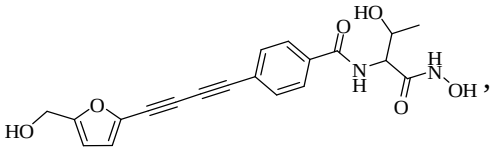

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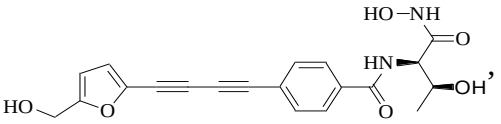

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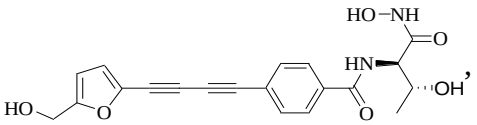

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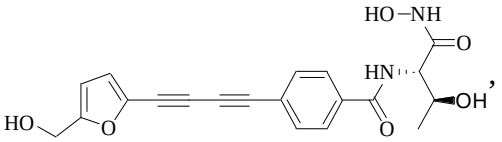

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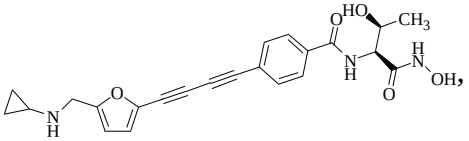

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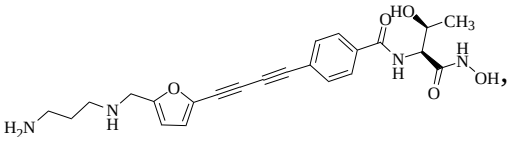

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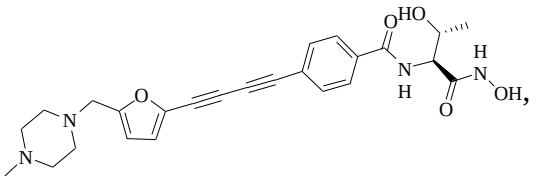

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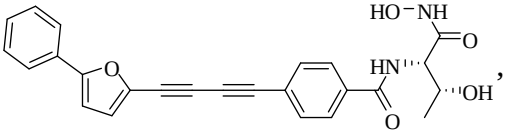

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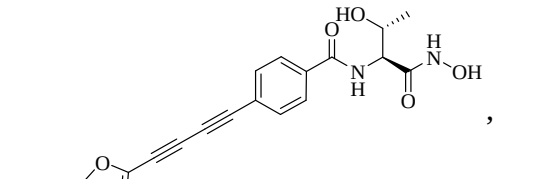

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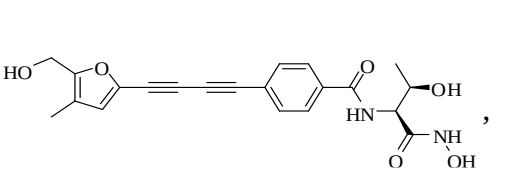

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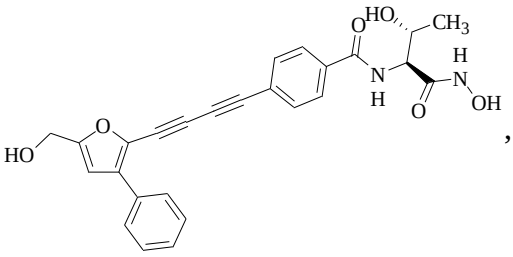
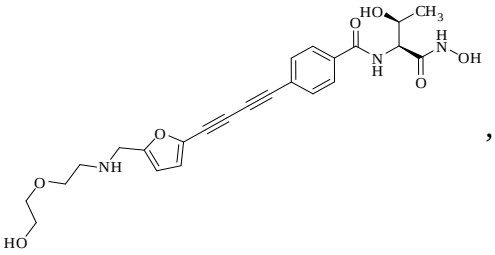
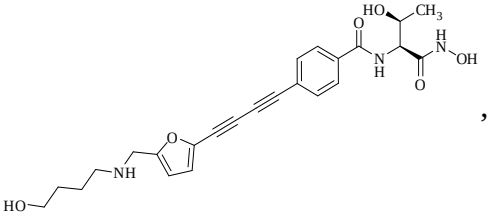
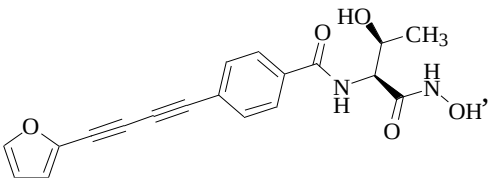
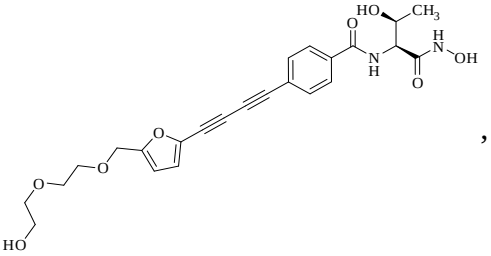
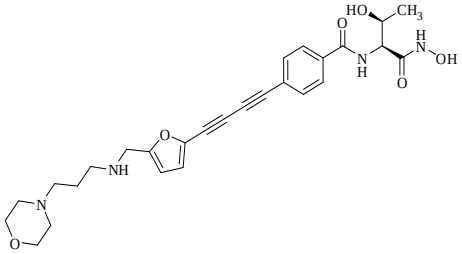
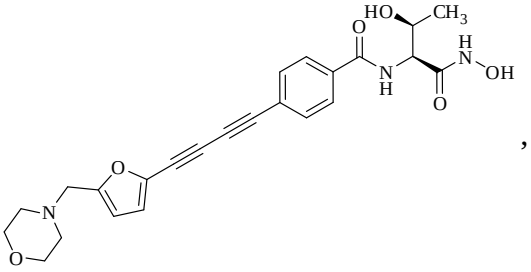
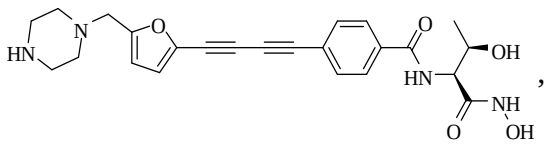
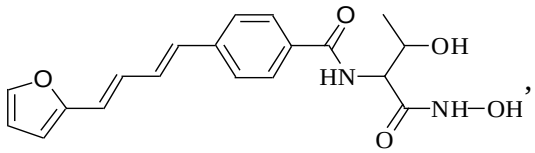
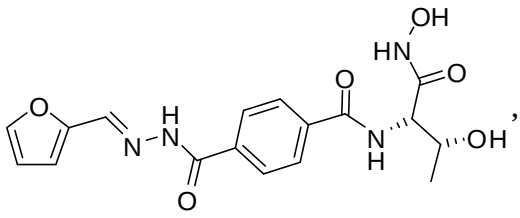
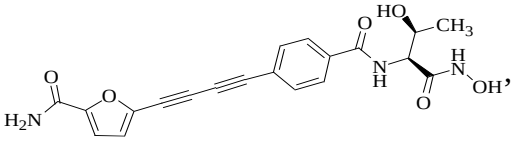
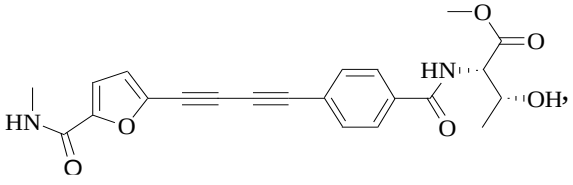
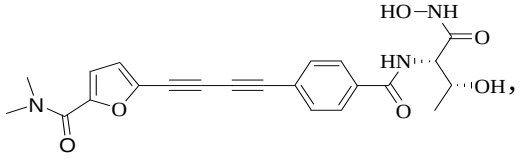
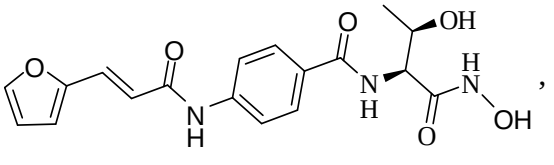

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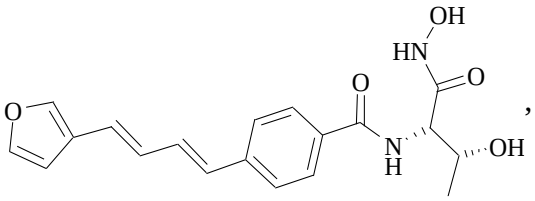
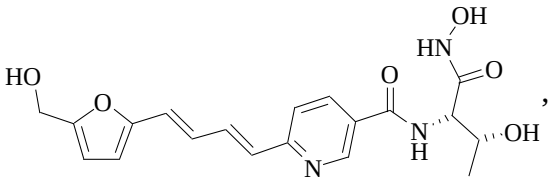
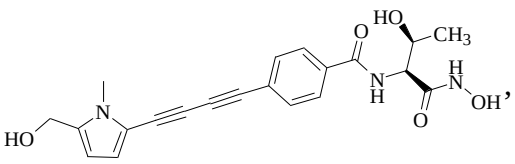
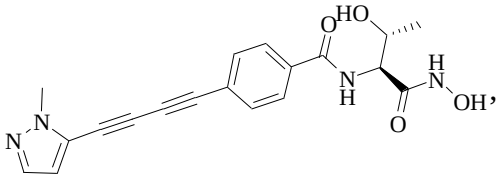
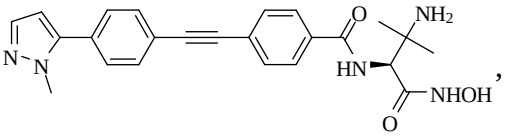
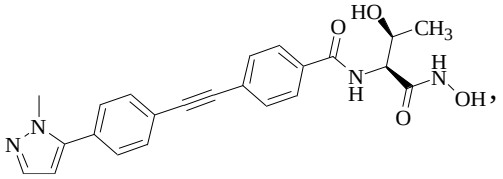
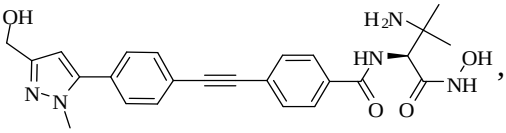
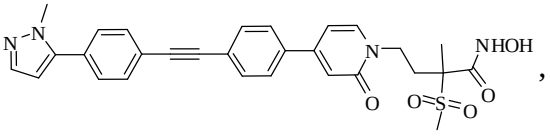
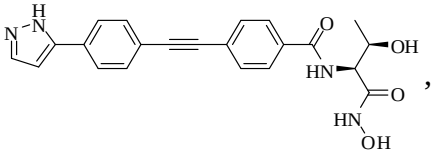
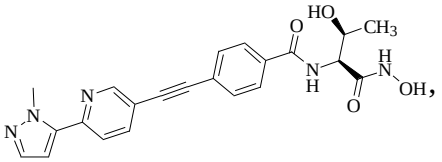
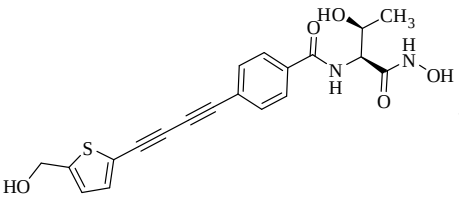
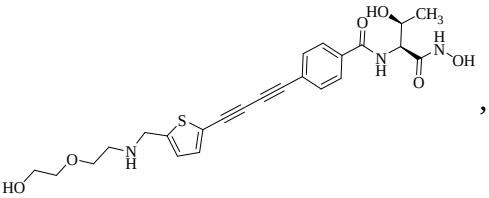
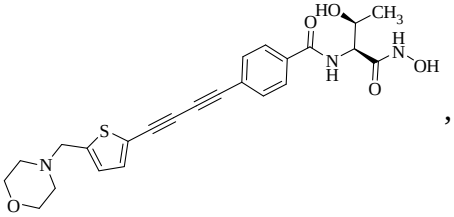
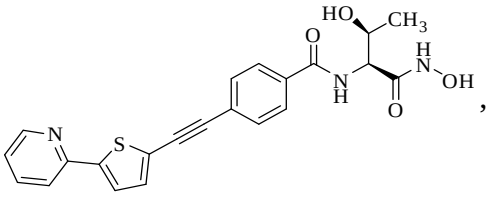
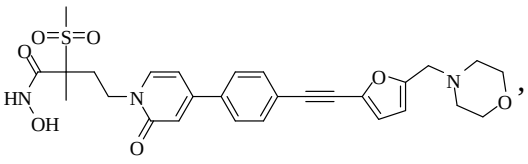
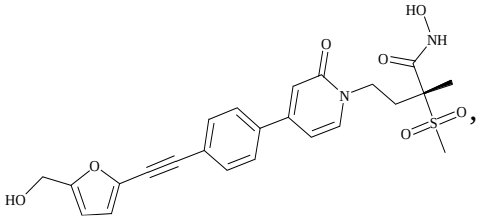
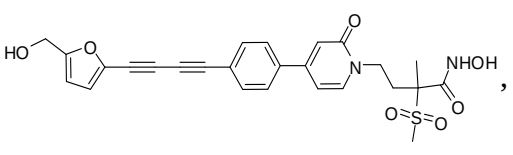
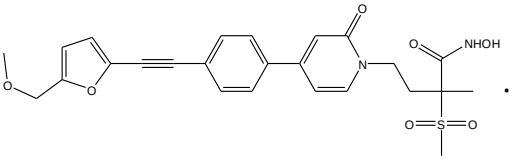

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and

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~~9~~8. A pharmaceutical composition, comprising the compound according to ~~any of~~ claim~~s~~ 1~~-8~~, 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.

~~10~~13. T~~Use of t~~he compound according to ~~any of~~ claim~~s~~ ~~1~~7~~-8~~, a pharmaceutically acceptable salt thereof, an ester thereof, a prodrug thereof, a solvate thereof, or a deuterated analog thereof, or a stereoisomer thereof, or ~~the~~ a pharmaceutical composition comprising the compound according to claim ~~9~~7 for use in the treatment of ~~ingand/or preventing~~ infectious diseases~~, preferably infectious diseases~~ caused by Gram-negative bacteria.