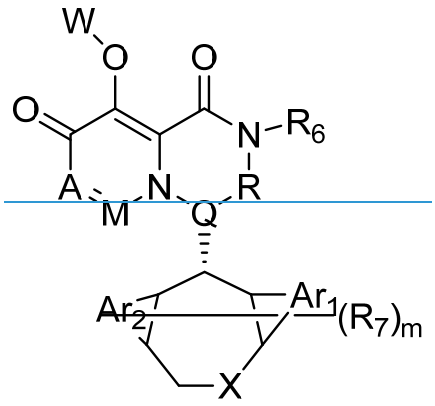
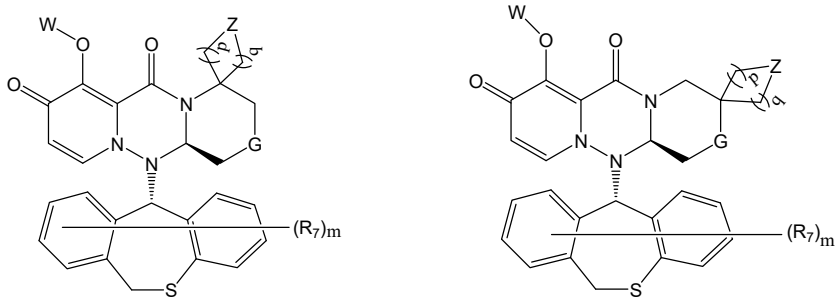
CLAIMS

What is claimed is:

1. A pyridone derivative represented by Formula IIa or Formula IIb~~(I)~~ or a stereoisomer, a pharmaceutically acceptable salt, a solvate or a crystal thereof,



~~(I)~~



IIa , IIb

wherein:

~~(1) A is selected from N or CR_1, R_1 is selected from hydrogen, cyano, hydroxy, halogen, carboxyl, ester, amide, sulfonyl amide; or, R_1 is selected from the following unsubstituted or substituted groups: C_{1-6} hydrocarbyl, C_{1-6} hydrocarbyloxy, C_{1-6} hydrocarbylamino, C_{1-6} hydrocarbylsulfydryl, carbonyl hydrazide, C_{1-6} hydrocarbyl carbonyl, C_{1-6} hydrocarbylamino carbonyl, C_{1-6} hydrocarbylcarbonyl amino, C_{1-6} hydrocarbyloxy carbonyl, C_{1-6} hydrocarbylsulfinyl, C_{1-6} hydrocarbylamino carbonylamino, C_{4-8} heterocycloalkyl, C_{4-8} heterocycloalkoxy, C_{4-8} heterocycloalkylamino, C_{4-8} heterocycloalkyl sulfydryl, C_{4-8} heterocycloalkyl carbonyl, C_{4-8} heterocycloalkylamino carbonyl, C_{5-10} aryl, C_{5-10} aryloxy, C_{5-10} aryloxy hydrocarbyl, C_{5-10} arylamino, C_{5-10} aryl sulfydryl, C_{5-10} aryl carbonyl, C_{1-6} hydrocarbyl sulfonyl, C_{1-6} hydrocarbyl sulfonylamino, C_{5-10} aryl sulfonyl, C_{5-10} aryl sulfonylamino, aminooxalyl amino, aminooxalyl, C_{5-10}

~~arylamino carbonyl or C_{5-10} arylamino carbonylamino;~~

~~(2) M is selected from N or CR_2, R_2 is selected from hydrogen, cyano, hydroxy, halogen, carboxyl, ester, amide, sulfonyl amide; or, R_2 is selected from the following unsubstituted or substituted groups: C_{1-6} hydrocarbyl, C_{1-6} hydrocarbyloxy, C_{1-6} hydrocarbylamino, C_{1-6} hydrocarbylsulfydryl, carbonyl hydrazide, C_{1-6} hydrocarbyl carbonyl, C_{1-6} hydrocarbylamino carbonyl, C_{1-6} hydrocarbylcarbonyl amino, C_{1-6} hydrocarbyloxy carbonyl, C_{1-6} hydrocarbylsulfinyl, C_{1-6} hydrocarbylamino carbonylamino, C_{4-8} heterocycloalkyl, C_{4-8} heterocycloalkoxy, C_{4-8} heterocycloalkylamino, C_{4-8} heterocycloalkyl sulfydryl, C_{4-8} heterocycloalkyl carbonyl, C_{4-8} heterocycloalkylamino carbonyl, C_{5-10} aryl, C_{5-10} aryloxy, C_{5-10} aryloxy hydrocarbyl, C_{5-10} arylamino, C_{5-10} aryl sulfydryl, C_{5-10} aryl carbonyl, C_{1-6} hydrocarbyl sulfonyl, C_{1-6} hydrocarbyl sulfonylamino, C_{5-10} aryl sulfonyl, C_{5-10} aryl sulfonylamino, aminooxalyl amino, aminooxalyl, C_{5-10} arylamino carbonyl or C_{5-10} arylamino carbonylamino;~~

~~(3) Q is selected from N or CR_3, R_3 is selected from hydrogen, cyano, carboxyl, ester, amide; or, R_3 is selected from the following unsubstituted or substituted groups: C_{1-6} hydrocarbyl, C_{4-8} heterocycloalkyl, C_{5-10} aryl, C_{3-6} cycloalkyl sulfydryl, spirocyclic ring, bridged cyclic ring, C_{3-6} cycloalkyl sulfydryl C_{1-6} hydrocarbyl, C_{3-6} cycloalkyl C_{1-6} hydrocarbyl sulfydryl C_{1-6} hydrocarbyl, C_{3-6} cycloalkyloxy cycloalkyl, cycloamide C_{1-6} hydrocarbyl, cycloamide cycloalkyl, cyclosulfonyl C_{1-6} hydrocarbyl, cyclosulfonyl cycloalkyl;~~

~~(4) R_6 and R are connected and form a sixth ring together with a nitrogen atom both connected therewith, and the sixth ring is a spiro ring and optionally contains 1, 2, 3 or more groups independently selected from heteroatom, C=O, S=O or SO_2, in addition to the nitrogen atom which R and R_6 are both connected with; wherein a common carbon atom of the spiro ring and a nitrogen atom shared by the spiro ring and a parent ring are adjacent or spaced by one atom; a ring in the spiro ring that shares the nitrogen atom with a parent ring has an oxygen atom or a nitrogen atom at a position opposite to the nitrogen atom;~~

(~~5~~1) m is 0, 1, 2, 3, 4 or 5, and R_7 is selected from hydrogen, hydroxy, cyano, halogen, carboxyl, ester, sulfonyl amide, amide; or, R_7 is selected from the following unsubstituted or substituted groups: C_{1-6} hydrocarbyl, C_{1-6} hydrocarbyloxy, C_{1-6} hydrocarbylamino, C_{1-6} hydrocarbylsulfydryl, carbonyl hydrazide, C_{1-6} hydrocarbyl carbonyl, C_{1-6} hydrocarbylamino carbonyl, C_{1-6} hydrocarbylcarbonyl amino, C_{1-6} hydrocarbyloxy carbonyl, C_{1-6} hydrocarbylsulfinyl, C_{1-6} hydrocarbylamino carbonylamino, C_{4-8}

heterocycloalkyl, C_{4-8} heterocycloalkoxy, C_{4-8} heterocycloalkylamino, C_{4-8} heterocycloalkyl sulfydryl, C_{4-8} heterocycloalkyl carbonyl, C_{4-8} heterocycloalkylamino carbonyl, C_{5-10} aryl, C_{5-10} aryloxy, C_{5-10} aryloxy hydrocarbyl, C_{5-10} arylamino, C_{5-10} aryl sulfydryl, C_{5-10} aryl carbonyl, C_{1-6} hydrocarbyl sulfonyl, C_{1-6} hydrocarbyl sulfonyl ~~amide~~amino, C_{5-10} aryl sulfonyl, C_{5-10} aryl sulfonylamino~~ amide~~, aminooxalyl amino, aminooxalyl, C_{5-10} arylamino carbonyl or C_{5-10} arylamino carbonylamino;

~~(6) X is selected from $Y(CH_2)_n$, $CH(OCH_3)$, $CH(SCH_3)$, N, O or S, Y is a single bond, NH, O or S, and n is 0, 1, 2 or 3;~~

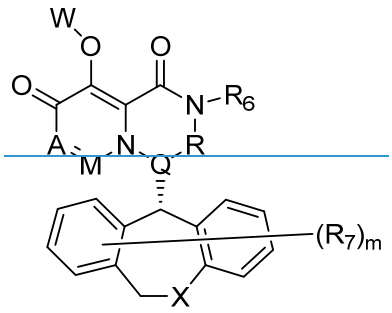
(~~7~~2) W is hydrogen or W is selected from the following groups:(a) $-C(=O)-R_8$; (b) $-C(=O)-(CH_2)_k-R_8$, k is selected from 0-3; (c) $-C(=O)-O-(CH_2)_k-R_8$, k is selected from 0-3; (d) $-CH_2-O-R_8$; (e) $-CH_2-O-C(=O)-R_8$; (f) $-CH_2-O-C(=O)-O-R_8$; (g) $-CH(-CH_3)-O-C(=O)-R_8$; (h) $-CH(-CH_3)-O-C(C=O)-O-(CH_2)_k-R_8$, k is selected from 0-3; (i) $-CH_2-O-P(=O)(OH)_2$; (j) $-CH_2-O-P(=O)(OPh)(NHR_8)$; (k) $-CH_2-O-P(=O)(OCH_2OC(=O)OR_8)_2$; R_8 is selected from the following unsubstituted or substituted groups: C_{1-6} hydrocarbyl, C_{1-6} hydrocarbyloxy, C_{1-6} hydrocarbylamino, C_{1-6} hydrocarbylsulfydryl, carbonyl hydrazide, C_{1-6} hydrocarbyl carbonyl, C_{1-6} hydrocarbylamino carbonyl, C_{1-6} hydrocarbylcarbonyl amino, C_{1-6} hydrocarbyloxy carbonyl, C_{1-6} hydrocarbylsulfinyl, C_{1-6} hydrocarbylamino carbonylamino, C_{4-8} heterocycloalkyl, C_{4-8} heterocycloalkoxy, C_{4-8} heterocycloalkylamino, C_{4-8} heterocycloalkyl sulfydryl, C_{4-8} heterocycloalkyl carbonyl, C_{4-8} heterocycloalkylamino carbonyl, C_{5-10} aryl, C_{5-10} aryloxy, C_{5-10} aryloxy hydrocarbyl, C_{5-10} arylamino, C_{5-10} aryl sulfydryl, C_{5-10} aryl carbonyl, C_{1-6} hydrocarbyl sulfonyl, C_{1-6} hydrocarbyl sulfonylamino, C_{5-10} aryl sulfonyl, C_{5-10} aryl sulfonylamino, aminooxalyl amino, aminooxalyl, C_{5-10} arylamino carbonyl or C_{5-10} arylamino carbonylamino;

(3) G is O;

(4) Z is selected from CH_2, O or S;

(5) p and q are respectively 0, 1 or 2, and the two are not 0 at the same time, and when Z is O or S, p+q is greater than or equal to 2~~(8) Ar1 and Ar2 are independently selected from a phenyl ring, or a heteroaromatic ring containing 1, 2, 3 or more heteroatoms~~.

~~2. The pyridone derivative or the stereoisomer, the pharmaceutically acceptable salt, the solvate or the crystal thereof according to claim 1, wherein Ar1 and Ar2 are both phenyl rings and the pyridone derivative is represented by Formula (II):~~



~~(II)~~

~~or, at least one of Ar1 and Ar2 is a heteroaromatic ring.~~

~~3~~2. The pyridone derivative or the stereoisomer, the pharmaceutically acceptable salt, the solvate or the crystal thereof according to claim 1 ~~or 2~~, wherein,~~–~~

~~in the heterocyclic ring or the heteroaromatic ring, a heteroatom is independently selected from N, O, or S;~~

~~and/or, R_1 is selected from hydrogen, cyano, hydroxy, halogen, carboxyl, amide or sulfonyl amide; or, R_1 is selected from the following unsubstituted or substituted groups: C_{1-6} hydrocarbyl, C_{1-6} hydrocarbyloxy, C_{1-6} hydrocarbylamino, C_{1-6} hydrocarbylsulfydryl, carbonyl hydrazide, C_{1-6} hydrocarbyl carbonyl, C_{1-6} hydrocarbylamino carbonyl, C_{1-6} hydrocarbylcarbonyl amino, C_{1-6} hydrocarbyloxy carbonyl, C_{1-6} hydrocarbylsulfinyl or C_{1-6} hydrocarbylamino carbonylamino;~~

~~and/or, R_2 is selected from hydrogen, cyano, hydroxy, halogen, carboxyl, amide or sulfonyl amide; or, R_2 is selected from the following unsubstituted or substituted groups: C_{1-6} hydrocarbyl, C_{1-6} hydrocarbyloxy, C_{1-6} hydrocarbylamino, C_{1-6} hydrocarbylsulfydryl, carbonyl hydrazide, C_{1-6} hydrocarbyl carbonyl, C_{1-6} hydrocarbylamino carbonyl, C_{1-6} hydrocarbylcarbonyl amino, C_{1-6} hydrocarbyloxy carbonyl, C_{1-6} hydrocarbylsulfinyl or C_{1-6} hydrocarbylamino carbonylamino;~~

~~and/or, R_3 is selected from hydrogen, cyano, carboxyl, amide, unsubstituted or substituted C_{1-6} hydrocarbyl;~~

~~and/or,~~ R_7 is selected from hydrogen, hydroxy, cyano, halogen, carboxyl, sulfonyl amide or amide; or, R_7 is selected from the following unsubstituted or substituted groups: C_{1-6} hydrocarbyl, C_{1-6} hydrocarbyloxy, C_{1-6} hydrocarbylamino, C_{1-6} hydrocarbylsulfydryl, carbonyl hydrazide, C_{1-6} hydrocarbyl carbonyl, C_{1-6} hydrocarbylamino carbonyl, C_{1-6} hydrocarbylcarbonyl amino, C_{1-6} hydrocarbyloxy carbonyl, C_{1-6} hydrocarbylsulfinyl ~~or~~ , C_{1-6} hydrocarbylamino carbonylamino, C_{1-6} hydrocarbyl sulfonyl or C_{1-6} hydrocarbyl

sulfonylamino;

and/or, R_8 is selected from the following unsubstituted or substituted groups: C_{1-6} hydrocarbyl, C_{1-6} hydrocarbyloxy, C_{1-6} hydrocarbylamino, C_{1-6} hydrocarbylsulfydryl, carbonyl hydrazide, C_{1-6} hydrocarbyl carbonyl, C_{1-6} hydrocarbylamino carbonyl, C_{1-6} hydrocarbylcarbonyl amino, C_{1-6} hydrocarbyloxy carbonyl, C_{1-6} hydrocarbylsulfinyl, C_{1-6} hydrocarbylamino carbonylamino, C_{1-6} hydrocarbyl sulfonyl or C_{1-6} hydrocarbyl sulfonylamino;

and/or, the substituted groups are groups with its hydrogen atom replaced with 1,2, 3 or more substituents selected from cyano, F, Cl, Br, hydroxy, carboxyl, ester, sulfonyl, sulphonylamino, amide, carbonyl, methylsulfinylamino, ethylsulfinylamino, isopropylsulfinylamino, tert-butylsulfinylamino, amino, carbonyl hydrazide~~acylhydrazino~~, methyl, ethyl, n-propyl, isopropyl, cyclopropyl, n-butyl, isobutyl, tert-butyl, cyclobutyl, n-pentyl, isopentyl, neopentyl, cyclohexyl, halomethyl, haloethyl, halo-n-propyl, halo-isopropyl, halocyclopropyl, halo-n-butyl, halo-isobutyl, halo-tert-butyl, halocyclobutyl, hydroxymethyl, hydroxyethyl, hydroxy-n-propyl, hydroxyisopropyl, hydroxycyclopropyl, hydroxy-n-butyl, hydroxyisobutyl, hydroxy-tert-butyl, hydroxycyclobutyl, hydroxy-n-pentyl, hydroxyisopentyl, hydroxy neopentyl, hydroxycyclohexyl, methoxy, ethoxy or propoxy.

43. The pyridone derivative or the stereoisomer, the pharmaceutically acceptable salt, the solvate or the crystal thereof according to claim ~~3~~2, wherein,

~~R_1 is selected from hydrogen, cyano, hydroxy, halogen, carboxyl, amide or sulfonyl amide; or, R_1 is selected from the following unsubstituted or substituted groups: C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} alkylamino, C_{1-6} alkylsulfydryl, carbonyl hydrazide, C_{1-6} alkylcarbonyl, C_{1-6} alkylamino carbonyl, C_{1-6} alkylcarbonyl amino, C_{1-6} alkoxy carbonyl, C_{1-6} alkylsulfinyl or C_{1-6} alkylamino carbonylamino;~~

~~and/or, R_2 is selected from hydrogen, cyano, hydroxy, halogen, carboxyl, amide or sulfonyl amide; or, R_2 is selected from the following unsubstituted or substituted groups: C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} alkylamino, C_{1-6} alkylsulfydryl, carbonyl hydrazide, C_{1-6} alkyl carbonyl, C_{1-6} alkylamino carbonyl, C_{1-6} alkylcarbonyl amino, C_{1-6} alkoxy carbonyl, C_{1-6} alkylsulfinyl or C_{1-6} alkylamino carbonylamino;~~

~~and/or, R_3 is selected from hydrogen, cyano, carboxyl, amide, unsubstituted or substituted C_{1-6} alkyl;~~

~~and/or,~~ R_7 is selected from hydrogen, hydroxy, cyano, halogen, carboxyl, sulfonyl amide or amide; or, R_7 is selected from the following unsubstituted or substituted groups:

C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} alkylamino, C_{1-6} alkylsulfydryl, carbonyl hydrazide, C_{1-6} alkyl carbonyl, C_{1-6} alkylamino carbonyl, C_{1-6} alkylcarbonyl amino, C_{1-6} alkoxy carbonyl, C_{1-6} alkylsulfinyl ~~or,~~ C_{1-6} alkylamino carbonylamino, C_{1-6} alkyl sulfonyl or C_{1-6} alkyl sulfonylamino;

and/or, R_8 is selected from the following unsubstituted or substituted groups: C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} alkylamino, C_{1-6} alkylsulfydryl, carbonyl hydrazide, C_{1-6} alkyl carbonyl, C_{1-6} alkylamino carbonyl, C_{1-6} alkylcarbonyl amino, C_{1-6} alkoxy carbonyl, C_{1-6} alkylsulfinyl, C_{1-6} alkylamino carbonylamino, C_{1-6} alkyl sulfonyl, C_{1-6} alkyl sulfonylamino, C_{1-6} alkyl sulfonyl or C_{1-6} alkyl sulfonylamino.

~~5~~4. The pyridone derivative or the stereoisomer, the pharmaceutically acceptable salt, the solvate or the crystal thereof according to any one of claims 1 to 43, wherein,

m is 0, 1, 2 or 3~~;~~

~~and/or, A is CR_1, R_1 is hydrogen;~~

~~and/or, M is CR_2, R_2 is hydrogen;~~

~~and/or, Q is N;~~

~~and/or, X is S;~~

~~and/or, Ar1 and Ar2 are both phenyl rings~~.

~~6. The pyridone derivative or the stereoisomer, the pharmaceutically acceptable salt, the solvate or the crystal thereof according to any one of claims 1 to 5, wherein,~~

~~m is 0, 1, 2 or 3;~~

~~A is CR_1, R_1 is hydrogen;~~

~~M is CR_2, R_2 is hydrogen;~~

~~Q is N;~~

~~X is S;~~

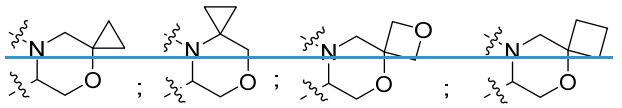
~~Ar1 and Ar2 are both phenyl rings.~~

~~7. The pyridone derivative or the stereoisomer, the pharmaceutically acceptable salt, the solvate or the crystal thereof according to any one of claims 1 to 6, wherein a ring in the spiro ring that shares the nitrogen atom with a parent ring is a 5 membered, 6 membered, 7 membered or 8 membered ring, and another ring is a 3 membered, 4 membered, 5 membered or 6 membered carboatomic, oxygen containing heterocyclic or sulfur containing heterocyclic ring unsubstituted or substituted by a substituent selected from halogen, C_{1-3} hydrocarbyl,~~

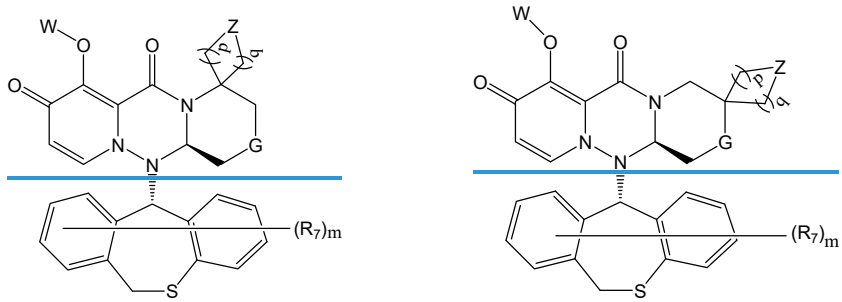
~~hydroxymethyl, methoxymethyl, methoxyethyl, or C_{1-3} halohydrocarbyl.~~

~~8. The pyridone derivative or the stereoisomer, the pharmaceutically acceptable salt, the solvate or the crystal thereof according to any one of claim 7, wherein when the another ring has a substituent, the substituent is selected from methyl, fluoro, chloro, bromo, monofluoromethyl, difluoromethyl, trifluoromethyl, hydroxymethyl, methoxymethyl, methoxyethyl, chloromethyl.~~

~~9. The pyridone derivative or the stereoisomer, the pharmaceutically acceptable salt, the solvate or the crystal thereof according to any one of claims 1 to 6, wherein R_6 and R together with the nitrogen atom connected therewith is selected from the following groups:~~



~~10. The pyridone derivative or the stereoisomer, the pharmaceutically acceptable salt, the solvate or the crystal thereof according to any one of claims 1 to 3, wherein the pyridone derivative is represented by Formula IIa or Formula IIb:~~



~~in Formula IIa and Formula IIb,~~

~~G is O;~~

~~Z is selected from CH_2, O or S;~~

~~p and q are respectively 0, 1 or 2, and the two are not 0 at the same time, and when Z is O or S, p+q is greater than or equal to 2;~~

~~definitions of W, R_7 and m are respectively the same as in any one of claims 1 to 3.~~

~~11~~5. The pyridone derivative or the stereoisomer, the pharmaceutically acceptable salt, the solvate or the crystal thereof according to any one of claims 1 to 4~~claim 10~~, wherein in Formula IIa and Formula IIb, p+q = 1 or 2 or 3, and Z is CH_2; or, p = 1 or 2, q = 1 or 2, and Z is O or S.

~~12~~6. The pyridone derivative or the stereoisomer, the pharmaceutically acceptable salt, the solvate or the crystal thereof according to any one of claims 1 to 5~~claim 10 or 11~~, wherein in Formula IIa and Formula IIb,

Z is CH_2, and p=0, q=1; or, p=0, q=2; or, p=1, q=0; or, p=1, q=1; or p=1, q=2; or, p=2, q=0; or, p=2, q=1; or

Z is O, and p=1, q=1; or, p=1, q=2; or, p=2, q=1; or, p=2, q=2; or

Z is S, and p=1, q=1; or, p=1, q=2; or, p=2, q=1; or, p=2, q=2.

~~13~~7. The pyridone derivative or the stereoisomer, the pharmaceutically acceptable salt, the solvate or the crystal thereof according to any one of claims 1 to ~~12~~6, wherein R_7 is connected to a phenyl ring.

~~14~~8. The pyridone derivative or the stereoisomer, the pharmaceutically acceptable salt, the solvate or the crystal thereof according to any one of claims 1~~ to 3~~, 2 and ~~5~~ 4 to ~~13~~7, wherein R_7 is selected from hydrogen, hydroxy, cyano, halogen, C_{1-6} hydrocarbyl, C_{1-6} halohydrocarbyl, C_{1-6} alkoxy C_{1-6} hydrocarbyl, hydroxy C_{1-6} hydrocarbyl, C_{1-6} hydrocarbyloxy.

~~15~~9. The pyridone derivative or the stereoisomer, the pharmaceutically acceptable salt, the solvate or the crystal thereof according to any one of claims 1 to ~~14~~8, wherein R_7 is connected to a phenyl ring, R_7 is selected from F, Cl, Br, difluoromethyl, trifluoromethyl or methyl, and m is 0, 1, 2 or 3.

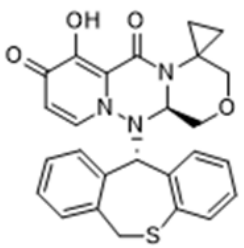
1~~6~~0. The pyridone derivative or the stereoisomer, the pharmaceutically acceptable salt, the solvate or the crystal thereof according to any one of claims 1 to ~~15~~9, wherein R_7 is connected to a phenyl ring, R_7 is selected from F, Cl, Br, trifluoromethyl or methyl, and m is 0, 1, 2 or 3.

11~~7~~. The pyridone derivative or the stereoisomer, the pharmaceutically acceptable salt, the solvate or the crystal thereof according to any one of claims 1 to ~~16~~10, wherein W is hydrogen or W is selected from the following groups: (e) $-CH_2-O-C(=O)-R_8$; (f) $-CH_2-O-C(=O)-O-R_8$; (g) $-CH(-CH_3)-O-C(=O)-R_8$; (h) $-CH(-CH_3)-O-C(C=O)-O-(CH_2)_k-R_8$, k is selected from 0-3; (i) $-CH_2-O-P(=O)(OH)_2$; (j) $-CH_2-O-P(=O)(OPh)(NHR_8)$ or (k) $-CH_2-O-P(=O)(OCH_2OC(=O)OR_8)_2$.

1~~8~~2. The pyridone derivative or the stereoisomer, the pharmaceutically acceptable salt, the solvate or the crystal thereof according to any one of claims 1~~ to 3~~, 2 and ~~5~~ 4 to ~~17~~11, wherein R_8 is selected from C_{1-6} hydrocarbyl or C_{1-6} hydrocarbyloxy.

~~19~~13. The pyridone derivative or the stereoisomer, the pharmaceutically acceptable salt, the solvate or the crystal thereof according to any one of claims 1 to ~~18~~12, wherein the R_8 is selected from methyl, ethyl, isopropyl or butyl.

~~20~~14. The pyridone derivative or the stereoisomer, the pharmaceutically acceptable salt, the solvate or the crystal thereof according to claim 1, wherein the pyridone derivative is selected from the following compounds: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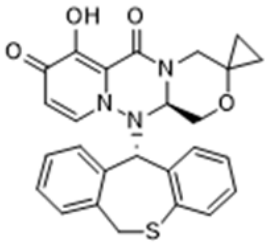
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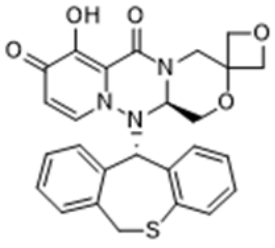
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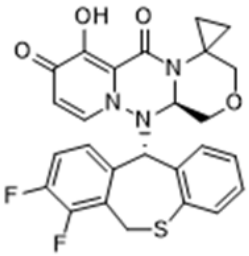
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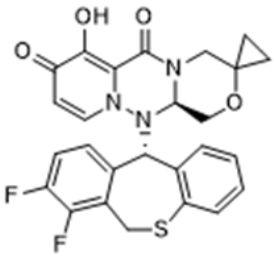
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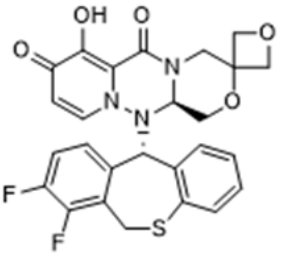
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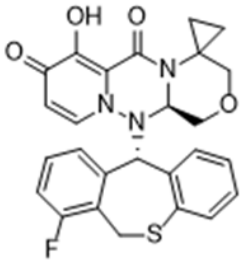
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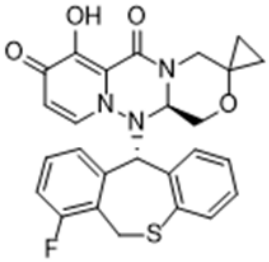
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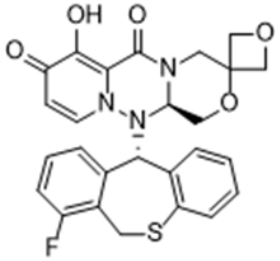
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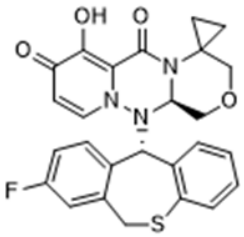

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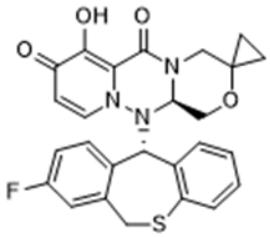

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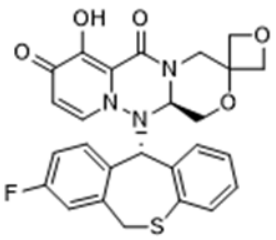

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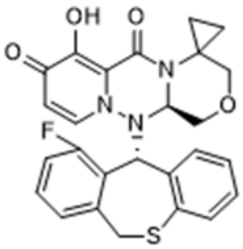

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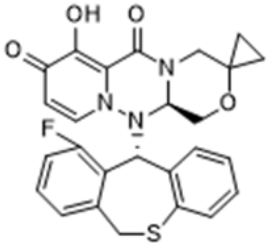

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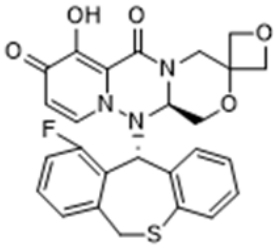

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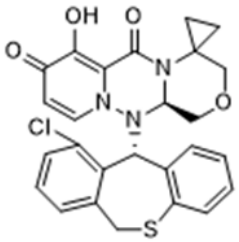

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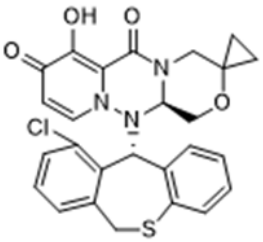

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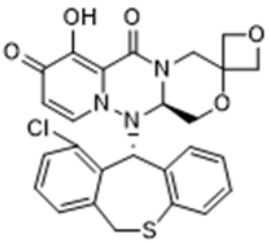

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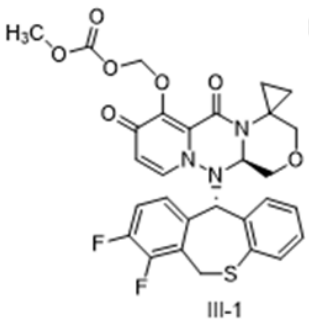

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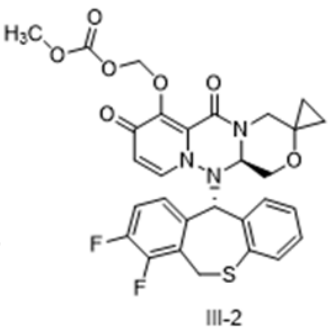

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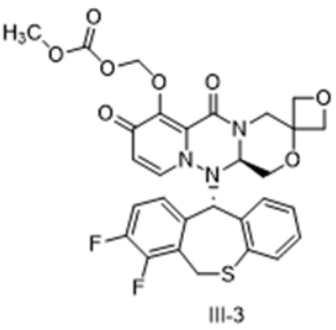

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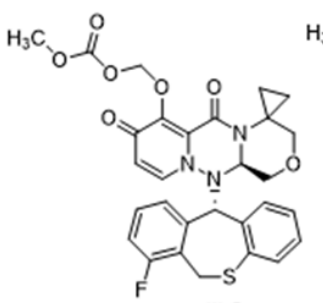

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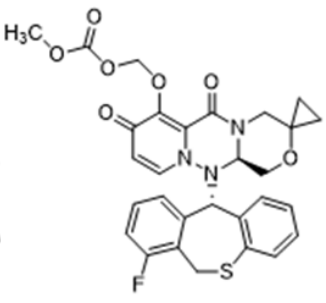

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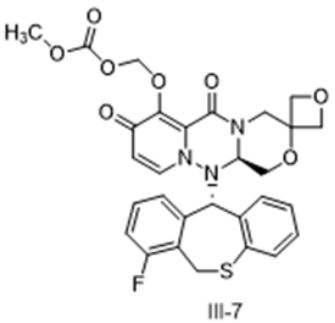

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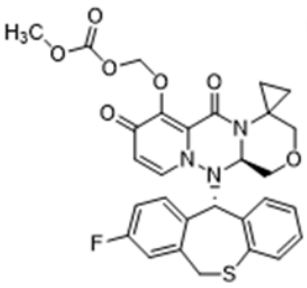

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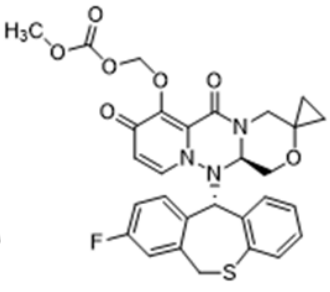

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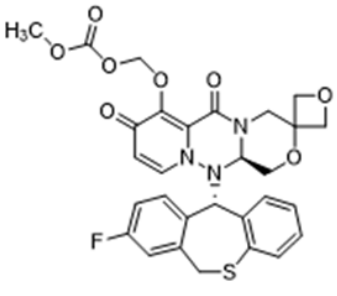

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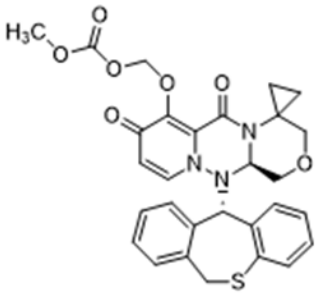

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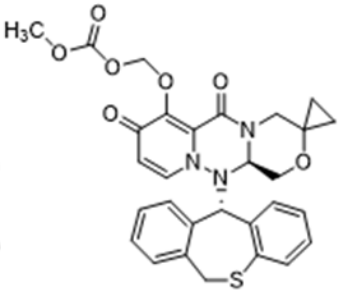

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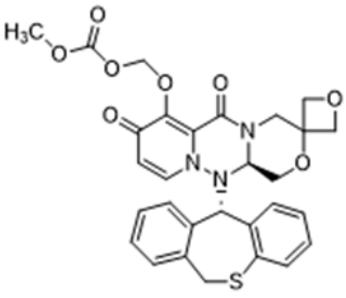

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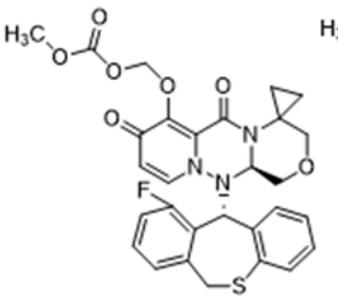

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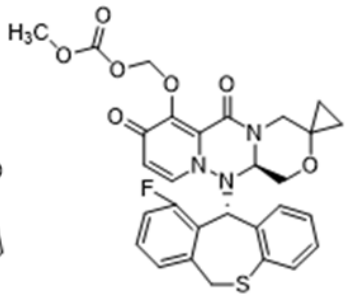

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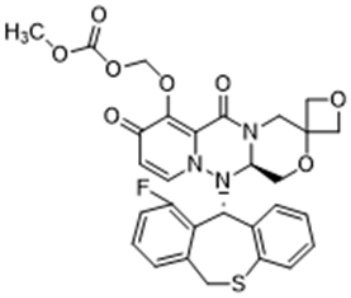

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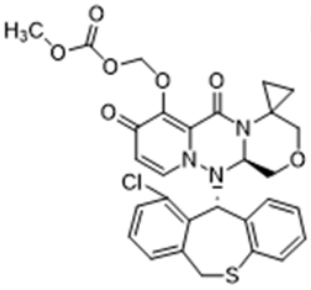

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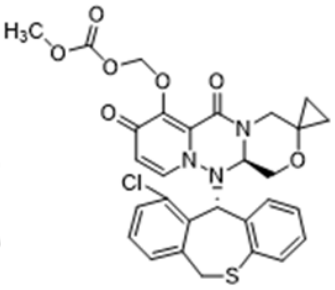

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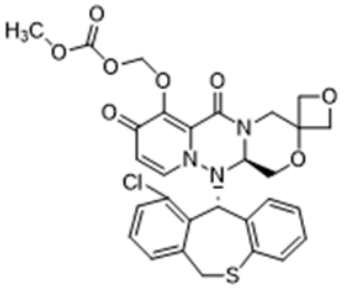

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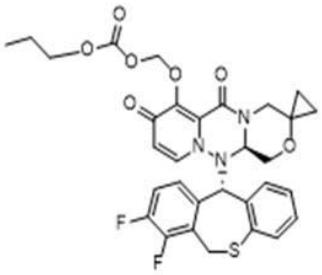

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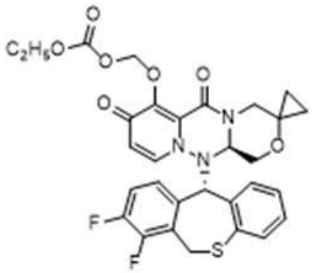

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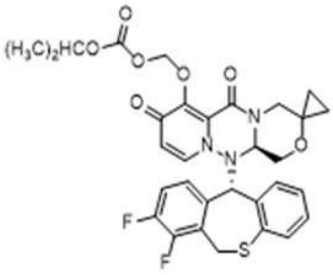

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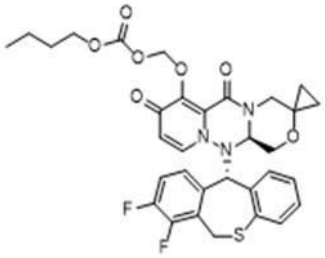

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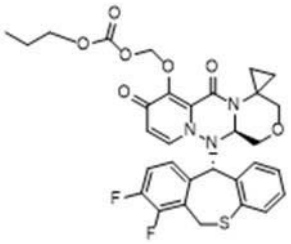

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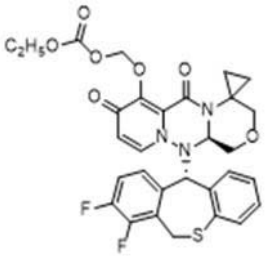

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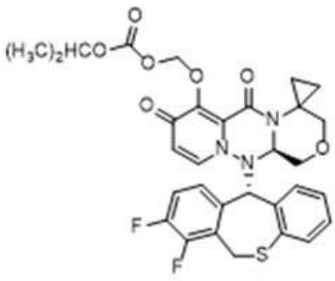

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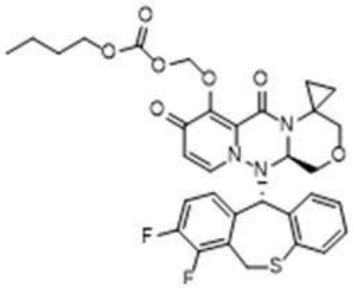

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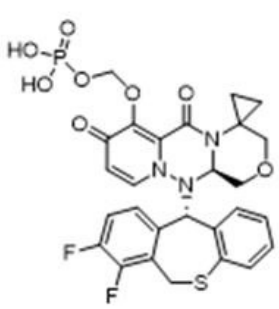

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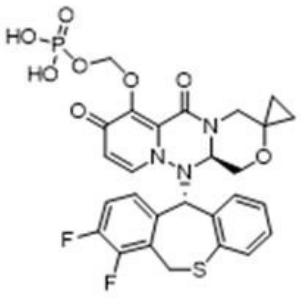

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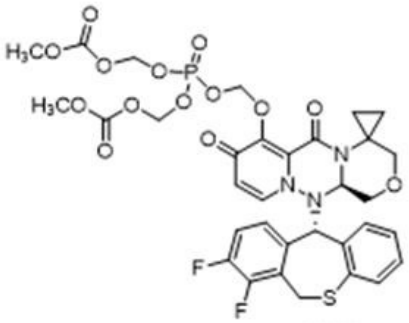

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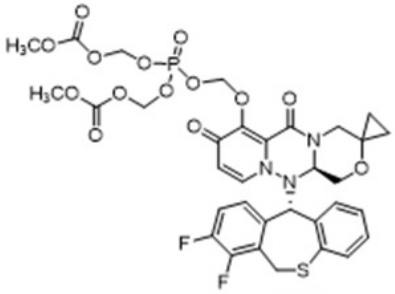

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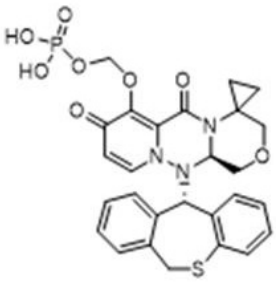

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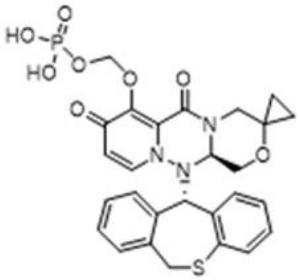

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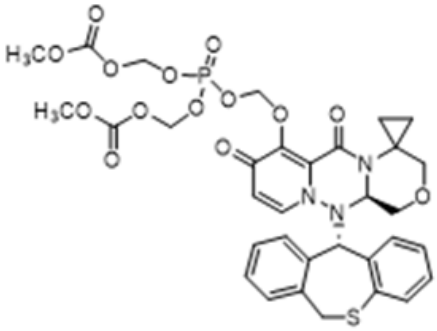

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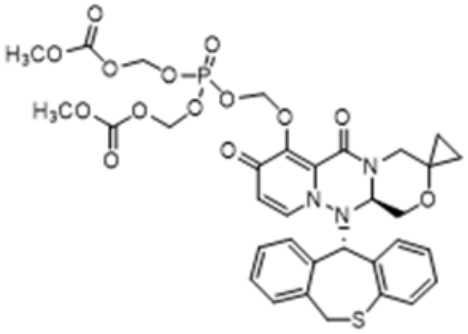
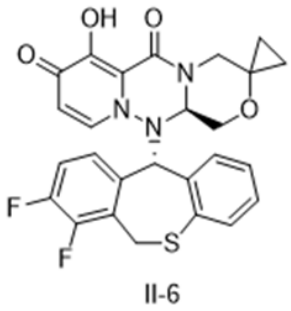
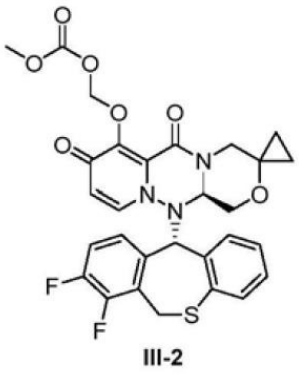


IV-16

.

5 ~~21~~15. A pyridone derivative or the pharmaceutically acceptable salt thereof, wherein the

pyridone derivative is  or  .

~~22~~16. A pharmaceutical composition containing the pyridone derivative represented by Formula IIa or Formula IIb~~(I)~~ or the stereoisomer, the pharmaceutically acceptable salt, the solvate or the crystal thereof according to any one of claims 1 to ~~20~~14, wherein the pharmaceutical composition is an antiviral pharmaceutical composition.

17. The pharmaceutical composition according to claim 16, wherein the pharmaceutical composition further ~~optionally~~ comprising one or more therapeutic agents selected from the group consisting of a neuraminidase inhibitor, a nucleoside drug, a PB2 inhibitor, a PB1 inhibitor, an M2 inhibitor and other anti-influenza drugs.

~~23~~18. A pharmaceutical composition containing the pyridine derivate or the pharmaceutically acceptable salt thereof according to claim ~~21~~ 15 and a pharmaceutically acceptable carrier, wherein the pharmaceutical composition is an antiviral pharmaceutical composition.

19. The pharmaceutical composition according to claim 18, wherein the pharmaceutical composition further ~~optionally~~ comprising one or more therapeutic agents selected from the group consisting of a neuraminidase inhibitor, a nucleoside drug, a PB2 inhibitor, a PB1 inhibitor, an M2 inhibitor and other anti-influenza drugs.

~~24~~20. The pharmaceutical composition according to any one of claims ~~22~~ 16 ~~or~~ to ~~23~~19, wherein the pharmaceutical composition is a pharmaceutical preparation selected from a tablet, a powder, a capsule, a granule, an oral liquid, an injection, a suppository, a pill, a cream, a paste, a gel, a pulvis, an inhalant, a suspension, a dry suspension, a patch, a lotion or a nano preparation.

~~25~~21. Use of the pyridone derivative represented by Formula IIa or Formula IIb~~(I)~~ or the stereoisomer, the pharmaceutically acceptable salt, the solvate or the crystal thereof according to any one of claims 1 to ~~20~~14, or the pharmaceutical composition according to claim ~~22~~16 or 17, or a combination thereof in the preparation of a drug for preventing and/or treating a viral infection disease.

~~26~~22. The use according to claim ~~25~~21, wherein the viral infection disease is an influenza type A viral infection disease and/or an influenza type B viral infection disease.

~~27~~23. Use of the pyridone derivative or the pharmaceutically acceptable salt thereof according to claim ~~21~~ 15 or the pharmaceutical composition according to claim ~~23~~ 18 or 19 in the preparation of a drug for preventing and/or treating a viral infection disease.

~~28~~24. The use according to claim ~~27~~23, wherein the viral infection disease is an influenza type A viral infection disease and/or an influenza type B viral infection disease.

~~29~~25. Use of the pyridone derivative represented by Formula IIa or Formula IIb~~(I)~~ or the stereoisomer, the pharmaceutically acceptable salt, the solvate or the crystal thereof according to any one of claims 1 to ~~20~~14, or the pharmaceutical composition according to claim ~~22~~16 or 17, or a combination thereof in the preparation of an antiviral drug, the antiviral drug is a drug or an agent inhibiting influenza cap-dependent endonuclease activities.

~~30~~26. Use of the pyridone derivative or the pharmaceutically acceptable salt thereof according to claim ~~21~~ 15 or the pharmaceutical composition according to claim ~~23~~ 18 or 19 in the preparation of an antiviral drug, the antiviral drug is a drug or an agent inhibiting influenza cap-dependent endonuclease activities.