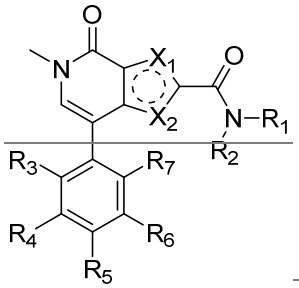
Claims

1. An acylaminopyrrolo-pyridone compound represented by general formula I, or a pharmaceutically acceptable salt thereof, or an enantiomer, a diastereomer, a tautomer, a solvate, a polymorph, or a prodrug thereof,



I

wherein:

R1 is independently selected from hydrogen, C1-C8 alkyl, 3-8 membered cyclohydrocarbyl or heterocycloalkyl, alkoxyalkyl, alkylaminoalkyl, heterocyclylalkyl, arylalkyl, etc.; R2 is independently selected from hydrogen, C1-C6 alkyl;

X1 and X2 are each independently selected from CH or NH;

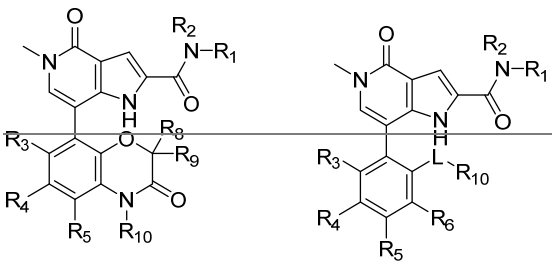
R3 and R5 are each independently selected from hydrogen, halogen, and C1-C6 alkyl;

R4, R6, and R7 are independently selected from hydrogen, halogen, cyano, nitro, alkenyl, alkynyl, acylamino, ether or thioether, substituted or unsubstituted C1-C6 alkyl, 3-8 membered cyclohydrocarbyl or heterocycloalkyl, 5-10 membered aryl or heteroaryl, alkoxy, substituted or unsubstituted amino, alkylsulfone, alkylsulfoxide, alkylsulphonamino, alkylsulfinylamino, ureido, sulphonylureido, sulfinylureido, etc.;

or R6 and R7 may form a 3-8-membered saturated, unsaturated or partially unsaturated ring system between them through carbon atoms or heteroatoms;

one or more hydrogen atoms on any of the groups may be substituted by the substituents selected from the following group: including but not limited to deuterium, halogen, hydroxyl, amino or cycloamino, cyano, nitro, sulfone or sulfoxide, C1-C8 alkyl, 3-8 membered cycloalkyl or heterocycloalkyl, C1-C8 alkoxy or alkylthio, C1-C8 alkylamino, alkenyl, alkynyl, acyl or sulphonyl, ureido or sulphonylureido, 5-8 membered aryl or heteroaryl; wherein the heteroaryl includes 1-3 heteroatoms selected from the following group: N, O, P or S, and the heterocycloalkyl includes 1-3 heteroatoms selected from the following group: N, O, P or S, and the ring system includes a saturated or partially unsaturated ring system such as spiro ring, bridged ring, condensed ring, and fused ring, etc.

2. The acylaminopyrrolo-pyridone compound represented by general formula I as defined in claim 1, or the pharmaceutically acceptable salt thereof, or the enantiomer, the diastereomer, the tautomer, the solvate, the polymorph, or the prodrug thereof, wherein the compound is as shown in general formula (II), or a pharmaceutically acceptable salt thereof, or an enantiomer, a diastereomer, a tautomer, a solvate, a polymorph, or a prodrug thereof:



wherein, R8 and R9 are independently selected from hydrogen, halogen, C1-C6 alkyl, 3-8 membered cycloalkyl or heterocycloalkyl, or R8 together with R9 and the carbon atoms or heteroatoms they are attached to form a 3-8 membered saturated, unsaturated or partially unsaturated ring system; R10 is selected from hydrogen, C1-C10 alkyl, 3-10 membered cycloalkyl or heterocycloalkyl, 5-10 membered aryl or heteroaryl; L is selected from O, S, NH, etc.; and R1, R2, R3, R4, R5, R6 are as defined in claim 1.

3. The acylaminopyrrolo-pyridone compound represented by general formula I as defined in claim 1 or 2, or the pharmaceutically acceptable salt thereof, or the enantiomer, the diastereomer, the tautomer, the solvate, the polymorph, or the prodrug thereof, wherein

R1 is preferably selected from substituted or unsubstituted C2-C8 alkyl, substituted or unsubstituted 3-8 membered cycloalkyl or heterocycloalkyl;

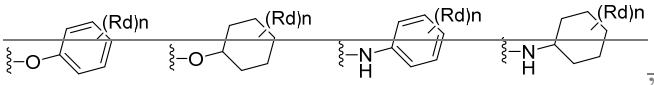
R2 is preferably selected from hydrogen, C1-C6 alkyl; or R1 and R2 form a 4-8 membered nitrogen-containing heterocyclic ring between them; more preferably selected from substituted or unsubstituted ethyl, ethoxyethyl, etc.;

R3, R5 and R6 are each independently selected from hydrogen, fluorine, and C1-C6 alkyl;

R4 is preferably selected from C1-C6 sulfone, C1-C6 sulfonamino, C1-C6 sulfoxide, C1-C6 sulfinylamino, C1-C6 sulphonylimino, and substituted C1-C6 alkyl;

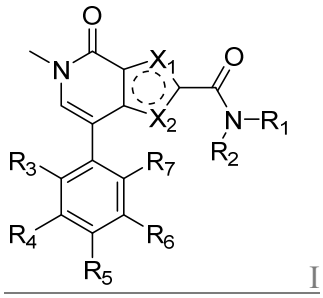
R8 and R9 are each independently preferably selected from hydrogen, C1-C3 alkyl, or form a 3-6 membered ring system with each other;

R10 is preferably selected from hydrogen, C1-C8 alkyl, 3-8 membered cycloalkyl and heterocycloalkyl, 5-8 membered aryl and heteroaryl; further preferably selected from



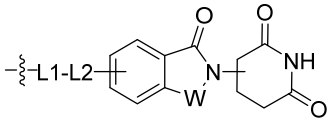
~~, wherein Rd is selected from hydrogen, halogen, cyano, sulfone, sulfoxide, C1-C3 alkyl or alkoxy, and Rd together with benzene ring or cyclohexane ring or another Rd substituent may form a 3-8 membered saturated or partially unsubstituted ring system; n=0-5, preferably 2 or 3.~~

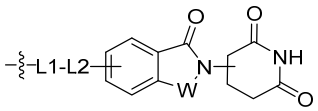
~~The~~An acylaminopyrrolo-pyridone compound represented by general formula I ~~as defined in claim 1~~, or the pharmaceutically acceptable salt thereof, or the enantiomer, the diastereomer, the tautomer, the solvate~~,~~ or the polymorph~~, or the prodrug~~ thereof, wherein

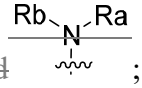


I

X1 is CH; X2 is NH;

R1 is ~~hydrogen,~~ C1-C8 alkyl, 3-8 membered cycloalkyl, ~~3-8 membered heterocycloalkyl,~~ C1-C8 alkyl substituted by 3-8 membered cycloalkyl~~, C1-C8 alkyl substituted by 3-8 membered heterocycloalkyl,~~ or 

; ~~the 3-8 membered heterocycloalkyl in the 3-8 membered heterocycloalkyl and C1-C8 alkyl substituted by 3-8 membered heterocycloalkyl, the heteroatom is selected from one or more of N, O, S, -S(=O)- and -S(=O)2-, the number of the heteroatom is 1, 2 or 3;~~ the C1-C8 alkyl, 3-8 membered cycloalkyl, ~~3-8 membered heterocycloalkyl,~~ C1-C8 alkyl substituted by 3-8 membered cycloalkyl~~, C1-C8 alkyl substituted by 3-8 membered heterocycloalkyl,~~ and 

are optionally substituted by one or more substituents, the substituents are independently selected from: halogen, cyano, ~~hydroxyl, =O,~~ C1-C6 alkyl, C1-C6 alkyl-O-~~,~~ and C1-C6 alkyl-(SO_2)- ~~and~~ 

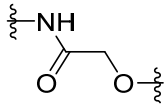
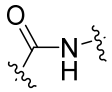
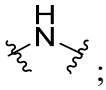
; when there are multiple substituents, they are the same or different;

~~Ra and Rb are independently hydrogen or C1-C8 alkyl;~~

L1 is~~ a connecting bond,~~ -(C1-C8 alkyl)-, -(C2-C6 alkynyl)-, or -(C1-C6 alkyl)-

$(CH_2OCH_2)_{m1}$-(C1-C6 alkyl)-;

m1 is 1, 2, 3 or 4;

L2 is a connecting bond, -O-, ,  or ;

W is $-CH_2-$ or -C(O)-;

R2 is hydrogen~~ or C1-C6 alkyl~~;

~~or, R1 together with R2 and the N they are attached to form a 3-8 membered heterocycloalkyl or a 3-8 membered heterocycloalkyl substituted by one or more halogens; besides the N, the heteroatom in the 3-8 membered heterocycloalkyl and the 3-8 membered heterocycloalkyl substituted by one or more halogens also includes 0 to 2 heteroatoms selected from N, O, S, -S (=O)- and $-S(=O)_2-$; when there are multiple substituents, they are the same or different;~~

R3 and R5 are each independently hydrogen~~, halogen or C1-C6 alkyl~~;

R4~~, R6 and R7 are independently hydrogen or~~ is - L-R10;

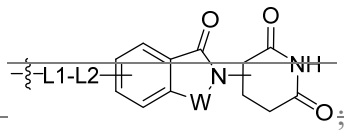
L is independently a connecting bond, -O-, $-(SO_2)-$ or $-(SO_2)$-NH-;

R10 is independently C1-C6 alkyl~~, 6-10 membered aryl,~~ or C1-C6 alkyl substituted by one or more substituents~~, or 6-10 membered aryl substituted by one or more substituents~~; the substituents in the C1-C6 alkyl substituted by one or more substituents~~ and the 6-10 membered aryl substituted by one or more substituents~~ are independently halogen, hydroxy, cyano or C1 -C6 alkyl; when there are multiple substituents, they are the same or different;

~~or,~~ R6 together with R7 and the carbon atoms they are attached to form: a 6-membered heterocycloalkyl or a 6-membered heterocycloalkyl substituted by one or more substituents, the heteroatoms in the 6-membered heterocycloalkyl are selected from one or more of N, O, S, -S(=O)- and $-S(=O)_2-$, and the number of the heteroatom is 1, 2 or 3; the substituent is independently C1-C6 alkyl or = O; when the substituents are multiple, they are the same or different.

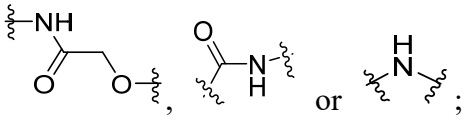
~~5~~2. The acylaminopyrrolo-pyridone compound represented by general formula I as defined in claim ~~4~~1, or the pharmaceutically acceptable salt thereof, or the enantiomer, the diastereomer, the tautomer, the solvate~~,~~ or the polymorph~~, or the prodrug~~ thereof, wherein

~~R1 is C1-C8 alkyl, 3-8-membered cycloalkyl, 3-8-membered heterocycloalkyl, C1-C8 alkyl~~

substituted by 3-8 membered cycloalkyl, or ; or, R1 together with R2 and the N they are attached to form a 3-8 membered heterocycloalkyl or a 3-8 membered heterocycloalkyl substituted by one or more halogen;

and/or, in R1, the substituents are independently selected from halogen, cyano, hydroxyl, =O, C1-C6 alkyl, C1-C6 alkyl -O- and C1-C6 alkyl (SO_2) ;

and/or, m1 is 3;

and/or, L2 is a connecting bond, ;

and/or, R3 is H;

and/or, R5 is H;

and/or, R6 is H;

and/or, L is a connecting bond, -O- or -(SO_2)-;

and/or, R4 is -L-R10;

and/or, R7 is -L-R10;

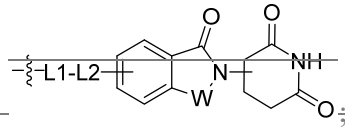
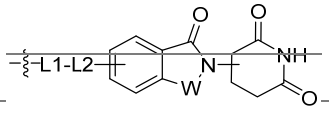
and/or, when R1 is C1-C8 alkyl, and the C1-C8 alkyl is substituted by one or more substituents, the substituents are selected from halogen, cyano, C1-C6 alkyl, C1-C6 alkyl -O- and C1-C6 alkyl -(SO_2);

and/or, when R1 is 3-8 membered cycloalkyl, C1-C8 alkyl substituted by 3-8-membered cycloalkyl, the 3-8-membered cycloalkyl and the C1-C8 alkyl substituted by 3-8-membered cycloalkyl are independently substituted by one or more substituents, the substituents are selected from halogen, hydroxyl and C1-C6 alkyl;

and/or, when R1 is C1-C8 alkyl substituted by 3-8 membered cycloalkyl, and the C1-C8 alkyl substituted by 3-8 membered cycloalkyl is substituted by one or more substituents, the substituents are selected from halogen and hydroxyl.

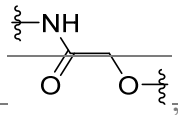
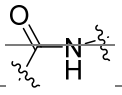
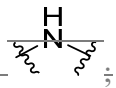
63. The acylaminopyrrolo-pyridone compound represented by general formula I as defined in claim 51, or the pharmaceutically acceptable salt thereof, or the enantiomer, the diastereomer, the tautomer, the solvate, or the polymorph, or the prodrug thereof, wherein the acylaminopyrrolo-pyridone compound represented by formula (I) is as shown in the scheme 1, or scheme 2 or scheme 3;

scheme 1: X1 is CH; X2 is NH;

R1 is C1-C8 alkyl, 3-8 membered cycloalkyl, 3-8 membered heterocycloalkyl, C1-C8 alkyl substituted by 3-8 membered cycloalkyl, or ; in the 3-8 membered heterocycloalkyl, the heteroatom is selected from one or more of N, O, S, -S(=O)- and -S(=O)$_2$-, the number of the heteroatom is 1, 2 or 3; the C1-C8 alkyl, 3-8 membered cycloalkyl, C1-C8 alkyl substituted by 3-8 membered cycloalkyl and  are optionally substituted by one or more substituents, the substituents are independently selected from: halogen, cyano, hydroxyl, =O, C1-C6 alkyl, C1-C6 alkyl-O-, and C1-C6 alkyl-(SO$_2$); when there are multiple substituents, they are the same or different;

L1 is a connecting bond, -(C1-C8 alkyl)-, -(C2-C6 alkynyl)-, -(C1-C6 alkyl)-(CH$_2$OCH$_2$)$_{m1}$-(C1-C6 alkyl)-;

m1 is 1, 2, 3 or 4;

L2 is a connecting bond, ,  or ;

W is -CH$_2$- or -C(O)-;

R2 is H;

or, R1 together with R2 and the N they are attached to form a 3-8 membered heterocycloalkyl or a 3-8 membered heterocycloalkyl substituted by one or more halogens; besides N, the heteroatom in the 3-8 membered heterocycloalkyl and the 3-8 membered heterocycloalkyl substituted by one or more halogens includes 0 to 2 heteroatoms selected from N, O, S, -S(=O)- and -S(=O)$_2$-;

R3 and R5 are each independently hydrogen, halogen or C1-C6 alkyl;

R6 is H;

R4 and R7 are independently hydrogen or -L-R10;

L is a connecting bond, -O- or -(SO$_2$)-;

R10 is independently C1-C6 alkyl, 6-10 membered aryl, C1-C6 alkyl substituted by one or more substituents, or 6-10 membered aryl substituted by one or more substituents; the substituents in the C1-C6 alkyl substituted by one or more substituents and the 6-10 membered aryl substituted by one or more substituents are independently halogen, hydroxy, cyano or C1-

C6 alkyl; when there are multiple substituents, they are the same or different;

or, R6 together with R7 and the carbon atoms they are attached to form: a 6 membered heterocycloalkyl or a 6 membered heterocycloalkyl substituted by one or more substituents, the substituents are independently selected from C1-C6 alkyl or =O;

scheme 21: X1 is CH; X2 is NH;

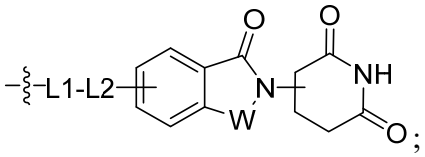
R1 is C1-C8 alkyl and 3-8 membered cycloalkyl; the C1-C8 alkyl and 3-8 membered cycloalkyl are optionally substituted by one or more substituents;

R2, R3, and R5 and R6 are each independently hydrogen;

R4 and R7 are independently hydrogen or is - L-R10;

or, R6 together with R7 and the carbon atoms they are attached to form: a 6 membered heterocycloalkyl or a 6 membered heterocycloalkyl substituted by one or more substituents, the substituents are independently selected from C1-C6 alkyl or =O;

scheme 32: X1 is CH; X2 is NH;

R1 is independently C1-C8 alkyl or 

;

R2, R3, and R5 and R6 are each independently hydrogen;

R4 and R7 are independently hydrogen or is - L-R10;

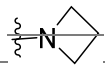
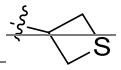
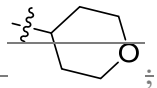
or, R6 together with R7 and the carbon atoms they are attached to form: a 6 membered heterocycloalkyl or a 6 membered heterocycloalkyl substituted by one or more substituents, the substituents are independently selected from C1-C6 alkyl or =O.

74. The acylaminopyrrolo-pyridone compound represented by general formula I as defined in any one of claims 4-61-3, or the pharmaceutically acceptable salt thereof, or the enantiomer, the diastereomer, the tautomer, the solvate, or the polymorph, or the prodrug thereof, wherein

Wwhen R1 is C1-C8 alkyl, or C1-C8 alkyl substituted by 3-8-membered cycloalkyl or C1-C8 alkyl substituted by 3-8-membered heterocycloalkyl, the C1-C8 alkyl in the C1-C8 alkyl, and C1-C8 alkyl substituted by 3-8-membered cycloalkyl and C1-C8 alkyl substituted by 3-8-membered heterocycloalkyl is independently methyl, ethyl, *n*-propyl, isopropyl, *n*-butyl, isobutyl, *sec*-butyl or *tert*-butyl; for example, methyl, ethyl or isopropyl;

and/or, when R1 is 3-8 membered cycloalkyl or C1-C8 alkyl substituted by 3-8 membered cycloalkyl, the 3-8 membered cycloalkyl in the 3-8 membered cycloalkyl or the C1-C8 alkyl

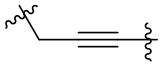
substituted by 3-8 membered cycloalkyl is independently cyclopropyl, cyclobutyl, cyclopentyl and cyclohexyl; for example, cyclopropyl or cyclobutyl;

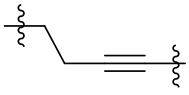
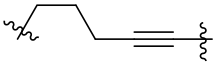
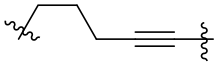
~~and/or, when R1 is 3-8 membered heterocycloalkyl or C1-C8 alkyl substituted by 3-8 membered heterocycloalkyl, the 3-8 membered heterocycloalkyl in the 3-8 membered heterocycloalkyl or C1-C8 alkyl substituted by 3-8 membered heterocycloalkyl is independently 3-6 membered heterocycloalkyl, wherein the heteroatom is selected from one or more of N, O, S, -S(=O)- and -S(=O)$_2$-, the number of the heteroatom is 1 or 2; for example~~  ~~,~~  ~~or~~  ~~;~~

~~and/~~or, when the substituent in R1 is C1-C6 alkyl, C1-C6 alkyl-O- or C1-C6 alkyl-(SO_2)-, the C1-C6 alkyl in the C1-C6 alkyl, the C1-C6 alkyl -O- and the C1-C6 alkyl-(SO_2)- is independently methyl, ethyl, *n*-propyl, isopropyl, *n*-butyl, isobutyl, *sec*-butyl or *tert*-butyl; for example, methyl or ethyl;

~~and/or, when Ra and/or Rb are independently C1-C8 alkyl, the C1-C8 alkyl is independently methyl, ethyl, *n*-propyl, isopropyl, *n*-butyl, isobutyl, *sec*-butyl, *tert*-butyl, *n*-pentyl or *n*-hexyl; for example, methyl;~~

~~and/~~or, when L1 is -(C1-C8 alkyl)-, the C1-C8 alkyl is methyl, ethyl, *n*-propyl, isopropyl, *n*-butyl, isobutyl, *sec*-butyl, *tert*-butyl, *n*-pentyl or *n*-hexyl; for another example, *n*-butyl, *n*-pentyl or *n*-hexyl;

~~and/~~or, when L1 is -(C2-C6 alkynyl)-, the C2-C6 alkynyl is ethynyl, ,

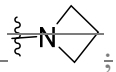
 or , for another example , wherein, the terminal a means that it is connected to L2;

~~and/~~or, when L1 is -(C1-C6 alkyl)-(CH_2OCH_2)$_{m1}$-(C1-C6 alkyl)-, the C1-C6 alkyl is independently methyl, ethyl , *n*-propyl, isopropyl, *n*-butyl, isobutyl, *sec*-butyl or *tert*-butyl; for example, methyl, ethyl or *n*-propyl;

~~and/~~or, m1 is 2 or 3;

~~and/or, when R2 is C1-C6 alkyl, the C1-C6 alkyl is methyl, ethyl, *n*-propyl, isopropyl, *n*-butyl, isobutyl, *sec*-butyl or *tert*-butyl; for example, methyl, ethyl or isopropyl;~~

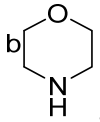
~~and/or, when R1 together with R2 and the N they are attached to form a 3-8 membered~~

~~heterocycloalkyl or a 3-8 membered heterocycloalkyl substituted by one or more halogens; the 3-8 membered heterocycloalkyl in the 3-8 membered heterocycloalkyl or the 3-8 membered heterocycloalkyl substituted by one or more halogens is independently 3-6 membered heterocycloalkyl, wherein the heteroatom is the N; for example~~  ~~;~~

~~and/~~or, when R10 is independently C1-C6 alkyl or C1-C6 alkyl substituted by one or more substituents, the C1-C6 alkyl is independently methyl, ethyl, *n*-propyl, isopropyl, *n*-butyl, isobutyl, *sec*-butyl or *tert*-butyl; for example, methyl or ethyl;

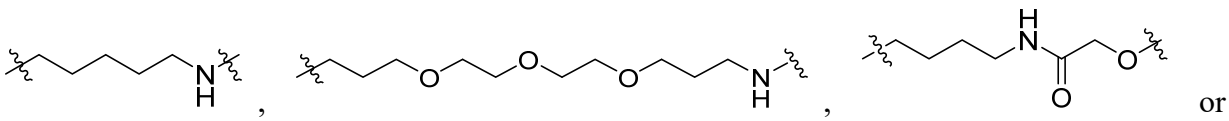
~~and/or, when R10 is independently 6-10 membered aryl or 6-10 membered aryl substituted by one or more substituents, the 6-10 membered aryl in the 6-10 membered aryl or the 6-10 membered aryl substituted by one or more substituents is independently phenyl or naphthyl;~~

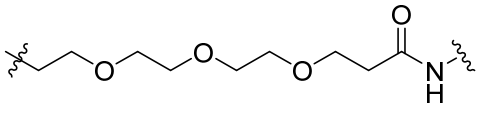
~~and/~~or, when the substituent in R10 is C1-C6 alkyl, the substituent is independently methyl, ethyl, *n*-propyl, isopropyl, *n*-butyl, isobutyl, *sec*-butyl or *tert*-butyl; for example, methyl or ethyl;

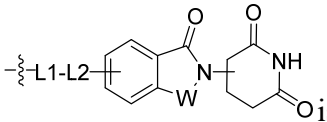
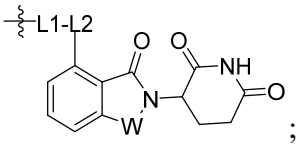
~~and/~~or, when R6 together with R7 and the carbon atoms they are attached to form a 6 membered heterocycloalkyl or a 6 membered heterocycloalkyl substituted by one or more substituents; the 6 membered heterocycloalkyl in the 6 membered heterocycloalkyl or the 6 membered heterocycloalkyl substituted by one or more substituents is , wherein, the terminal b means that it is connected to the benzene ring by a fused ring;

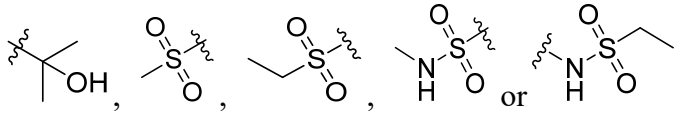
~~and/~~or, when R6 together with R7 and the carbon atoms they are attached to form: a 6 membered heterocycloalkyl or a 6 membered heterocycloalkyl substituted by one or more substituents, and the substituents are independently C1-C6 alkyl, the C1-C6 alkyl is independently methyl, ethyl, *n*-propyl, isopropyl, *n*-butyl, isobutyl, *sec*-butyl or *tert*-butyl; for example, methyl or ethyl.

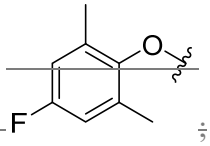
~~8~~5. The acylaminopyrrolo-pyridone compound represented by general formula I as defined in claim ~~7~~1, or the pharmaceutically acceptable salt thereof, or the enantiomer, the diastereomer, the tautomer, the solvate~~,~~ or the polymorph~~, or the prodrug~~ thereof, wherein

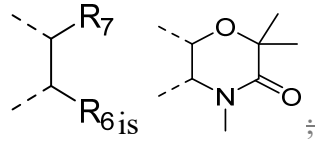
-L1-L2- is ,  or


;

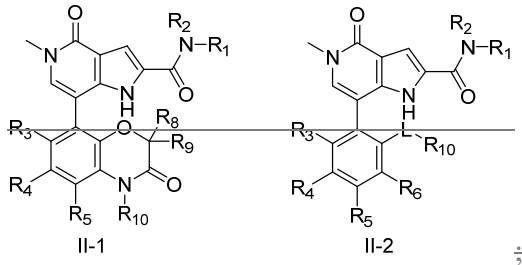
~~and/~~or,  is ;

~~and/~~or, R4 is ;

~~and/or, R7 is~~  ~~;~~

~~and/~~or, ~~when~~ R6 together with R7 and the carbon atoms they are attached to form: a 6 membered heterocycloalkyl or a 6 membered heterocycloalkyl substituted by one or more substituents,  is ~~;~~

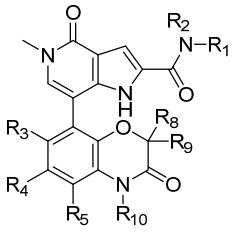
~~and/or, the acylaminopyrrolo-pyridone compound represented by formula I is as shown in formula II-1 or II-2:~~


II-1 II-2

~~; wherein R1, R2, R3, R4, R5, R6, L and R10 are as defined above; R8 and R9 are independently C1-C6 alkyl~~.

6. The acylaminopyrrolo-pyridone compound represented by general formula I as defined in claim 1, or the pharmaceutically acceptable salt thereof, or the enantiomer, the diastereomer, the tautomer, the solvate or the polymorph thereof, wherein

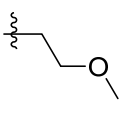
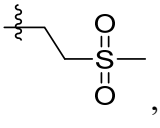
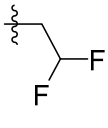
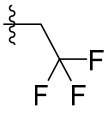
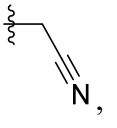
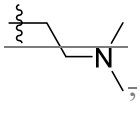
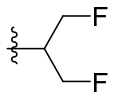
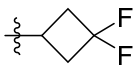
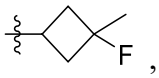
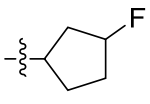
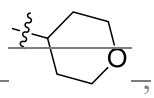
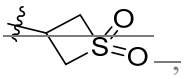
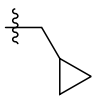
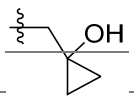
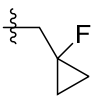
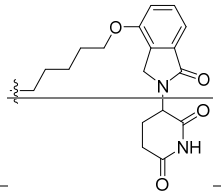
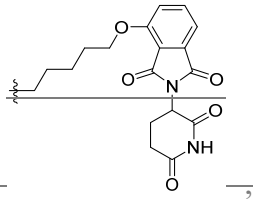
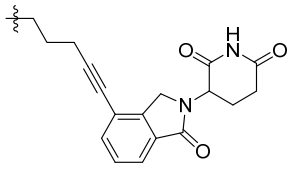
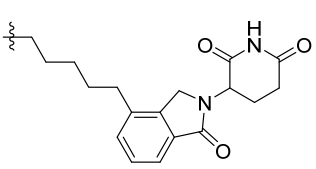
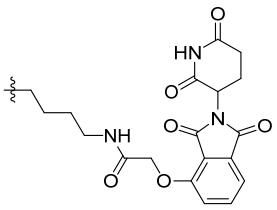
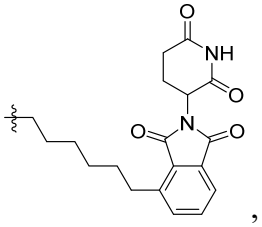
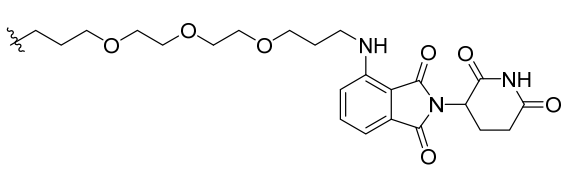
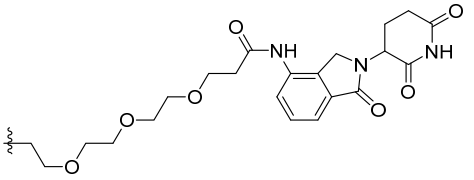
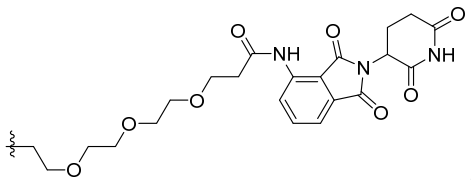
the acylaminopyrrolo-pyridone compound represented by formula I is as shown in formula II-1:



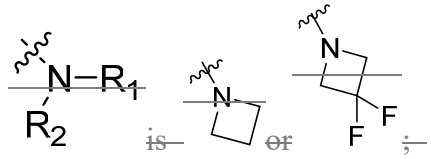
II-1 ;

wherein R1, R2, R3, R4, R5 and R10 are as defined in claim 1; R8 and R9 are independently C1-C6 alkyl.

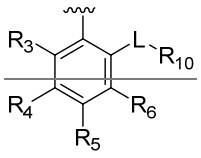
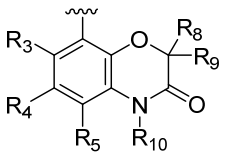
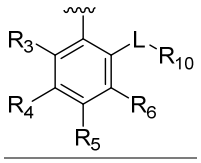
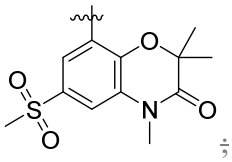
~~9~~7. The acylaminopyrrolo-pyridone compound represented by general formula I as defined in claim ~~8~~1, or the pharmaceutically acceptable salt thereof, or the enantiomer, the diastereomer, the tautomer, the solvate~~,~~ or the polymorph~~, or the prodrug~~ thereof, wherein

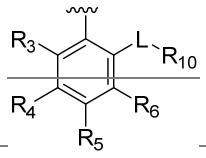
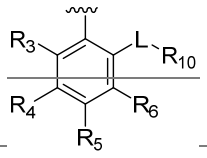
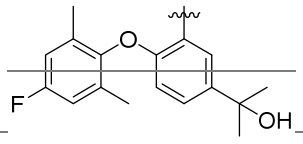
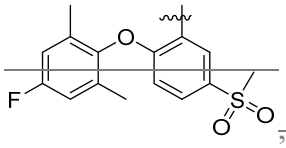
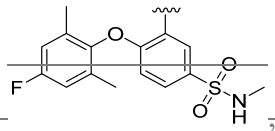
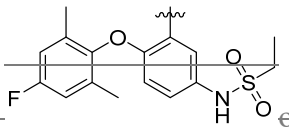
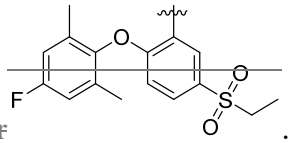
R1 is ethyl, isopropyl, , , , , , , , cyclopropyl, cyclopentyl, , , , , , , , , , , , , , , , , or ;

~~and/or, when R1 together with R2 and the N they are attached to form a 3-8 membered heterocycloalkyl or a 3-8 membered heterocycloalkyl substituted by one or more halogens,~~



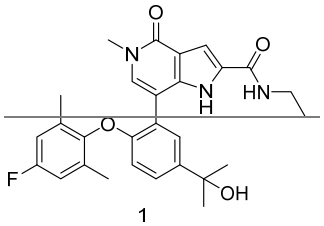
~~is~~ ~~or~~ ~~;~~

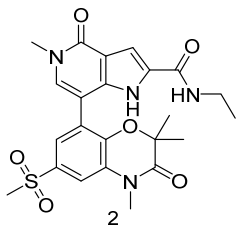
~~and/~~or, when  is ,  is  ;

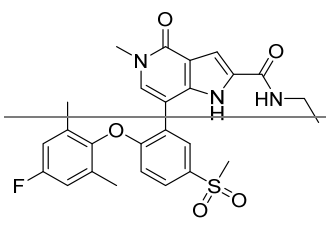
~~and/or, when~~  ~~is~~  ~~,~~ ~~is~~  ~~,~~  ~~,~~  ~~,~~  ~~or~~  .

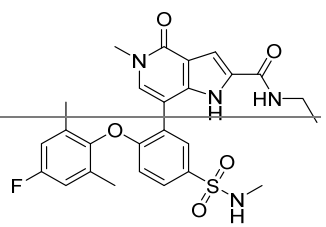
~~108~~. The acylaminopyrrolo-pyridone compound represented by general formula I as defined in claim 1 ~~or 4~~, or the pharmaceutically acceptable salt thereof, or the enantiomer, the diastereomer, the tautomer, the solvate~~,~~ or the polymorph~~, or the prodrug~~ thereof, wherein

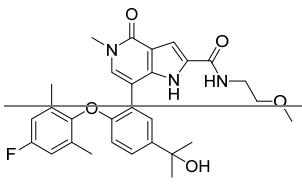
the acylaminopyrrolo-pyridone compound represented by formula I is selected from any one of the structures as follows:

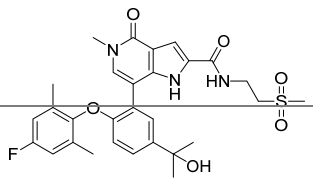

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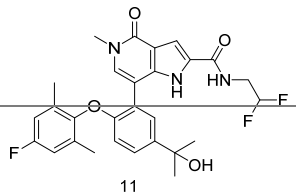

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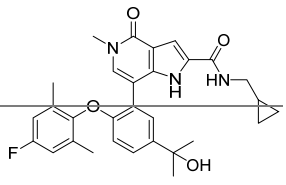


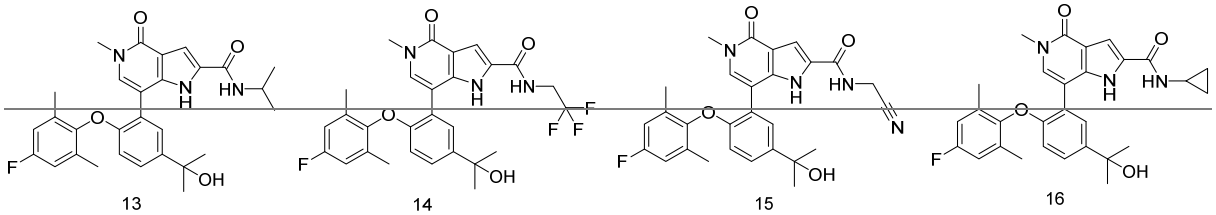



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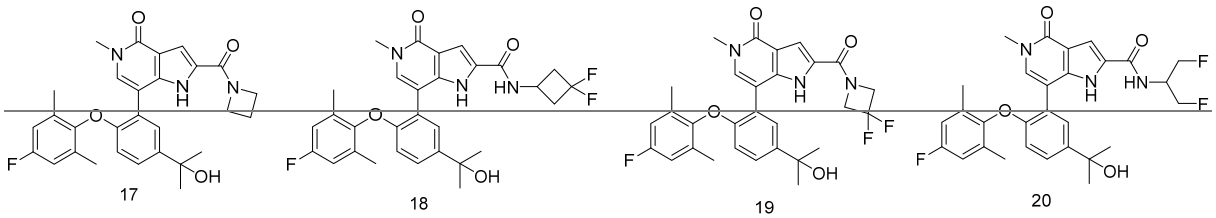

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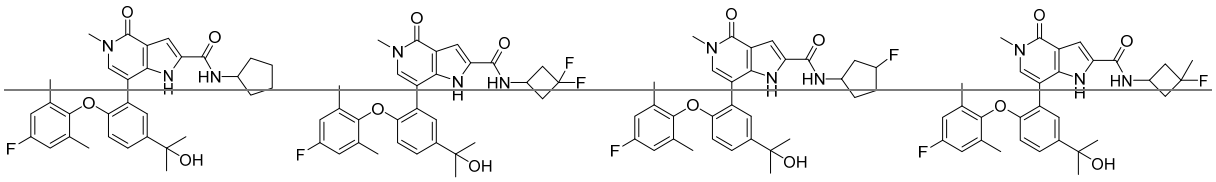

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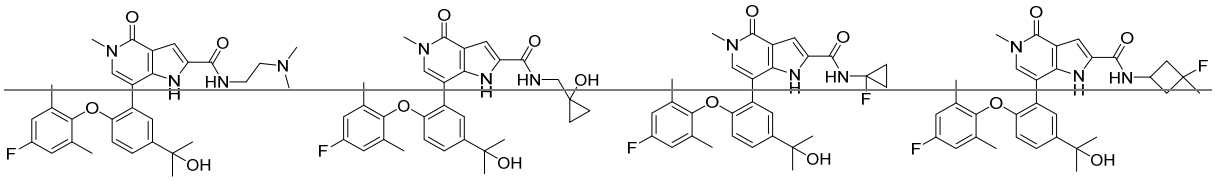


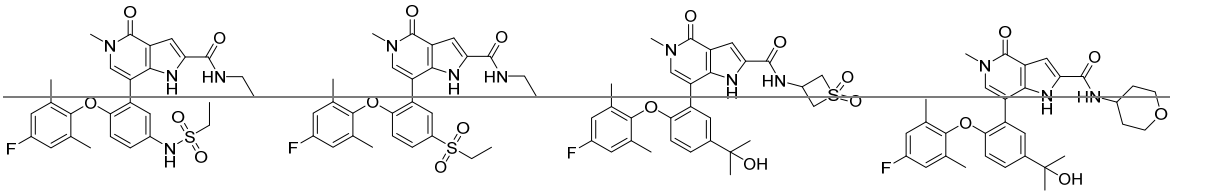
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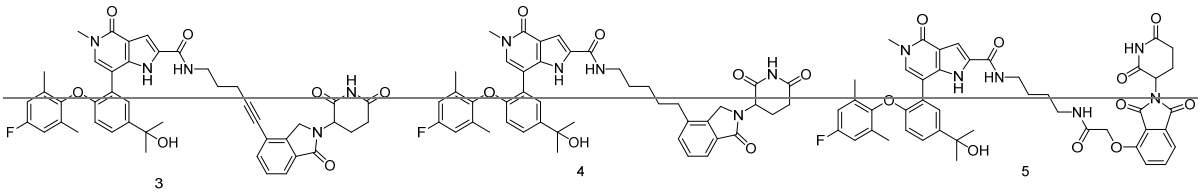


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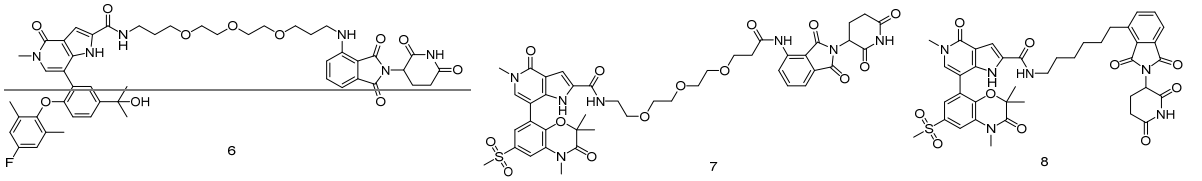




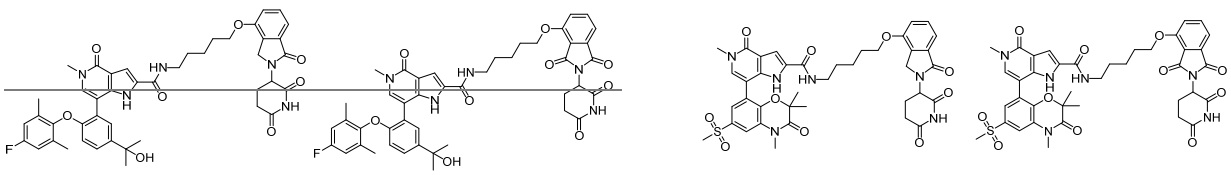


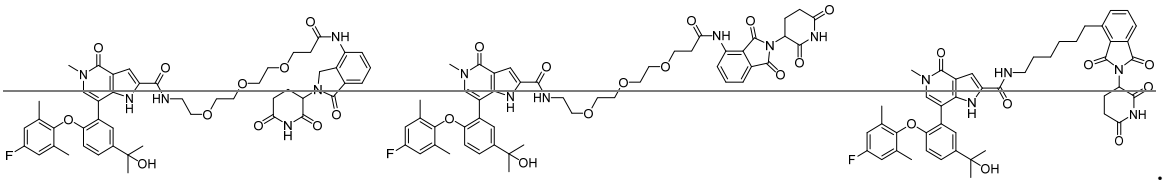


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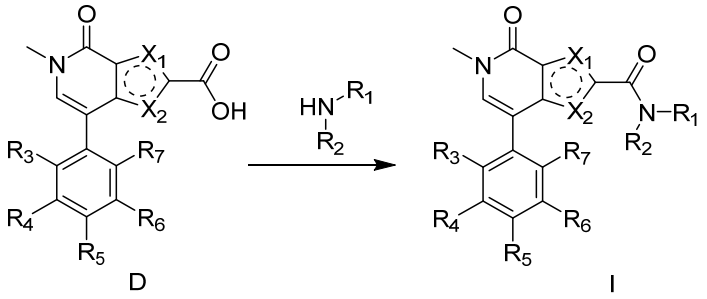
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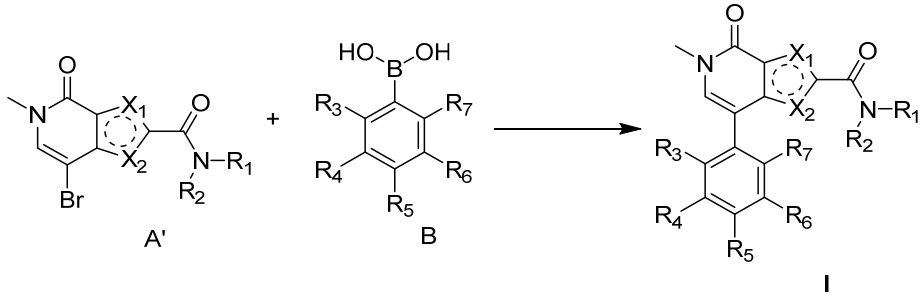


~~11~~9. A preparation method of the acylaminopyrrolo-pyridone compound represented by formula I as defined in any one of claims 1-~~10~~8, wherein the preparation method comprises scheme 1 or scheme 2;

scheme 1 comprises the following steps: in a solvent, in the presence of alkali and condensation reagent, a condensation reaction shown as follows between a compound represented by formula D and R1R2NH is carried out to obtain the acylaminopyrrolo-pyridone compound represented by formula I;



scheme 2 comprises the following steps: in a solvent, in the presence of alkali and transition metal catalyst, a metal-catalyzed coupling reaction shown as follows between a compound represented by formula A' and a compound represented by formula B is carried out to obtain the acylaminopyrrolo-pyridone compound represented by formula I;



wherein, X1, X2, R1, R2, R3, R4, R5, R6 and R7 are as defined in any one of claims 1-~~10~~8.

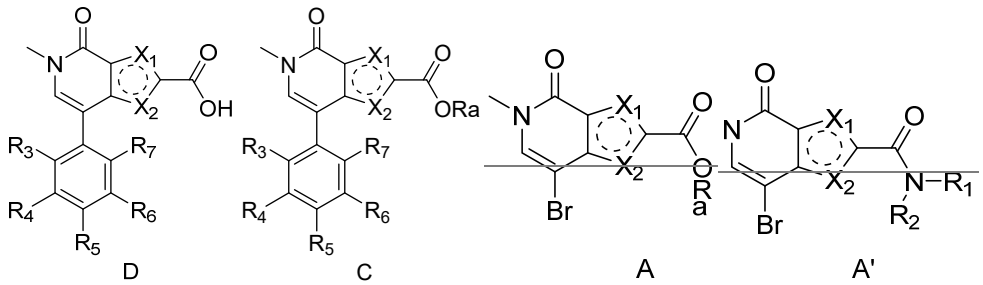
~~12~~10. A pharmaceutical composition, comprising the acylaminopyrrolo-pyridone compound represented by general formula I as defined in any one of claims 1-~~10~~8, or the pharmaceutically acceptable salt thereof, or the enantiomer, the diastereomer, the tautomer, the solvate~~,~~ or the polymorph~~, or the prodrug~~ thereof, and a pharmaceutically acceptable carrier.

~~13~~11. A use of the acylaminopyrrolo-pyridone compound represented by general formula I as defined in any one of claims 1-~~10~~8, or the pharmaceutically acceptable salt thereof, or the

enantiomer, the diastereomer, the tautomer, the solvate~~,~~ or the polymorph~~, or the prodrug~~ thereof, or the pharmaceutical composition as defined in claim ~~12~~10 in the preparation of BRD ~~and/~~or c-Myc inhibitors, ~~a medicament for the treatment or prevention of diseases related to BRD and/or c-Myc protein activity or expression,~~ or a medicament for the treatment or prevention of tumors, immune diseases ~~and/~~or inflammatory disease~~s~~;

the tumor is selected from non-small cell lung cancer, small cell lung cancer, lung adenocarcinoma, lung squamous carcinoma, breast cancer, prostate cancer, liver cancer, skin cancer, gastric cancer, intestinal cancer, cholangiocarcinoma, brain cancer, leukemia, lymph cancer, fibroma, sarcoma, basal cell carcinoma, glioma, kidney cancer, melanoma, bone cancer, thyroid cancer, nasopharyngeal cancer~~,~~ and pancreatic cancer~~, etc.~~; the immune diseases and inflammatory diseases are independently selected from the rejection of transplanted organs, gout, rhinitis, alopecia, Alzheimer's disease, appendicitis, atherosclerosis, asthma, arthritis, allergic dermatitis, Behcet's disease, bullous dermatosis cholecystitis, chronic idiopathic thrombocytopenic purpura, chronic obstructive pulmonary disease, liver cirrhosis, degenerative joint disease, dermatitis, dermatomyositis, eczema, enteritis, encephalitis, gastritis, nephritis, Hashimoto's thyroiditis, hepatitis, hypophysitis, inflammatory bowel disease, irritable bowel syndrome, Kawasaki disease, cerebrospinal meningitis, multiple sclerosis, myocarditis, myasthenia gravis, mycosis fungoides, myositis, nephritis, osteomyelitis, pancreatitis, Parkinson's disease, pericarditis, pernicious anemia, pneumonia, primary biliary sclerosing cholangitis, polyarteritis nodosa, psoriasis, fibrosis, lupus erythematosus, tissue graft rejection, thyroiditis, type I diabetes, urethritis, uveitis, vasculitis, vitiligo and Waldenstrom's macroglobulinemia.

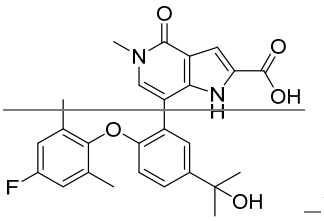
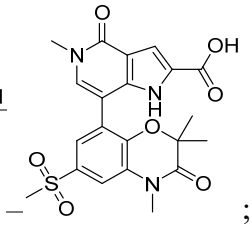
~~14~~12. A compound represented by formula D, formula C~~, formula A, formula A'~~,



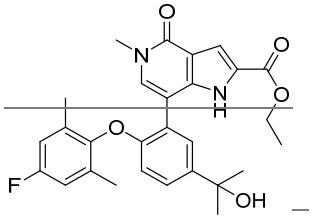
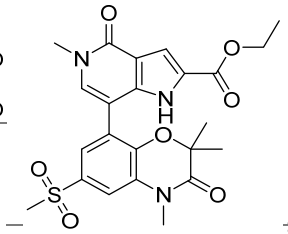
wherein, X1, X2, R1, ~~R2,~~ R3, R4, R5, R6 and R7 are as defined in any one of claims 1-~~10~~8; Ra is C1-6 alkyl.

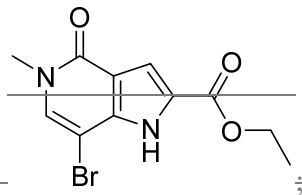
~~15~~13. The compound represented by formula D, formula C~~, formula, A, formula A'~~ as defined in claim ~~14~~12, wherein,

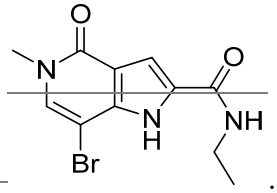
the compound represented by formula D is selected from any of the following structures:



;

~~and/~~or, the compound represented by formula C is selected from any of the following structures:



~~;~~

~~and/or, the compound represented by formula A is~~  ~~;~~

~~and/or, the compound represented by formula A' is~~  .