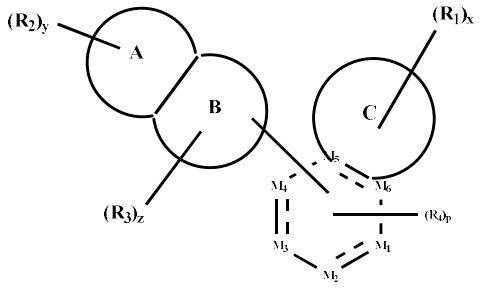
Claims

1. A compound as represented by general formula (I), or a stereoisomer or a pharmaceutically acceptable salt thereof:



(I)

wherein

 is a single bond or a double bond;

ring A is phenyl, 4- to 7-membered heterocyclyl, 5- to 6-membered heteroaryl, or absent;

ring B is 4- to 7-membered heterocyclyl, 5- to 6-membered heteroaryl, or phenyl;

ring C is cycloalkyl, heteroaryl, heterocyclyl, or absent;

M_1, M_2, M_4, M_5, and M_6 are each independently selected from N, NH, or CH;

M_3 is a bond, N, or CH;

each R_1 is independently selected from cycloalkyl, heterocyclyl, cycloalkyloxy, heterocyclyloxy, cycloalkylamino, heterocyclylamino, cycloalkylthio, heterocyclylthio, $-C(O)(CH_2)_nR_b$, $-NR_aC(O)(CH_2)_nR_b$, $-O(CH_2)_nR_b$, $-NH(CH_2)_nR_b$, $-S(CH_2)_nR_b$, $-S(O)_2(CH_2)_nR_b$, $-S(O)(NH)(CH_2)_nR_b$, $-NR_aS(O)_2(CH_2)_nR_b$, $-NR_aS(O)(NH)(CH_2)_nR_b$, or $-NS(O)(CH_2)_nR_aR_b$, wherein optionally the cycloalkyl, heterocyclyl, cycloalkyloxy, heterocyclyloxy, cycloalkylamino, heterocyclylamino, cycloalkylthio, or heterocyclylthio is further substituted with one or more substituents selected from oxo, deuterium, halogen, amino, hydroxyl, cyano, nitro, alkyl, alkenyl, alkynyl, deuteroalkyl, haloalkyl, alkoxy, haloalkoxy, hydroxyalkyl, $-C(O)(CH_2)_nR_b$, $-S(O)_2(CH_2)_nR_b$, $-S(O)(NH)(CH_2)_nR_b$, $-S(O)_2(CH_2)_nR_b$, or $-NR_aS(O)(NH)(CH_2)_nR_b$;

or any two R_1, together with adjacent carbon atoms, form 3- to 8-membered cycloalkyl or 4- to 7-membered heterocyclyl, wherein optionally the 3- to 8-membered cycloalkyl or 4- to 7-membered heterocyclyl is further substituted with oxo, $-C(O)R_b$, $-NR_aC(O)R_b$, $-S(O)_2R_b$, $-S(O)(NH)R_b$, $-NR_aS(O)_2R_b$, or $-NR_aS(O)(NH)R_b$;

R_a or R_b is each independently selected from hydrogen, deuterium, halogen, amino, hydroxyl, cyano, nitro, alkyl, alkenyl, alkynyl, deuteroalkyl, haloalkyl, alkoxy, haloalkoxy, hydroxyalkyl, cycloalkyl, aryl, heteroaryl, or heterocyclyl, wherein optionally the cycloalkyl, aryl, heteroaryl, or heterocyclyl is further substituted with one or more substituents selected from oxo, deuterium, halogen, amino, hydroxyl, cyano, nitro, alkyl, alkenyl, alkynyl, deuteroalkyl, haloalkyl, alkoxy, haloalkoxy, hydroxyalkyl, cycloalkyl, or -$S(O)_2$alkyl;

R_2, R_3, or R_4 is each independently selected from hydrogen, deuterium, oxo, halogen, amino, hydroxyl, cyano, nitro, alkyl, alkenyl, alkynyl, deuteroalkyl, haloalkyl, alkoxy, haloalkoxy, hydroxyalkyl, cycloalkyl, heterocyclyl, aryl, or heteroaryl, wherein the alkyl, alkenyl, alkynyl, deuteroalkyl, haloalkyl, alkoxy, haloalkoxy, hydroxyalkyl, cycloalkyl, heterocyclyl, aryl, heteroaryl, -$NR_aC(O)(CH_2)_nR_b$, or -$C(O)NR_a(CH_2)_nR_b$ can be optionally further substituted;

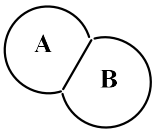
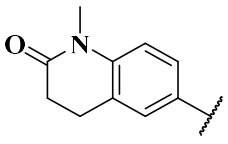
or R_2 and R_3, together with adjacent atoms, form 3- to 8-membered cycloalkyl, 5- to 6-membered heteroaryl, or 4- to 7-membered heterocyclyl, wherein optionally the 3- to 8-membered cycloalkyl, 5- to 6-membered heteroaryl, or 4- to 7-membered heterocyclyl is further substituted with one or more substituents selected from oxo, deuterium, halogen, amino, hydroxyl, cyano, nitro, alkyl, alkenyl, alkynyl, deuteroalkyl, haloalkyl, alkoxy, haloalkoxy, or hydroxyalkyl;

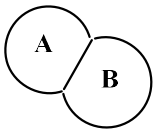
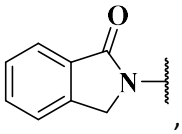
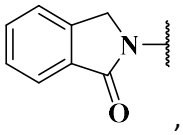
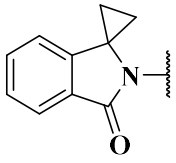
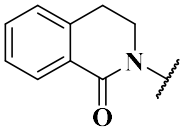
or any two R_2, together with adjacent atoms, form 3- to 8-membered cycloalkyl, 5- to 6-membered heteroaryl, or 4- to 7-membered heterocyclyl, wherein optionally the 3- to 8-membered cycloalkyl, 5- to 6-membered heteroaryl, or 4- to 7-membered heterocyclyl is further substituted with one or more substituents selected from oxo, deuterium, halogen, amino, hydroxyl, cyano, nitro, alkyl, alkenyl, alkynyl, deuteroalkyl, haloalkyl, alkoxy, haloalkoxy, or hydroxyalkyl;

or R_2 and R_4, together with adjacent atoms, form 5- to 14-membered cycloalkyl, 5- to 14-membered heteroaryl, or 5-14-membered heterocyclyl, wherein optionally the 5- to 14-membered cycloalkyl, 5- to 14-membered heteroaryl, or 5-14-membered heterocyclyl is further substituted with one or more substituents selected from oxo, deuterium, halogen, amino, hydroxyl, cyano, nitro, alkyl, alkenyl, alkynyl, deuteroalkyl, haloalkyl, alkoxy, haloalkoxy, or hydroxyalkyl;

p, x, y, and z are each independently selected from 1, 2, 3, or 4; and

n is selected from 0, 1, 2, or 3;

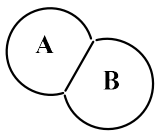
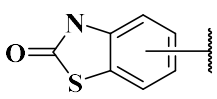
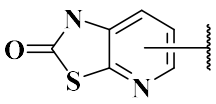
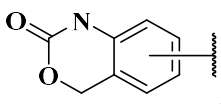
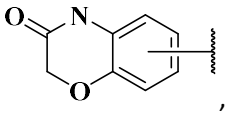
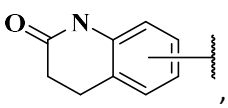
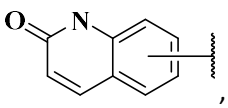
when  is , M_1 is N, and ring C is ,  or , R_1 is not $-NR_aC(O)R_b$ and $-NR_aS(O)_2R_b$;

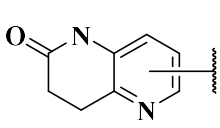
when M_1 is N, and ring C is absent, or is  or ,  is not , ,  or .

2. The compound, or the stereoisomer or the pharmaceutically acceptable salt thereof according to claim 1, wherein ring A is absent or selected from 5- to 10-membered heterocyclyl or 5- to 10-membered heteroaryl containing 1-3 moieties selected from C(O), N, O, S, SO_2 or SONH; and preferably 5- to 7-membered heterocyclyl or 5- to 6-membered heteroaryl containing 1-3 moieties selected from C(O), N, O, S, SO_2 or SONH.
3. The compound, or the stereoisomer or the pharmaceutically acceptable salt thereof according to claim 1, wherein ring B is selected from phenyl, or 5- to 7-membered heterocyclyl or 5- to 6-membered heteroaryl containing 1-3 moieties selected from C(O), N, O or S.
4. The compound, or the stereoisomer or the pharmaceutically acceptable salt thereof according to claim 1, wherein

   ring A is selected from 5- to 7-membered heterocyclyl containing C(O), N or S, or 5- to 6-membered heteroaryl containing 1-3 moieties selected from C(O), N, O, S, SO_2 or SONH; ring B is selected from phenyl;

   or

    is selected from , , , , , , ,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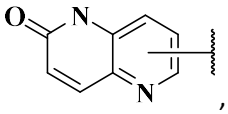
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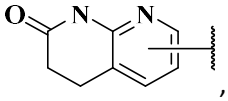
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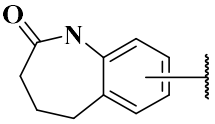
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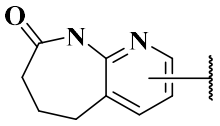
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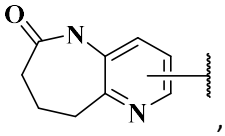
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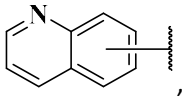
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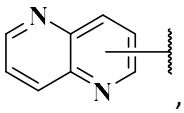
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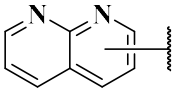
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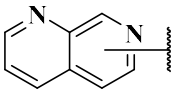
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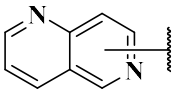
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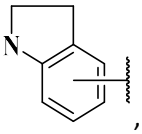
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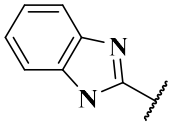
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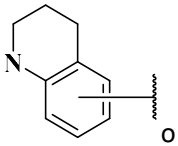
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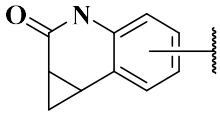
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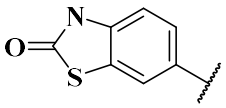
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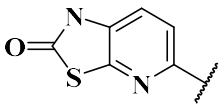
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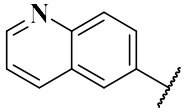
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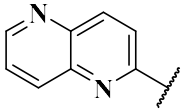
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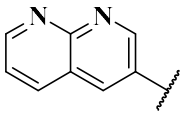
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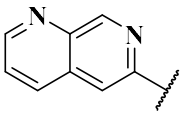
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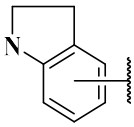
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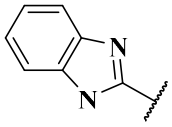
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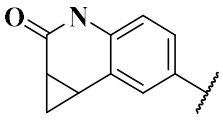
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5. The compound, or the stereoisomer or the pharmaceutically acceptable salt thereof according to claim 1, wherein ring C is absent or selected from 3- to 10-membered cycloalkyl, or 4- to 10-membered heterocyclyl containing 1-3 moieties selected from C(O), N, O, S, SO_2, or SONH; preferably, ring C is selected from 5- to 7-membered monocyclic cycloalkyl, 6- to 10-membered bicyclic cycloalkyl, 5- to 7-membered monocyclic heterocyclyl containing 1-3 moieties selected from C(O), N, O, S, SO_2, or SONH, or 7- to 10-membered bicyclic heterocyclyl containing 1-3 moieties selected from C(O), N, O, S, SO_2, or SONH.
6. The compound, or the stereoisomer or the pharmaceutically acceptable salt thereof according to claim 1, wherein

each R_1 is independently selected from 3- to 8-membered cycloalkyl, 4- to 8-membered heterocyclyl, 3- to 8-membered cycloalkyloxy, 4- to 8-membered heterocyclyloxy, 3- to 8-membered cycloalkylamino, 4- to 8-membered heterocyclylamino, 3- to 8-membered cycloalkylthio, 4- to 8-membered heterocyclylthio, $-C(O)(CH_2)_nR_b$, $-NR_aC(O)(CH_2)_nR_b$, $-O(CH_2)_nR_b$, $-NH(CH_2)_nR_b$, $-S(CH_2)_nR_b$, $-S(O)_2(CH_2)_nR_b$, $-S(O)(NH)(CH_2)_nR_b$, $-NR_aS(O)_2(CH_2)_nR_b$, or $-NR_aS(O)(NH)(CH_2)_nR_b$, wherein optionally the 3- to 8-membered cycloalkyl, 4- to 8-membered

heterocyclyl, 3- to 8-membered cycloalkyloxy, 4- to 8-membered heterocyclyloxy, 3- to 8-membered cycloalkylamino, 4- to 8-membered heterocyclylamino, 3- to 8-membered cycloalkylthio, or 4- to 8-membered heterocyclylthio is further substituted with one or more substituents selected from oxo, deuterium, halogen, amino, hydroxyl, cyano, nitro, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} hydroxyalkyl, $-C(O)(CH_2)_nR_b$, $-S(O)_2(CH_2)_nR_b$, $-S(O)(NH)(CH_2)_nR_b$, $-S(O)_2(CH_2)_nR_b$, or $-NR_aS(O)(NH)(CH_2)_nR_b$;

R_a or R_b is each independently selected from hydrogen, deuterium, halogen, amino, hydroxyl, cyano, nitro, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} hydroxyalkyl, 3- to 8-membered cycloalkyl, 5- to 8-membered heteroaryl containing 1-3 moieties selected from C(O), N, O, or S, or 4- to 8-membered heterocyclyl containing 1-3 moieties selected from C(O), N, O, or S, wherein optionally the 3- to 8-membered cycloalkyl, 5- to 8-membered heteroaryl containing 1-3 moieties selected from C(O), N, O, or S, or 4- to 8-membered heterocyclyl containing 1-3 moieties selected from C(O), N, O, or S is further substituted with one or more substituents selected from oxo, deuterium, halogen, amino, hydroxyl, cyano, nitro, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} hydroxyalkyl or $-SO_2-C_{1-6}$ alkyl;

preferably,

each R_1 is independently selected from 3- to 8-membered cycloalkyl, 4- to 8-membered heterocyclyl containing 1-3 moieties selected from N, O, S, SO_2, or SONH, 3- to 8-membered cycloalkyloxy, 4- to 8-membered heterocyclyloxy containing 1-3 moieties selected from N, O, S, SO_2, or SONH, $-C(O)(CH_2)_nR_b$, $-NR_aC(O)(CH_2)_nR_b$, $-O(CH_2)_nR_b$, $-S(O)_2(CH_2)_nR_b$, $-S(O)(NH)(CH_2)_nR_b$, $-NR_aS(O)_2(CH_2)_nR_b$, or $-NR_aS(O)(NH)(CH_2)_nR_b$, wherein optionally the 3- to 8-membered cycloalkyl, 4- to 8-membered heterocyclyl containing 1-3 moieties selected from N, O, S, SO_2, or SONH, 3- to 8-membered cycloalkyloxy, or 4- to 8-membered heterocyclyloxy containing 1-3 moieties selected from N, O, S, SO_2, or SONH is further substituted with one or more substituents selected from oxo, $-C(O)(CH_2)_nR_b$, $-S(O)_2(CH_2)_nR_b$, $-S(O)(NH)(CH_2)_nR_b$, $-S(O)_2(CH_2)_nR_b$, or $-NR_aS(O)(NH)(CH_2)_nR_b$;

R_a or R_b is each independently selected from hydrogen, deuterium, C_{1-3} alkyl, 3- to 8-membered cycloalkyl, 5- to 8-membered heteroaryl containing 1-3 heteroatoms selected from N, O, or S, or 4- to 8-membered heterocyclyl containing 1-3 moieties selected from C(O), N, O, or S, wherein optionally the 5- to 8-membered heteroaryl containing 1-3 heteroatoms selected from N, O, or S or the 4- to 8-membered heterocyclyl containing 1-3 moieties selected from C(O), N, O, or S is

further substituted with one or more substituents selected from oxo, deuterium, halogen, amino, hydroxyl, cyano, nitro, C_{1-3} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{1-3} deuteroalkyl, C_{1-3} haloalkyl, C_{1-3} alkoxy, C_{1-3} haloalkoxy, C_{1-3} hydroxyalkyl, or $-SO_2-C_{1-3}$ alkyl.

7. The compound, or the stereoisomer or the pharmaceutically acceptable salt thereof according to claim 1, wherein

each R_1 is independently selected from 3- to 10-membered cycloalkyl, 4- to 10-membered heterocyclyl containing 1-3 moieties selected from N, O, S, SO_2, or SONH, 3- to 8-membered cycloalkyloxy, 3- to 8-membered cycloalkylamino, 4- to 8-membered heterocyclyloxy containing 1-3 moieties selected from N, O, S, SO_2, or SONH, 4- to 8-membered heterocyclylamino containing 1-3 moieties selected from N, O, S, SO_2, or SONH, $-C(O)(CH_2)_nR_b$, $-NR_aC(O)(CH_2)_nR_b$, $-O(CH_2)_nR_b$, $-S(O)_2(CH_2)_nR_b$, $-S(O)(NH)(CH_2)_nR_b$, $-NR_aS(O)_2(CH_2)_nR_b$, or $-NR_aS(O)(NH)(CH_2)_nR_b$, wherein optionally the 3- to 10-membered cycloalkyl, 4- to 10-membered heterocyclyl containing 1-3 moieties selected from N, O, S, SO_2, or SONH, 3- to 8-membered cycloalkyloxy, 3- to 8-membered cycloalkylamino, 4- to 8-membered heterocyclyloxy containing 1-3 moieties selected from N, O, S, SO_2, or SONH, or 4- to 8-membered heterocyclylamino containing 1-3 moieties selected from N, O, S, SO_2, or SONH is further substituted with one or more substituents selected from oxo, $-C(O)(CH_2)_nR_b$, $-S(O)_2(CH_2)_nR_b$, $-S(O)(NH)(CH_2)_nR_b$, $-S(O)_2(CH_2)_nR_b$, or $-NR_aS(O)(NH)(CH_2)_nR_b$; and

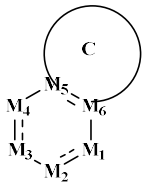
R_a or R_b is each independently selected from hydrogen, deuterium, halogen, hydroxyl, cyano, C_{1-3} alkyl, 3- to 8-membered cycloalkyl, 5- to 8-membered heteroaryl containing 1-3 heteroatoms selected from N, O, or S, or 4- to 8-membered heterocyclyl containing 1-3 moieties selected from C(O), N, O, or S, wherein optionally the 5- to 8-membered heteroaryl containing 1-3 heteroatoms selected from N, O, or S, or 4- to 8-membered heterocyclyl containing 1-3 moieties selected from C(O), N, O, or S is further substituted with one or more substituents selected from oxo, deuterium, halogen, amino, hydroxyl, cyano, nitro, C_{1-3} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{1-3} deuteroalkyl, C_{1-3} haloalkyl, C_{1-3} alkoxy, C_{1-3} haloalkoxy, C_{1-3} hydroxyalkyl, 3- to 6-membered cycloalkyl, or $-SO_2-C_{1-3}$ alkyl.

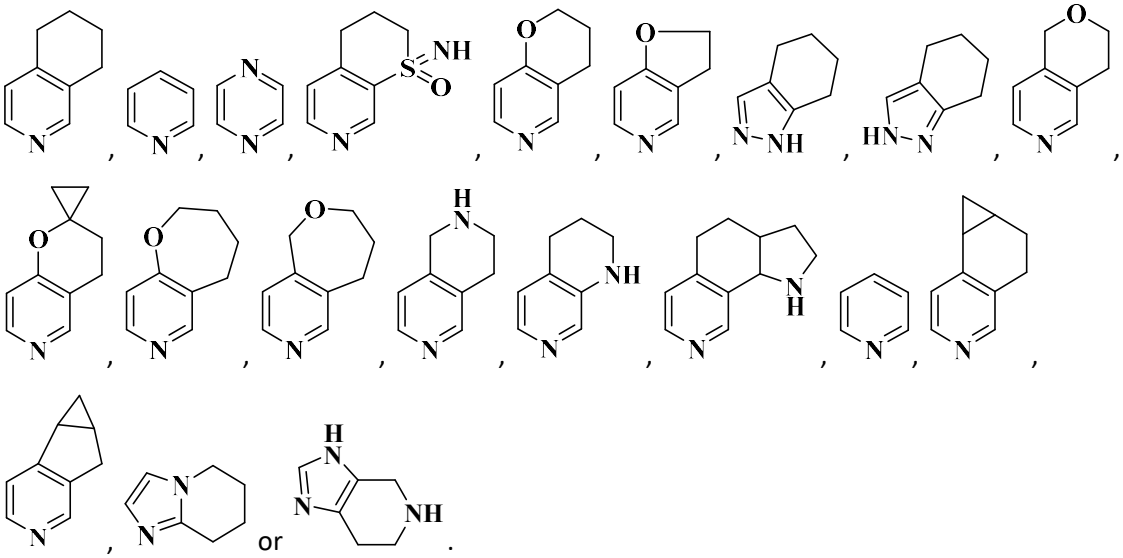
8. The compound, or the stereoisomer or the pharmaceutically acceptable salt thereof according to claim 1, wherein

R_2, R_3, or R_4 is each independently selected from hydrogen, deuterium, halogen, amino, hydroxyl, cyano, nitro, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} deuteroalkoxy, C_{1-6} hydroxyalkyl, 3- to 8-membered cycloalkyl, 3- to

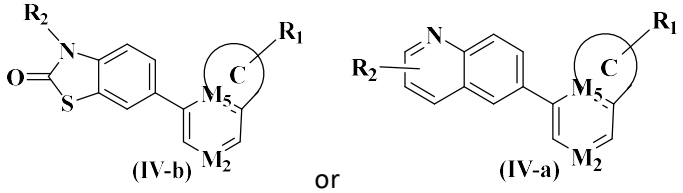
8-membered cycloalkyloxy, 3- to 8-membered cycloalkylamino, C_{6-10} aryl, 5- to 6-membered heteroaryl containing 1-3 heteroatoms selected from N, O, or S or 4- to 8-membered heterocyclyl containing 1-3 moieties selected from C(O), N, O, or S, $-NR_aR_b$, $-NR_aC(O)R_b$, or $-C(O)NR_aR_b$;

preferably, R_2, R_3, or R_4 is each independently selected from hydrogen, deuterium, halogen, C_{1-3} alkyl, C_{1-3} deuteroalkyl, C_{1-3} haloalkyl, C_{1-3} alkoxy, C_{1-3} haloalkoxy, C_{1-3} hydroxyalkyl, or C_{3-6} cycloalkyloxy.

9. The compound, or the stereoisomer or the pharmaceutically acceptable salt thereof according to claim 1, wherein  is selected from the following groups:



10. The compound, or the stereoisomer or the pharmaceutically acceptable salt thereof according to any one of claims 1-9, wherein the compound, or the stereoisomer or the pharmaceutically acceptable salt thereof is further a compound as represented by general formula (IV-a) or (IV-b), or a stereoisomer or a pharmaceutically acceptable salt thereof:



wherein

M_2 or M_3 is each independently selected from N or CH;

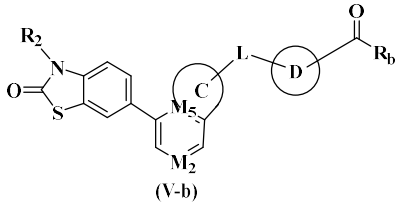
ring C is selected from 5- to 7-membered monocyclic cycloalkyl, 6- to 10-membered bicyclic cycloalkyl, 5- to 7-membered monocyclic heterocyclyl containing 1-3 moieties selected from C(O), N, O, S, SO_2, or SONH, 7- to 10-membered bicyclic heterocyclyl containing 1-3 moieties selected from C(O), N, O, S, SO_2, or SONH, or absent;

R_1 is selected from $-C(O)R_b$, $-NR_aC(O)R_b$, $-OR_b$, $-S(O)_2R_b$, $-S(O)(NH)R_b$, $-NR_aS(O)_2R_b$, $-NR_aS(O)(NH)R_b$, 4- to 8-membered nitrogen-containing heterocyclyl, 4- to 8-membered nitrogen-containing heterocyclyloxy, 4- to 8-membered nitrogen-containing heterocyclylthio, or 4- to 8-membered nitrogen-containing heterocyclylamino, wherein the 4- to 8-membered nitrogen-containing heterocyclyl, 4- to 8-membered nitrogen-containing heterocyclyloxy, 4- to 8-membered nitrogen-containing heterocyclylthio, or 4- to 8-membered nitrogen-containing heterocyclylamino is optionally further substituted with $-C(O)R_b$ or $-S(O)_2R_b$;

R_a or R_b is each independently selected from hydrogen, deuterium, halogen, hydroxy, cyano, C_{1-3} alkyl, C_{1-3} deuteroalkyl, C_{1-3} haloalkyl, C_{1-3} alkoxy, C_{1-3} haloalkoxy, 3- to 8-membered cycloalkyl, 5- to 8-membered heteroaryl containing 1-3 heteroatoms selected from N, O, or S, or 4- to 8-membered heterocyclyl containing 1-3 moieties selected from C(O), N, O, or S, wherein optionally the C_{1-3} alkyl, 3- to 8-membered cycloalkyl, 5- to 8-membered heteroaryl containing 1-3 heteroatoms selected from N, O, or S, or 4- to 8-membered heterocyclyl containing 1-3 moieties selected from C(O), N, O, S, SO_2 or SONH is further substituted with hydroxyl, amino, CN, C_{1-3} alkyl, C_{1-3} deuteroalkyl, C_{1-3} haloalkyl, C_{1-3} alkoxy, C_{1-3} haloalkoxy, C_{1-3} hydroxyalkyl, or 3- to 6-membered cycloalkyl;

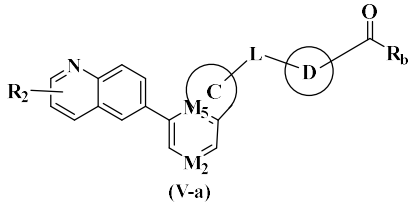
R_2 is selected from hydrogen, deuterium, halogen, C_{1-3} alkyl, C_{1-3} deuteroalkyl, C_{1-3} haloalkyl, C_{1-3} alkoxy, C_{1-3} haloalkoxy, C_{1-3} hydroxyalkyl, or C_{3-6} cycloalkyloxy.

11. The compound, or the stereoisomer or the pharmaceutically acceptable salt thereof according to claim 10, wherein the compound, or the stereoisomer or the pharmaceutically acceptable salt thereof is further a compound as represented by general formula (V-a) or (V-b), or a stereoisomer or a pharmaceutically acceptable salt thereof:



(V-b)

or



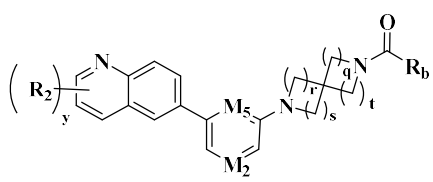
(V-a)

wherein

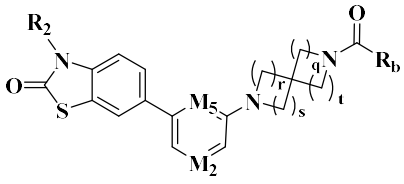
L is selected from a bond, NH or O; and

ring D is selected from 4- to 8-membered heterocyclyl containing 1 to 3 nitrogen atoms.

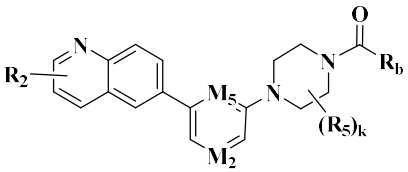
12. The compound, or the stereoisomer or the pharmaceutically acceptable salt thereof according to any one of claims 1-9, wherein the compound, or the stereoisomer or the pharmaceutically acceptable salt thereof is further a compound as represented by general formula (VI-a), (VI-c), (VI-d), (VI-e), (VI-f), (VI-g) and (VI-i), or a stereoisomer or a pharmaceutically acceptable salt thereof:



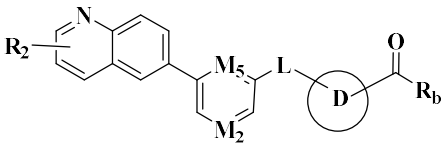
(VI-a)



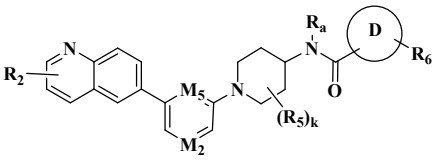
(VI-c)



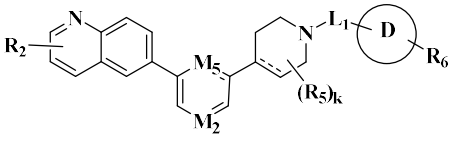
(VI-d)



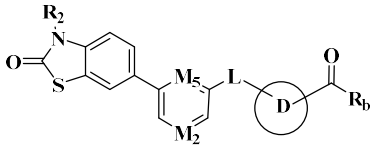
(VI-e)



(VI-f)



(VI-g)



(VI-i)

or

wherein

L is selected from NR_a, O, or S;

L_1 is selected from C(O) or $S(O)_2$;

R_a is selected from hydrogen, deuterium, halogen, C_{1-3} alkyl, C_{1-3} deuteroalkyl, C_{1-3} haloalkyl, C_{1-3} alkoxy, C_{1-3} haloalkoxy, C_{1-3} hydroxyalkyl, or C_{3-6} cycloalkyloxy;

M_2 is selected from N or CH;

M_5 is selected from N or CH;

R_2 is selected from hydrogen, deuterium, halogen, C_{1-3} alkyl, C_{1-3} deuteroalkyl, C_{1-3} haloalkyl, C_{1-3} alkoxy, C_{1-3} haloalkoxy, C_{1-3} hydroxyalkyl, or C_{3-6} cycloalkyloxy;

or any two R_2, together with adjacent atoms, form 3- to 8-membered cycloalkyl, 5- to 8-membered heteroaryl containing 1-3 heteroatoms selected from N, O, or S, or 4- to 8-membered heterocyclyl containing 1-3 moieties selected from C(O), N, O, or S;

each R_b is independently selected from hydrogen, deuterium, halogen, hydroxy, cyano, C_{1-3} alkyl, C_{1-3} deuteroalkyl, C_{1-3} haloalkyl, C_{1-3} alkoxy, C_{1-3} haloalkoxy, 3- to 8-membered cycloalkyl, 5- to 8-membered heteroaryl containing 1-3 heteroatoms selected from N, O, or S, or 4- to 8-membered heterocyclyl containing 1-3 moieties selected from C(O), N, O, or S, wherein optionally the 3- to 8-membered cycloalkyl, 5- to 8-membered heteroaryl containing 1-3 heteroatoms selected from N, O, or S, or 4- to 8-membered heterocyclyl containing 1-3 moieties selected from C(O), N, O, or S is further substituted with hydroxyl, amino, CN, C_{1-3} alkyl, C_{1-3} deuteroalkyl, C_{1-3} haloalkyl, C_{1-3} alkoxy, C_{1-3} haloalkoxy, C_{1-3} hydroxyalkyl, or 3- to 6-membered cycloalkyl;

each R_5 is independently selected from hydrogen, deuterium, halogen, C_{1-3} alkyl, C_{1-3} deuteroalkyl, C_{1-3} haloalkyl, C_{1-3} alkoxy, C_{1-3} haloalkoxy, C_{1-3} hydroxyalkyl, or C_{3-6} cycloalkyloxy;

R_6 is selected from hydrogen, deuterium, halogen, C_{1-3} alkyl, C_{1-3} deuteroalkyl, C_{1-3} haloalkyl, C_{1-3} alkoxy, C_{1-3} haloalkoxy, C_{1-3} hydroxyalkyl, or C_{3-6} cycloalkyl;

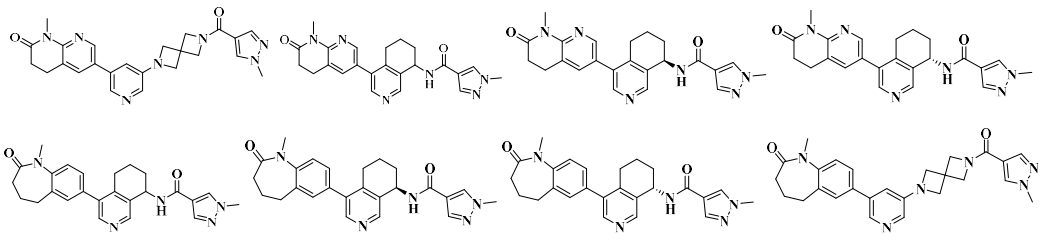
or any two R_5, together with adjacent carbon atoms, form 3- to 8-membered cycloalkyl or 3- to 8-membered heterocyclyl;

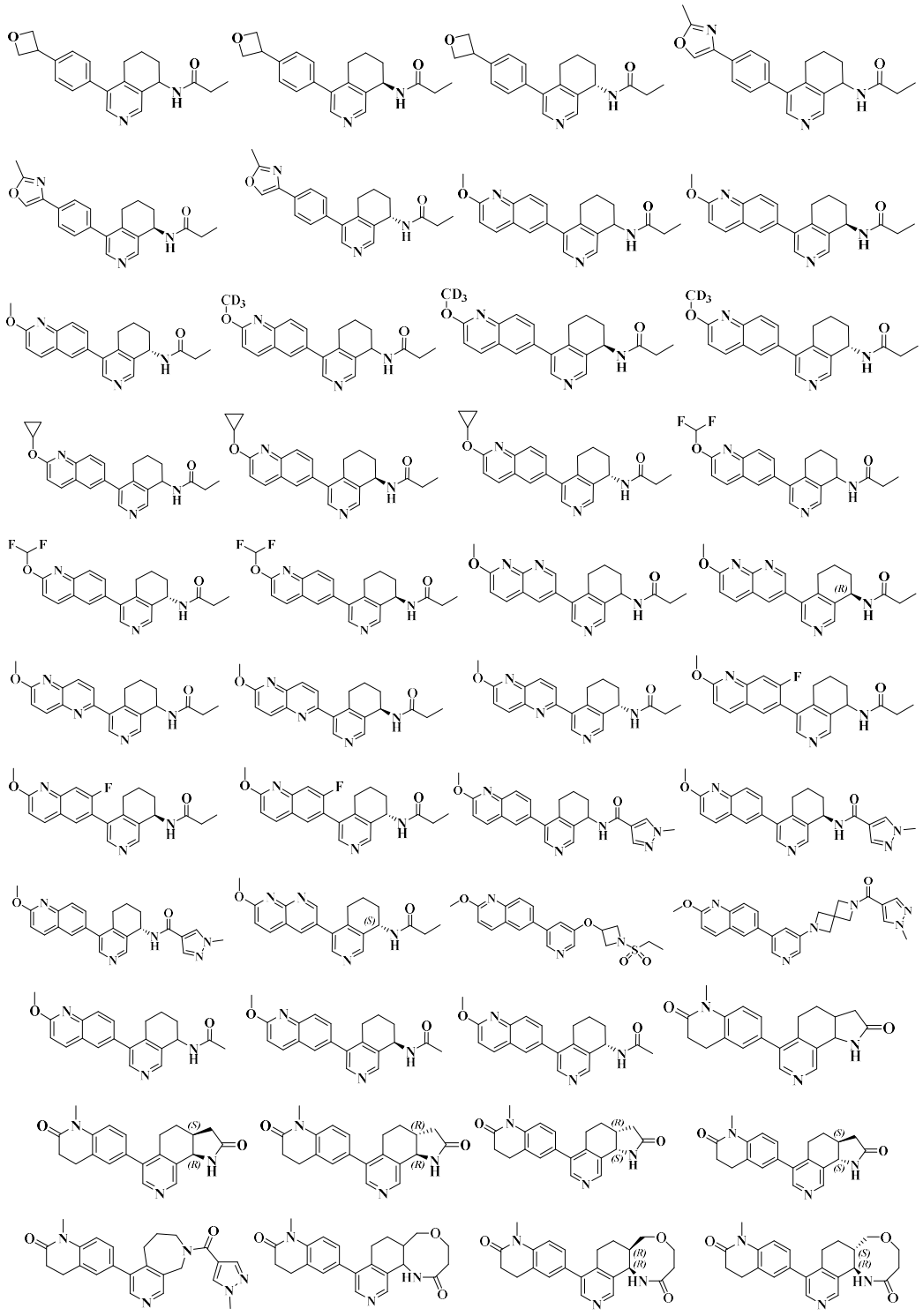
ring D is selected from 3- to 8-membered cycloalkyl or 4- to 8-membered heterocyclyl, preferably 4- to 6-membered nitrogen-containing heterocyclyl, more preferably 4- to 6-membered heterocyclyl containing 1-2 nitrogen atoms;

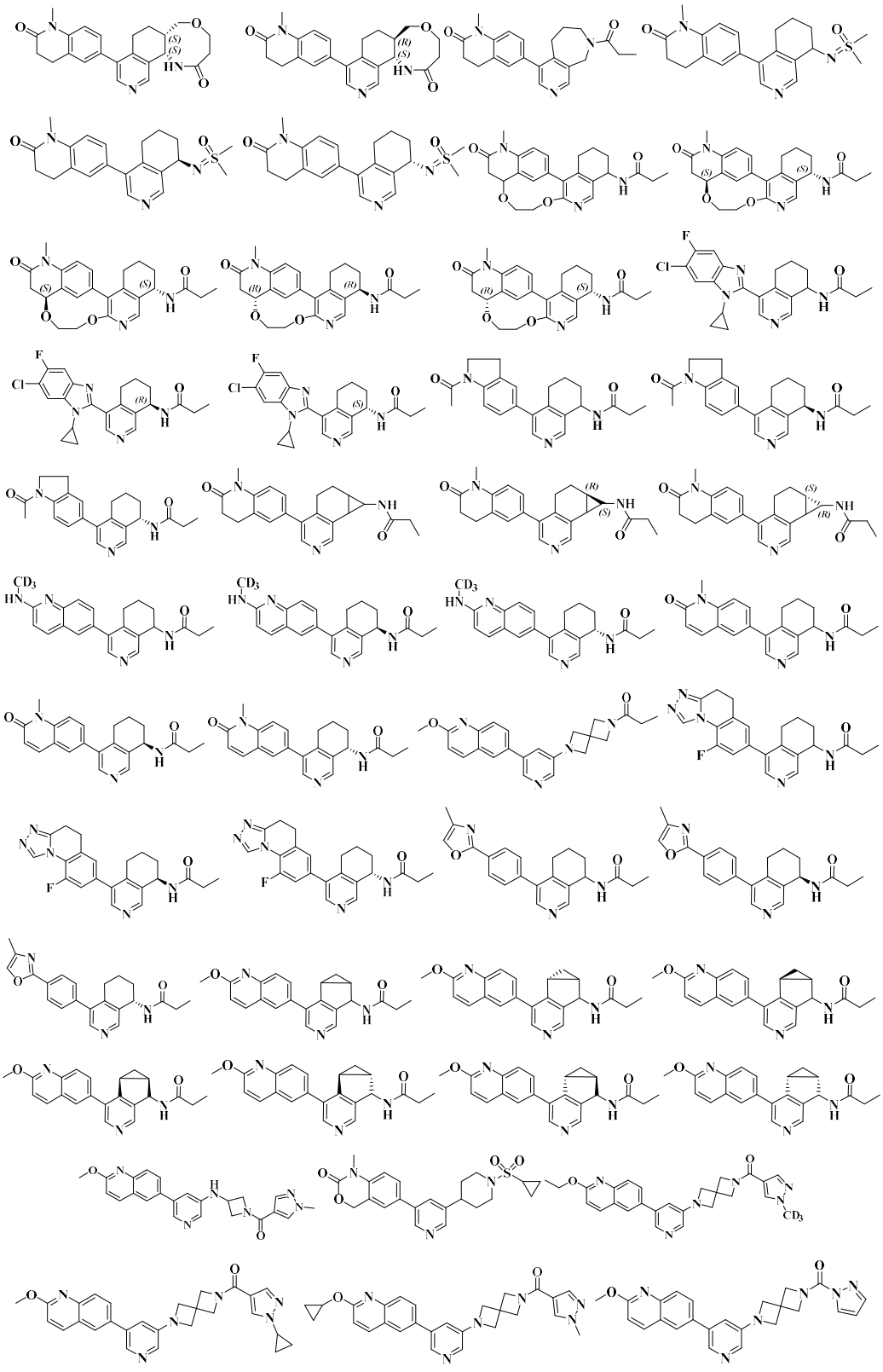
q, r, s, and t are each independently selected from 1 or 2; and

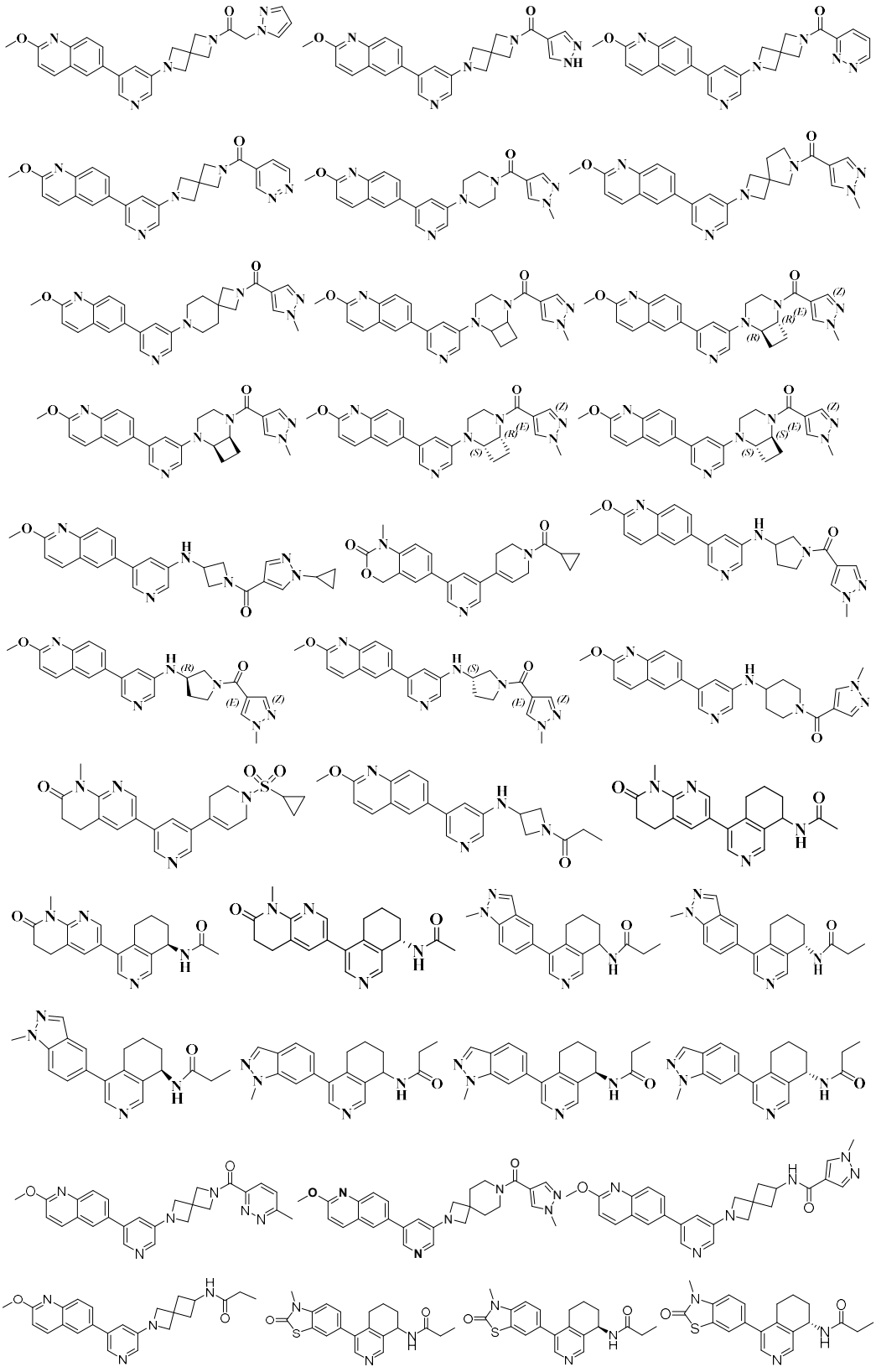
k is independently selected from 1, 2, or 3.

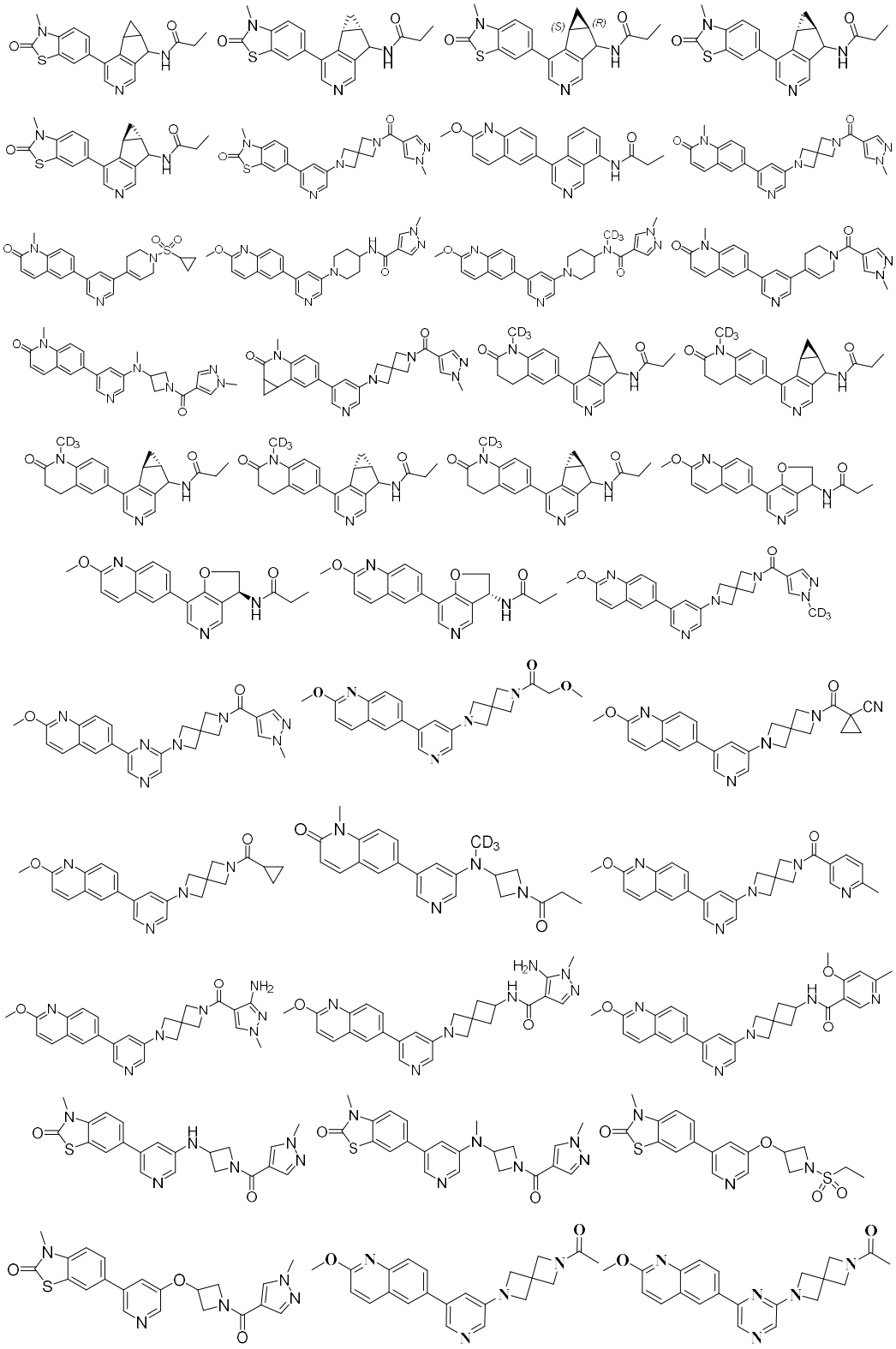
13. A compound as follows, or a stereoisomer or a pharmaceutically acceptable salt thereof:

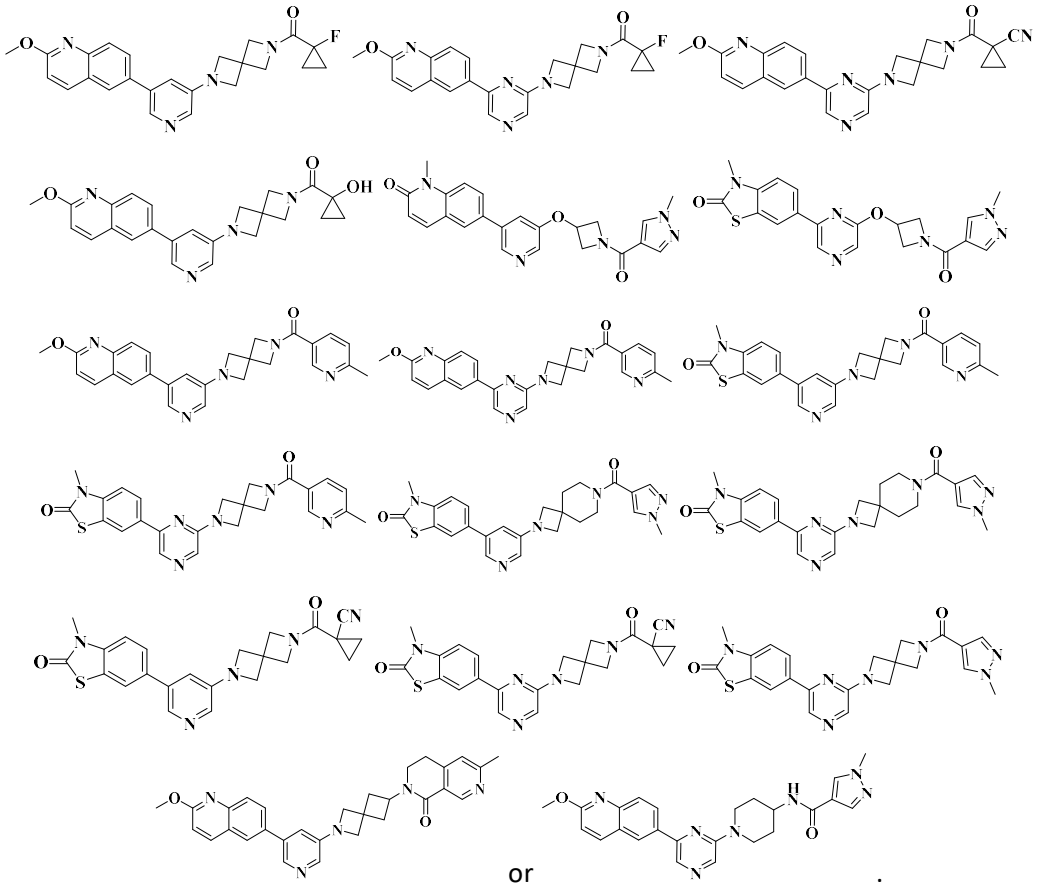






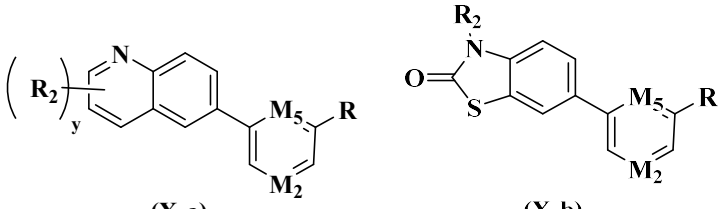






14. A pharmaceutical composition, comprising a therapeutically effective dose of the compound, or the stereoisomer or the pharmaceutically acceptable salt thereof according to any one of claims 1-13, and one or more pharmaceutically acceptable carriers, diluents, or excipients.

15. A compound as represented by general formula (X-a) or (X-b), or a stereoisomer or a pharmaceutically acceptable salt thereof:



(X-a) or (X-b)

M_2 or M_5 is each independently selected from N or CH;

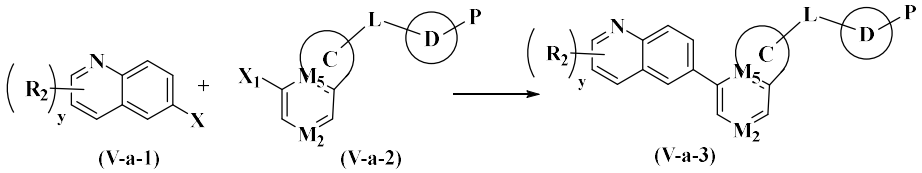
each R is independently selected from hydrogen, 3- to 10-membered cycloalkyl, 4- to 10-membered heterocyclyl, 3- to 8-membered cycloalkyloxy, 4- to 8-membered heterocyclyloxy, 3- to 8-membered cycloalkylamino, 4- to 8-membered heterocyclylamino, 3- to 8-membered cycloalkylthio, or 4- to 8-membered heterocyclylthio;

each R_2 is independently selected from hydrogen, deuterium, halogen, amino, hydroxyl, cyano, nitro, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} deuteroalkyl, C_{1-6} haloalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, C_{1-6} deuteroalkoxy, C_{1-6} hydroxyalkyl, 3- to 8-membered cycloalkyl, 3- to 8-membered cycloalkyloxy, 3- to 8-membered cycloalkylamino, C_{6-10} aryl, 5- to 6-membered heteroaryl containing 1-3 heteroatoms selected from N, O, or S or 4- to 8-membered heterocyclyl containing 1-3 moieties selected from C(O), N, O, or S, $-NR_aR_b$, $-NR_aC(O)R_b$, or $-C(O)NR_aR_b$;

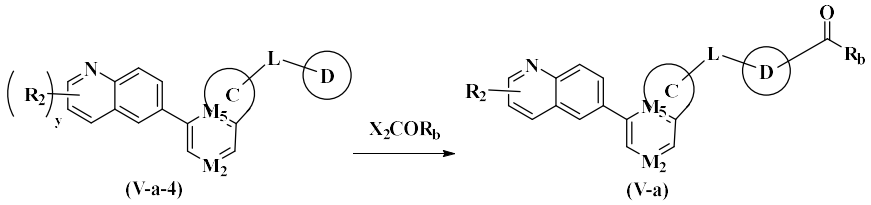
preferably, each R_2 is independently selected from hydrogen, deuterium, halogen, C_{1-3} alkyl, C_{1-3} deuteroalkyl, C_{1-3} haloalkyl, C_{1-3} alkoxy, C_{1-3} haloalkoxy, C_{1-3} hydroxyalkyl, or C_{3-6} cycloalkyloxy;

y is selected from 1, 2 or 3.

16. Use of the compound according to any one of claims 1-13 or the pharmaceutical composition according to claim 14 in the preparation of a drug for treating or preventing chronic kidney disease, kidney or cardiac fibrosis, diabetic nephropathy, congestive heart failure, hypertension, primary aldosteronism and Cushing's syndrome; preferably, the hypertension is refractory hypertension, the chronic kidney disease is chronic kidney disease with type II diabetes.
17. Use of the compound of the general formula, or the stereoisomer or the pharmaceutically acceptable salt thereof according to any one of claims 1-13 or the pharmaceutical composition according to claim 14 in the preparation of a drug for treating a disease related to CYP11B2.
18. A method for preparing a compound as represented by formula (V-a-3), (V-a-6) or (V-b-2), or a stereoisomer or a pharmaceutically acceptable salt thereof, comprising the following steps:

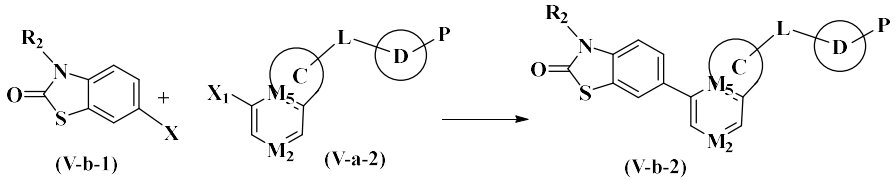


performing a coupling reaction between formula (V-a-1) and formula (V-a-2) to prepare a compound as represented by formula (V-a-3), or a stereoisomer or a pharmaceutically acceptable salt thereof; optionally, performing a deprotection on formula (V-a-3) to obtain a compound as represented by formula (V-a-4), or a stereoisomer or a pharmaceutically acceptable salt thereof;

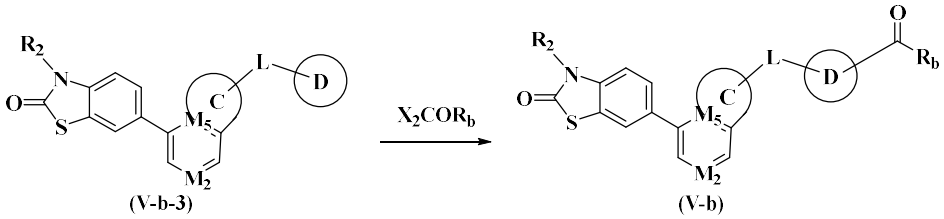


optionally, using formula (V-a-4) and X_2COR_b to prepare a compound as represented by general formula (V-a), or a stereoisomer or a pharmaceutically acceptable salt thereof;

or

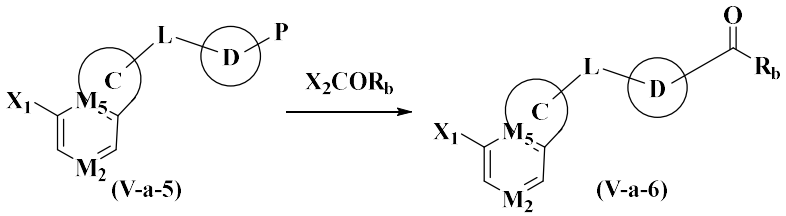


performing a coupling reaction between formula (V-b-1) and formula (V-a-2) to prepare a compound as represented by formula (V-b-2), or a stereoisomer or a pharmaceutically acceptable salt thereof; optionally, performing a deprotection to obtain a compound as represented by formula (V-b-3), or a stereoisomer or a pharmaceutically acceptable salt thereof;

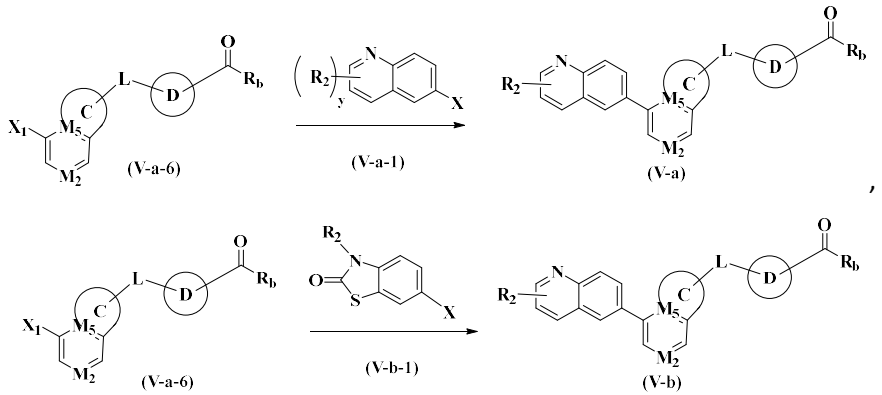


optionally, using formula (V-b-3) and X_2COR_b to prepare a compound as represented by formula (V-b), or a stereoisomer or a pharmaceutically acceptable salt thereof;

or



using formula (V-a-5) and X_2COR_b to prepare a compound as represented by formula (V-a-6), or a stereoisomer or a pharmaceutically acceptable salt thereof;



optionally, further performing a coupling reaction between formula (V-a-6) with formula (V-a-1) or (V-b-1) to prepare a compound as represented by formula (V-a) or formula (V-b), or a stereoisomer or a pharmaceutically acceptable salt thereof;

wherein

X is boranyl; X_1 is halogen; X_2 is halogen or hydroxy; P is an amino protecting group; and M_2, M_5, L, R_2, R_b, ring C, ring D and y are as defined in claim 11.

19. The compound of the general formula, or the stereoisomer or the pharmaceutically acceptable salt thereof according to any one of claims 1-13 or the pharmaceutical composition according to claim 14 for use in therapy.