[21]The pharmaceutical composition or the pharmaceutical preparation of the present invention, comprises the active ingredient M and the pharmaceutically acceptable excipient of any one of the preceding embodiments, wherein the pharmaceutically acceptable excipient comprises a filler, a binder, a glidant, a lubricant, and a disintegrant.

[22]The pharmaceutical composition or the pharmaceutical preparation of the present invention, comprises the active ingredient M and the pharmaceutically acceptable excipient of any one of the preceding embodiments, wherein the pharmaceutically acceptable excipient comprises a filler, a binder, a glidant, a lubricant, and a disintegrant, and further contains one or more of a solubilizer, a pH regulator, and a surfactant.

[23]The pharmaceutical composition or the pharmaceutical preparation of the present invention, comprises the active ingredient M and the pharmaceutically acceptable excipient of any one of the preceding embodiments, wherein the pharmaceutically acceptable excipient comprises a filler, a binder, a glidant, a lubricant, a disintegrant, and a solubilizer.

[24]The pharmaceutical composition or the pharmaceutical preparation of the present invention, comprises the active ingredient M and the pharmaceutically acceptable excipient of any one of the preceding embodiments, wherein the pharmaceutically acceptable excipient comprises a filler, a binder, a glidant, a lubricant, a disintegrant, and a pH regulator.

[25]The pharmaceutical composition or the pharmaceutical preparation of the present invention, comprises the active ingredient M and the pharmaceutically acceptable excipient of any one of the preceding embodiments, wherein the pharmaceutically acceptable excipient comprises a filler, a binder, a glidant, a lubricant, a disintegrant, and a surfactant.

[26]The present invention relates to a pharmaceutical composition and a pharmaceutical preparation, wherein the filler is selected from one or more of microcrystalline cellulose, lactose, mannitol, pregelatinized starch, silicified microcrystalline cellulose, sucrose, sorbitol, dextran, calcium dihydrogen phosphate, or starch; in some embodiments, the filler is selected from one or more of microcrystalline cellulose, silicified microcrystalline cellulose, or sorbitol; in some embodiments, the filler is microcrystalline cellulose.

[27]The present invention relates to a pharmaceutical composition and a pharmaceutical preparation, wherein the binder is selected from one or more of povidone, hydroxypropyl cellulose, hypromellose, methylcellulose, or sodium carboxymethyl cellulose; in some embodiments, the binder is selected from one or more of

hypromellose, methylcellulose, or sodium carboxymethyl cellulose; in some embodiments, the binder is hypromellose.

[28]The present invention relates to a pharmaceutical composition and a pharmaceutical preparation, wherein the glidant is selected from one or more of talc, silicon dioxide, micronized silica gel, polyethylene glycol, or magnesium lauryl sulfate; in some embodiments, the glidant is selected from one or more of silicon dioxide or micronized silica gel; in some embodiments, the glidant is colloidal silicon dioxide.

[29]The present invention relates to a pharmaceutical composition and a pharmaceutical preparation, wherein the lubricant is selected from one or more of magnesium stearate, calcium stearate, stearic acid, or sodium stearyl fumarate; in some embodiments, the lubricant is sodium stearyl fumarate.

[30]The present invention relates to a pharmaceutical composition and a pharmaceutical preparation, wherein the disintegrant is selected from one or more of sodium carboxymethyl starch, low-substituted hydroxypropyl cellulose, crospovidone, croscarmellose sodium, or calcium carboxymethylcellulose. in some embodiments, the disintegrant is selected from one or more of crospovidone, croscarmellose sodium, or calcium carboxymethylcellulose; in some embodiments, the disintegrant is crospovidone.

[31]The present invention relates to a pharmaceutical composition and a pharmaceutical preparation, wherein the solubilizer is selected from one or more of polyoxyethylene castor oil, polyoxyethylene hydrogenated castor oil, polysorbate, polyethylene glycol 15-hydroxystearate, poloxamer, cyclodextrin, hydroxypropyl betacyclodextrin, docusate sodium, or vitamin E polyethylene glycol succinate; in some embodiments, the solubilizer is selected from one or more of cyclodextrin or hydroxypropyl betacyclodextrin; in some embodiments, the solubilizer is cyclodextrin; in some embodiments, the solubilizer is hydroxypropyl betacyclodextrin.

[32]The present invention relates to a pharmaceutical composition and a pharmaceutical preparation, wherein the surfactant is sodium dodecyl sulfate.

[33]The present invention relates to a pharmaceutical composition and a pharmaceutical preparation, wherein the pH regulator is magnesium oxide.

[34]The pharmaceutical composition or the pharmaceutical preparation of the present invention, comprises the active ingredient M and the pharmaceutically acceptable excipient of any one of the preceding embodiments, wherein the pharmaceutically acceptable excipient comprises a filler, a binder, a glidant, a lubricant, and a disintegrant, and further optionally contains one or

the preceding embodiments, wherein the pharmaceutically acceptable excipient comprises a filler, a binder, a glidant, a lubricant, and a disintegrant, and further optionally contains one or more of a solubilizer, a pH regulator, and a surfactant, and the filler is present with a content of 10%-90%; in some embodiments, the filler is present with a content of 10%-80%; in some embodiments, the filler is present with a content of 10%-75%; in some embodiments, the filler is present with a content of 10%-70%; in some embodiments, the filler is present with a content of 10%-60%; in some embodiments, the filler is present with a content of 10%-50%; in some embodiments, the filler is present with a content of 10%-40%; in some embodiments, the filler is present with a content of 10%-30%; in some embodiments, the filler is present with a content of 10%-20%; in some embodiments, the filler is present with a content of 20%-80%; in some embodiments, the filler is present with a content of 20%-75%; in some embodiments, the filler is present with a content of 20%-70%; in some embodiments, the filler is present with a content of 20%-60%; in some embodiments, the filler is present with a content of 20%-50%; in some embodiments, the filler is present with a content of 30%-80%; in some embodiments, the filler is present with a content of 30%-75%; in some embodiments, the filler is present with a content of 30%-70%; in some embodiments, the filler is present with a content of 40%-80%; in some embodiments, the filler is present with a content of 40%-75%; in some embodiments, the filler is present with a content of 40%-70%; in some embodiments, the filler is present with a content of 37%; in some embodiments, the filler is present with a content of 40%; in some embodiments, the filler is present with a content of 72.5%; in some embodiments, the filler is present with a content of 80%.

[36]The pharmaceutical composition or the pharmaceutical preparation of the present invention, comprises the active ingredient M and the pharmaceutically acceptable excipient of any one of the preceding embodiments, wherein the pharmaceutically acceptable excipient comprises a filler, a binder, a glidant, a lubricant, and a disintegrant, and further optionally contains one or more of a solubilizer, a pH regulator, and a surfactant, and the binder is present with a content of 1%-50%; in some embodiments, the binder is present with a content of 1%-40%; in some embodiments, the binder is present with a content of 1%-30%; in some embodiments, the binder is present with a content of 1%-10%; in some embodiments, the binder is present with a content of 1%-6%; in some embodiments, the binder is present with a content of 1%-5%; in some embodiments, the binder is present with a content of 1%-4%; in some embodiments, the binder is present with a content of 1%-3%; in some embodiments, the

binder is present with a content of 1%-15%; in some embodiments, the binder is present with a content of 1%-10%; in some embodiments, the binder is present with a content of 1%-6%; in some embodiments, the binder is present with a content of 1%-5%; in some embodiments, the binder is present with a content of 1%-4%; in some embodiments, the binder is present with a content of 1%-3%; in some embodiments, the binder is present with a content of 1%-2.5%; in some embodiments, the binder is present with a content of 1.5%-2.5%; in some embodiments, the binder is present with a content of 2%-2.5%; in some embodiments, the binder is present with a content of 2%; in some embodiments, the binder is present with a content of 2.5%; in some embodiments, the binder is present with a content of 3%;

(iv) a glidant, which is one or more of silicon dioxide or micronized silica gel with a content of 0.5%-10%; in some embodiments, the glidant is present with a content of 0.5%-5%; in some embodiments, the glidant is present with a content of 0.5%-4%; in some embodiments, the glidant is present with a content of 0.5%-3%; in some embodiments, the glidant is present with a content of 0.5%-2%; in some embodiments, the glidant is present with a content of 1%-2%; in some embodiments, the glidant is present with a content of 0.5%; in some embodiments, the glidant is present with a content of 1%; in some embodiments, the glidant is present with a content of 2%; in some embodiments, the glidant is present with a content of 3%;

(v) a lubricant, which is sodium stearyl fumarate with a content of 0.1%-10%; in some embodiments, the lubricant is present with a content of 0.1%-8%; in some embodiments, the lubricant is present with a content of 0.1%-6%; in some embodiments, the lubricant is present with a content of 0.1%-5%; in some embodiments, the lubricant is present with a content of 0.5%-2.0%; in some embodiments, the lubricant is present with a content of 0.5%-1%; in some embodiments, the lubricant is present with a content of 0.5%; in some embodiments, the lubricant is present with a content of 0.6%; in some embodiments, the lubricant is present with a content of 0.7%; in some embodiments, the lubricant is present with a content of 0.8%; in some embodiments, the lubricant is present with a content of 0.9%; in some embodiments, the lubricant is present with a content of 1.0%.

(vi) a disintegrant, which is one or more of crospovidone, croscarmellose sodium, or calcium carboxymethylcellulose with a content of 0.5%-10%; in some embodiments, the disintegrant is present with a content of 1%-10%; in some embodiments, the disintegrant is present with a content of 1%-9%; in some embodiments, the disintegrant is present with a content of 1%-8%; in some embodiments, the disintegrant is present with a content of 1%-7%; in some

1000 mg, 20-1000 mg, 25-1000 mg, 30-1000 mg, 40-1000 mg, 50-1000 mg, 60-1000 mg, 70-1000 mg, 75-1000 mg, 80-1000 mg, 90-1000 mg, 100-1000 mg, 200-1000 mg, 300-1000 mg, 400-1000 mg, 1-900 mg, 2-900 mg, 3-900 mg, 4-900 mg, 5-900 mg, 6-900 mg, 10-900 mg, 20-900 mg, 25-900 mg, 30-900 mg, 40-900 mg, 50-900 mg, 60-900 mg, 70-900 mg, 75-900 mg, 80-900 mg, 90-900 mg, 100-900 mg, 200-900 mg, 300-900 mg, 400-900 mg, 1-800 mg, 2-800 mg, 3-800 mg, 4-800 mg, 5-800 mg, 6-800 mg, 10-800 mg, 20-800 mg, 25-800 mg, 30-800 mg, 40-800 mg, 50-800 mg, 60-800 mg, 70-800 mg, 75-800 mg, 80-800 mg, 90-800 mg, 100-800 mg, 200-800 mg, 300-800 mg, 400-800 mg, 1-700 mg, 2-700 mg, 3-700 mg, 4-700 mg, 5-700 mg, 6-700 mg, 10-700 mg, 20-700 mg, 25-700 mg, 30-700 mg, 40-700 mg, 50-700 mg, 60-700 mg, 70-700 mg, 75-700 mg, 80-700 mg, 90-700 mg, 100-700 mg, 200-700 mg, 300-700 mg, 400-700 mg, 1-600 mg, 2-600 mg, 3-600 mg, 4-600 mg, 5-600 mg, 6-600 mg, 10-600 mg, 20-600 mg, 25-600 mg, 30-600 mg, 40-600 mg, 50-600 mg, 60-600 mg, 70-600 mg, 75-600 mg, 80-600 mg, 90-600 mg, 100-600 mg, 200-600 mg, 300-600 mg, 400-600 mg, 1-500 mg, 2-500 mg, 3-500 mg, 4-500 mg, 5-500 mg, 6-500 mg, 10-500 mg, 20-500 mg, 25-500 mg, 30-500 mg, 40-500 mg, 50-500 mg, 60-500 mg, 70-500 mg, 75-500 mg, 80-500 mg, 90-500 mg, 100-500 mg, 125-500 mg, 150-500 mg, 200-500 mg, 250-500 mg, 300-500 mg, 400-500 mg, 5-400 mg, 10-400 mg, 20-400 mg, 25-400 mg, 30-400 mg, 40-400 mg, 50-400 mg, 60-400 mg, 70-400 mg, 75-400 mg, 80-400 mg, 90-400 mg, 100-400 mg, 125-400 mg, 150-400 mg, 200-400 mg, 250-400 mg, 300-400 mg, 1-300 mg, 2-300 mg, 5-300 mg, 10-300 mg, 20-300 mg, 25-300 mg, 30-300 mg, 40-300 mg, 50-300 mg, 60-300 mg, 70-300 mg, 75-300 mg, 80-300 mg, 90-300 mg, 100-300 mg, 125-300 mg, 150-300 mg, 200-300 mg, 250-300 mg, 1-200 mg, 2-200 mg, 5-200 mg, 10-200 mg, 20-200 mg, 25-200 mg, 30-200 mg, 40-200 mg, 50-200 mg, 60-200 mg, 70-200 mg, 75-200 mg, 80-200 mg, 90-200 mg, 100-200 mg, 125-200 mg, 150-200 mg, 1-100 mg, 2-100 mg, 5-100 mg, 10-100 mg, 15-100 mg, 20-100 mg, 25-100 mg, 30-100 mg, 40-100 mg, 50-100 mg, 60-100 mg, 70-100 mg, 75-100 mg, 80-100 mg, and 90-100 mg; in some embodiments, examples of therapeutically effective amounts include, but are not limited to, 1mg, 5mg, 10 mg, 15mg, 20 mg, 25mg, 30 mg, 35mg, 40 mg, 45mg, 50 mg, 55mg, 65mg, 70 mg, 75mg, 80 mg, 85mg, 90 mg, 95mg, 100 mg, 110 mg, 120 mg, 125mg, 130 mg, 140 mg, 150 mg, 160 mg, 170 mg, 180 mg, 190 mg, 200 mg, 210 mg, 220 mg, 230 mg, 240 mg, 250 mg, 300 mg, 350 mg, 400 mg, 600 mg, and 800 mg.

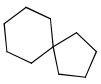
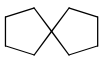
[50]A method for treating a disease in a mammal is provided, the method comprising administering to a subject an active ingredient M at a daily dose of 1–1200 mg/day, wherein the daily dose can be a single dose or divided doses. In some embodiments, the daily dose includes, but is not

pentadiene, 1,4-pentadiene, 1,4-hexadiene, etc.; and the alkenyl may further be optionally substituted with a substituent.

[68]The term "alkenylene" refers to a straight or branched divalent unsaturated hydrocarbon group comprising at least one carbon-carbon double bond (C=C). Unless otherwise specified, the alkenylene contains 2-6 carbon atoms, preferably 2-4 carbon atoms. Non-limiting examples of alkenylene include ethenylene, and the alkenylene may be optionally substituted with a substituent.

[69]The term "alkynyl" refers to a straight or branched hydrocarbon group comprising at least one carbon-carbon triple bond (C≡C) and generally comprises 2 to 18 carbon atoms, further comprises 2 to 8 carbon atoms, further comprises 2 to 6 carbon atoms, and still further comprises 2 to 4 carbon atoms. Examples of alkynyl include, but are not limited to ethynyl, 1-propynyl, 2-propynyl, butynyl, 2-butynyl, 3-butynyl, 1-methyl-2-propynyl, 4-pentynyl, 3-pentynyl, 1-methyl-2-butynyl, 2-hexynyl, 3-hexynyl, 2-heptynyl, 3-heptynyl, 4-heptynyl, 3-octynyl, 3-nonynyl, 4-decynyl, etc.; and the alkynyl may be optionally substituted with a substituent.

[70]The term "alkynylene" refers to a straight or branched divalent unsaturated hydrocarbon group comprising a carbon-carbon triple bond (C≡C) and generally comprises 2-6 carbon atoms, and further comprises 2-4 carbon atoms. Non-limiting examples of alkynylene include ethynylene, propynylene and butynylene; and the alkynylene may be optionally substituted with a substituent.

[71]The term "cycloalkyl" refers to a saturated or partially unsaturated, non-aromatic carbocyclic hydrocarbon group containing no ring heteroatoms. The cycloalkyl may be monocyclic, bicyclic or polycyclic, the bicyclic or polycyclic cycloalkyl may be in the form of a fused ring, a spiro ring, a bridged ring or a combination thereof, and may comprise one or more aromatic rings, but the ring system is non-aromatic as a whole, and the attachment site may be on an aromatic ring or a non-aromatic ring. Generally, the cycloalkyl contains 3 to 20 carbon atoms, further contains 3-8 carbon atoms, and still further contains 3-6 carbon atoms; when the cycloalkyl is monocyclic cycloalkyl, the cycloalkyl contains 3-15 carbon atoms, or 3-10 carbon atoms, or 3-8 carbon atoms, or 3-6 carbon atoms; when the cycloalkyl is bicyclic or polycyclic cycloalkyl, the cycloalkyl contains 5-12 carbon atoms, or 5-11 carbon atoms, or 6-10 carbon atoms. Non-limiting examples of cycloalkyl include cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, cycloheptyl, butenyl, cyclopentenyl, cyclohexenyl, , , , , , ,

extraction was performed with ethyl acetate (100 mL × 2). The organic phase was concentrated and then purified by column chromatography (petroleum ether/ethyl acetate = 1/1) to obtain 44C (3.6 g, yield 73%).

[375] LCMS m/z = 216.2 $[M+H]^+$;

[376] Step 3: 44C (2.80 g, 13.01 mmol) and acetonitrile (30 mL) were added into a 100 mL single-neck flask. Then alumina (2.65 g, 25.99 mmol) and potassium permanganate (3.08 g, 19.49 mmol) were added. After the addition, the obtained mixture was reacted under stirring at room temperature overnight. After the reaction was completed, the reaction solution was filtered, and the filtrate was concentrated and then purified by column chromatography (petroleum ether/ethyl acetate = 1/2) to obtain 44D (0.88 g, yield 31%).

[377] LCMS m/z = 214.1 $[M+H]^+$;

[378] ^{1}H NMR (400 MHz, DMSO-d6) δ 9.01 (s, 1H), 7.86-7.84 (d, 1H), 7.74-7.73 (d, 1H), 7.35 (s, 1H), 7.32-7.29 (dd, 1H), 3.94 (s, 3H), 2.58 (s, 3H).

[379] Step 4: 4D (0.88 g, 4.13 mmol) and N,N-dimethylformamide (10 mL) were added into a 50 mL single-neck flask. Then sodium thioethylate (1.04 g, 12.35 mmol) was added. After the addition, nitrogen protection was performed. The obtained mixture was reacted under stirring at 130°C overnight. After the reaction was completed, the reaction solution was concentrated. Dilute hydrochloric acid was added to adjust the pH to acidic. After concentration, a residue was obtained. The residue was purified by column chromatography (dichloromethane/methanol=20/1) to obtain 44E (0.68 g, yield 82%).

[380] LCMS m/z =200.1 $[M+H]^+$;

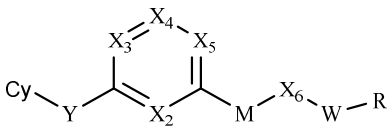
[381] Step 5: 44E (0.30 g, 1.51 mmol) was dissolved in dry N,N-dimethylformamide (8 mL) in a 25 mL single-neck flask. Cesium carbonate (0.74 g, 2.26 mmol) was slowly added under an ice bath. After the addition, the obtained mixture was reacted under stirring at room temperature for 0.5 h. 2,3,6-trifluorobenzonitrile (0.28 g, 1.81 mmol) was slowly added dropwise under an ice bath. After the addition, the obtained mixture was reacted under stirring at room temperature overnight. After the reaction was completed, the reaction solution was filtered, and the filtrate was concentrated and then purified by column chromatography (petroleum ether/ethyl acetate = 1/1) to obtain 44F (0.45 g, yield 88%).

[382] LCMS m/z =337.0 $[M+H]^+$;

[383] Step 6: 1B (0.21 g, 1.16 mmol) and cesium carbonate (0.47 g, 1.46 mmol) were added to dry N,N-dimethylformamide (5 mL) in a 25 mL single-neck flask. The obtained mixture was

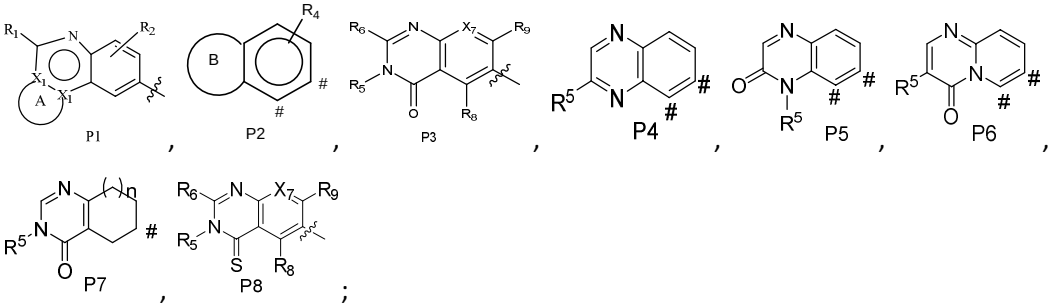
Claims

1. A pharmaceutical composition or a pharmaceutical preparation, wherein the pharmaceutical composition or the pharmaceutical preparation comprises an active ingredient M and a pharmaceutically acceptable excipient, and the active ingredient M is selected from a compound as shown in general formula I, or a stereoisomer, tautomer, deuterated product, solvate, prodrug, metabolite, pharmaceutically acceptable salt or eutectic crystal thereof,



(I)

wherein, Cy is selected from P1, P2, P3, P4, P5, P6, P7 or P8;



P1 , P2 , P3 , P4 , P5 , P6 , P7 , P8 ;

ring A is 5-membered or 6-membered heteroaryl containing 1 to 3 heteroatoms selected from N, S, and O, and the heteroaryl is optionally substituted with 1 or 2 groups selected from halogen, C_{1-4} alkoxy, -NHC_{1-4} alkyl, -$N(C_{1-4}$ alkyl$)_2$, CN, C_{1-4} alkyl, haloC_{1-4} alkoxy and haloC_{1-4} alkyl;

ring B is 5-membered heterocycle containing 1 to 3 heteroatoms selected from N, S, and O, and the heterocycle is optionally substituted with 1 to 3 groups selected from =O, halogen, C_{1-4} alkyl, haloC_{1-4} alkyl, C_{1-4} alkoxy, OH and haloC_{1-4} alkoxy;

means that one point is selected to connect to Y;

n is selected from 0 or 1;

each X_1 is independently N or C;

X_2 is N or CR_3;

X_3 is N or CR_{31};

X_4 is N or CR_{32};

X_5 is N or CR_{33};

X_6 is C(O), S(O) or $S(O)_2$;

X_7 is CR_7 or N;

R_1, R_2 and R_4 are independently H, halogen, OH, -NHC_{1-4} alkyl, -N(C_{1-4} alkyl)$_2$, CN, C_{1-4} alkyl, C_{1-4} alkoxy, haloC_{1-4} alkoxy, haloC_{1-4} alkyl, C_{2-4} alkenyl or C_{2-4} alkynyl;

R_3, R_{31}, R_{32}, and R_{33} are independently H, halogen, C_{1-4} alkyl, haloC_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{1-4} alkoxy, haloC_{1-4} alkoxy, -NHC_{1-4} alkyl, -N(C_{1-4} alkyl)$_2$, CN or C_{3-6} cycloalkyl, alternatively, R_{31} and R_{32}, or R_{32} and R_{33} together with the atoms to which they are attached form C_{3-6} carbocycle or 5-membered or 6-membered heterocycle containing 1 to 3 heteroatoms selected from N, S, and O, and the carbocycle or the heterocycle is optionally substituted with 1 to 3 groups selected from halogen, C_{1-4} alkyl, haloC_{1-4} alkyl, C_{1-4} alkoxy, OH, NH_2 and CN;

R_5 is C_{1-4} alkyl, haloC_{1-4} alkyl, C_{3-6} cycloalkyl, 4-membered to 7-membered heterocycloalkyl containing 1-3 heteroatoms selected from N, S, and O, C_{1-4} alkoxy, haloC_{1-4} alkoxy or C_{3-6} cycloalkyloxy, and is optionally substituted with 1 to 3 groups selected from halogen, -NHC_{1-4} alkyl, -N(C_{1-4} alkyl)$_2$, C_{1-4} alkoxy, haloC_{1-4} alkoxy, haloC_{1-4} alkyl, CN, C_{1-4} alkyl or =O;

R_6 is H, halogen, C_{1-4} alkyl or haloC_{1-4} alkyl;

alternatively, R_5 and R_6 together with the atoms to which they are attached form 5-membered or 6-membered heterocycle containing 1 to 3 heteroatoms selected from N, S, and O, and the heterocycle is optionally substituted with 1 to 3 groups selected from halogen, OH, NH_2, -NHC_{1-4} alkyl, -N(C_{1-4} alkyl)$_2$, CN and C_{1-4} alkyl;

R_7, R_8, and R_9 are independently H, halogen, -NHC_{1-4} alkyl, -N(C_{1-4} alkyl)$_2$, CN, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, haloC_{1-4} alkyl, C_{1-4} alkoxy or haloC_{1-4} alkoxy;

Y is C_{1-2} alkylene, O or NR_y;

R_y is H or C_{1-4} alkyl;

M is C_{1-2} alkylene, O or NR_m;

W is a bond, O or NR_w;

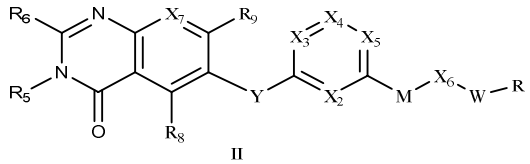
R_m and R_w are independently H or C_{1-4} alkyl;

R is selected from C_{1-4} alkyl, C_{3-8} cycloalkyl, 4-membered to 10-membered heterocycle containing 1 to 3 heteroatoms selected from N, S, and O, or -O-C_{3-6} cycloalkyl, and the alkyl, cycloalkyl or heterocycle is optionally substituted with 1 to 3 groups selected from halogen, C_{1-4} alkyl, C_{1-4} alkoxy, haloC_{1-4} alkoxy, OH, NH_2, -NHC_{1-4} alkyl, -N(C_{1-4} alkyl)$_2$ and haloC_{1-4} alkyl;

when Cy is P2, R is 4-membered to 10-membered saturated heterocycloalkyl containing 1 to 3 heteroatoms selected from N, S, and O, and is optionally substituted with 1 to 3 groups selected from halogen, C_{1-4} alkyl, C_{1-4} alkoxy, haloC_{1-4} alkoxy, OH, NH_2, -NHC_{1-4} alkyl, -N(C_{1-4} alkyl)$_2$ and haloC_{1-4} alkyl;

the pharmaceutical composition or the pharmaceutical preparation comprises 1-1000 mg of the active ingredient M and the excipient includes one or more of a filler, a binder, a glidant, a lubricant, and a disintegrant.

2. The pharmaceutical composition or the pharmaceutical preparation according to claim 1, wherein the pharmaceutical composition or the pharmaceutical preparation comprises 5-800 mg, 5-600 mg or 5-400 mg of the active ingredient M.
3. The pharmaceutical composition or the pharmaceutical preparation according to claim 2, wherein the pharmaceutical composition or the pharmaceutical preparation comprises 5 mg, 10 mg, 20 mg, 50 mg, 100 mg, 200 mg, 400 mg, 600 mg or 800 mg of the active ingredient M.
4. The pharmaceutical composition or the pharmaceutical preparation according to claim 1, wherein the pharmaceutical composition or the pharmaceutical preparation comprises an active ingredient M and a pharmaceutically acceptable excipient, and the active ingredient M is selected from a compound as shown in general formula I or a stereoisomer, tautomer, deuterated product, solvate, prodrug, metabolite, pharmaceutically acceptable salt or eutectic crystal thereof, having a structure of formula II:



II

wherein

R_6 and R_9 are H; Y is O; M is NH;

X_2 is CR_3; X_3 is CR_{31}; X_4 is CR_{32}; X_5 is CH; X_6 is SO_2; X_7 is CH;

R_3 is C_{1-2} alkyl, haloC_{1-2} alkyl, C_{1-2} alkoxy, haloC_{1-2} alkoxy, C_{2-4} alkenyl, C_{2-4} alkynyl, -NHC_{1-2} alkyl, -N(C_{1-2} alkyl)$_2$ or CN;

each of R_{31} and R_{32} is independently H, F, Cl, C_{1-2} alkyl, haloC_{1-2} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{1-2} alkoxy, haloC_{1-2} alkoxy, -NHC_{1-2} alkyl, -N(C_{1-2} alkyl)$_2$, CN or C_{3-6} cycloalkyl;

R_5 is C_{1-2} alkyl, CN or =O substituted C_{1-2} alkyl, haloC_{1-2} alkyl, C_{3-4} cycloalkyl, 4-membered to 7-membered heterocycloalkyl containing 1-3 heteroatoms selected from N, S, and O, C_{1-2} alkoxy, haloC_{1-2} alkoxy or C_{3-4} cycloalkyloxy;

R_8 is selected from H, F, Cl, CN, C_{1-2} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, haloC_{1-2} alkyl, C_{1-2} alkoxy or haloC_{1-2} alkoxy;

R is 4-membered or 5-membered monocyclic heterocycloalkyl containing 1 to 3 heteroatoms selected from N, S, and O, 6-membered to 8-membered monocyclic heterocycloalkyl, 5-membered or 6-membered monocyclic heteroaryl, 5-membered to 10-membered fused heterocycloalkyl, 5-membered to 10-membered bridged heterocycloalkyl, 6-membered to 10-membered spirocyclic heterocycloalkyl or -O-C_{3-6} cycloalkyl, and the 4-membered monocyclic heterocycloalkyl is substituted with 1 to 3 groups selected from F, Cl, C_{1-2} alkyl, C_{1-2} alkoxy, OH, NH_2, -NHC_{1-2} alkyl, -$N(C_{1-2}$ alkyl$)_2$ and haloC_{1-2} alkyl, the 6-membered to 8-membered monocyclic heterocycloalkyl, the 5-membered or 6-membered monocyclic heteroaryl, the 5-membered to 10-membered fused heterocycloalkyl, the 5-membered to 10-membered bridged heterocycloalkyl, the 6-membered to 10-membered spirocyclic heterocycloalkyl or the C_{3-6} cycloalkyl is optionally substituted with 1 to 3 groups selected from F, Cl, C_{1-2} alkyl, C_{1-2} alkoxy, OH, NH_2, -NHC_{1-2} alkyl, -$N(C_{1-2}$ alkyl$)_2$ and haloC_{1-2} alkyl.

5. The pharmaceutical composition or the pharmaceutical preparation according to claim 1, wherein the pharmaceutical composition or the pharmaceutical preparation comprises an active ingredient M and a pharmaceutically acceptable excipient, and the active ingredient M is selected from a compound as shown in general formula I or a stereoisomer, tautomer, deuterated product, solvate, prodrug, metabolite, pharmaceutically acceptable salt or eutectic crystal thereof, wherein

   R_3 is CN;

   each of R_{31} and R_{32} is independently H, F, Cl or C_{3-6} cycloalkyl;

   R_5 is selected from C_{1-2} alkyl, haloC_{1-2} alkyl, C_{1-2} alkoxy, or CN or =O substituted C_{1-2} alkyl;

   R_8 is H;

   R is 6-membered to 10-membered spirocyclic heterocycloalkyl containing 1 to 3 heteroatoms selected from N, S, and O, 4-membered or 5-membered monocyclic heterocycloalkyl containing 1 to 3 heteroatoms selected from N, S, and O, or -O-C_{3-6} cycloalkyl, and the 6-membered to 10-membered spirocyclic heterocycloalkyl, the 4-membered or 5-membered monocyclic heterocycloalkyl or the C_{3-6} cycloalkyl is optionally substituted with 1 to 3 groups selected from F, Cl, C_{1-2} alkyl or C_{1-2} alkoxy.

6. The pharmaceutical composition or the pharmaceutical preparation according to claim 1, wherein the active ingredient M is selected from one of the structures in Table 1 or Table 2.

7. A pharmaceutical composition or a pharmaceutical preparation comprising the active ingredient M and the pharmaceutically acceptable excipient according to any one of claims 1-6, wherein

the pharmaceutically acceptable excipient comprises a filler, a binder, a glidant, a lubricant, and a disintegrant, and preferably further comprises one or more of a solubilizer, a pH regulator, and a surfactant.

8. The pharmaceutical composition or the pharmaceutical preparation according to claim 7, wherein the active ingredient M is present with a content of 0.5%-99%, preferably 5%-60%.
9. The pharmaceutical composition or the pharmaceutical preparation according to claim 7, wherein the filler is one or more of microcrystalline cellulose, lactose, mannitol, pregelatinized starch, silicified microcrystalline cellulose, sucrose, sorbitol, dextran, calcium dihydrogen phosphate, or starch, preferably one or more of microcrystalline cellulose, silicified microcrystalline cellulose, or sorbitol, and preferably the content of the filler is 10% to 90%, preferably 10% to 80%, more preferably 10% to 50%, and/or
   wherein the binder is one or more of povidone, hydroxypropyl cellulose, hypromellose, methylcellulose, or sodium carboxymethyl cellulose, preferably one or more of hypromellose, methylcellulose, or sodium carboxymethyl cellulose, and preferably the content of the binder is 1% to 10%, preferably 1% to 5%, more preferably 1% to 2.5%, and/or
   wherein the glidant is one or more of talc, silicon dioxide, micronized silica gel, polyethylene glycol, or magnesium lauryl sulfate, preferably one or more of silicon dioxide or micronized silica gel, and preferably the content of the glidant is 0.5% to 10%, preferably 0.5% to 5%, more preferably 0.5% to 3%, and/or
   wherein the lubricant is one or more of magnesium stearate, calcium stearate, stearic acid, or sodium stearyl fumarate, preferably sodium stearyl fumarate, and preferably the content of the lubricant is 0.1% to 10%, preferably 0.1% to 5%, more preferably 0.5% to 2.0%, and/or
   wherein the disintegrant is one or more of sodium carboxymethyl starch, low-substituted hydroxypropyl cellulose, crospovidone, croscarmellose sodium, or calcium carboxymethylcellulose, preferably one or more of crospovidone, croscarmellose sodium, or calcium carboxymethylcellulose, and preferably the content of the disintegrant is 0.5% to 10%, preferably 2% to 10%.
10. The pharmaceutical composition or the pharmaceutical preparation according to claim 7, wherein the solubilizer is one or more of polyoxyethylene castor oil, polyoxyethylene hydrogenated castor oil, polysorbate, polyethylene glycol 15-hydroxystearate, poloxamer, cyclodextrin, hydroxypropyl betacyclodextrin, docusate sodium, or vitamin E polyethylene glycol

succinate, preferably one or more of cyclodextrin or hydroxypropyl betacyclodextrin, and preferably the content of the solubilizer is 5% to 50%, preferably 10% to 50%.

11. The pharmaceutical composition or the pharmaceutical preparation according to claim 7, wherein the pharmaceutical composition or the pharmaceutical preparation comprises:
(i) the active ingredient M with a content of 0.5%-99%, preferably 5%-60%;
(ii) a filler, which is one or more of microcrystalline cellulose, silicified microcrystalline cellulose or sorbitol with a content of 10%-90%, preferably 10%-70%, more preferably 10%-50%;
(iii) a binder, which is one or more of hypromellose, methyl cellulose or sodium carboxymethyl cellulose with a content of 1%-10%, preferably 1%-5%, and more preferably 1%-2.5%;
(iv) a glidant, which is one or more of silicon dioxide or micronized silica gel with a content of 0.5%-10%, preferably 0.5%-5%, more preferably 0.5%-3%;
(v) a lubricant, which is sodium stearyl fumarate with a content of 0.1%-10%, preferably 0.1%-5%, more preferably 0.5%-2.0%;
(vi) a disintegrant, which is one or more of crospovidone, croscarmellose sodium, or calcium carboxymethylcellulose with a content of 0.5% to 10%, preferably 2% to 10%.
12. The pharmaceutical composition or the pharmaceutical preparation according to claim 11, wherein the pharmaceutical composition or the pharmaceutical preparation further comprises one or more of a solubilizer, a surfactant, or a pH regulator;the solubilizer is one or more of cyclodextrin or hydroxypropyl betacyclodextrin with a content of 5%-50%, preferably 10%-50%;the surfactant is sodium dodecyl sulfate with a content of 1%-40%, preferably 10%-20%; the pH regulator is magnesium oxide with a content of 1-50%, preferably 1-5%.
13. Use of the pharmaceutical composition or the pharmaceutical preparation according to any one of claims 1-12 in preparation of a related drug for treating cancers.