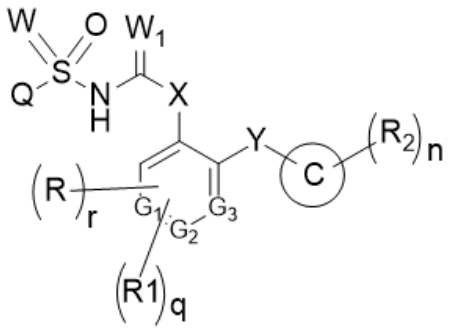
CLAIMS

1. A compound shown as general formula (I) or a stereoisomer, solvate, deuteride, pharmaceutically acceptable salt or cocrystal thereof:

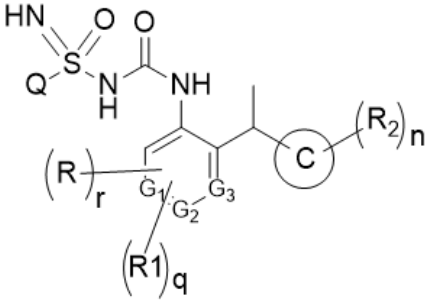


(I)

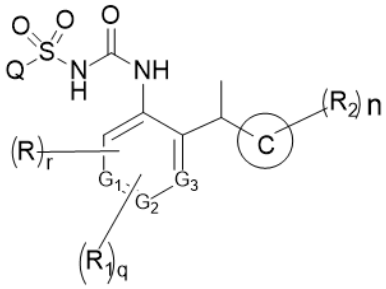
wherein,
Q is selected from 5 membered heteroaryl, wherein the 5 membered heteroaryl contains 1 to 3 heteroatoms selected from N, O and S, and the 5 membered heteroaryl is optionally substituted with 0 to 4 R^{q0};
R^{q0} are the same or different and are each independently selected from C_{1-6} alkyl, C_{2-6} alkenyl, halogen, OH, cyano, C_{3-8} cycloalkyl, C_{3-8}heterocycloalkyl, -NHC_{1-6} alkyl, and -N(C_{1-6} alkyl)$_2$, wherein the C_{3-8} heterocycloalkylcontains 1 to 3 heteroatoms selected from N, O and S, and the C_{1-6}alkyl, C_{2-6}alkenyl, C_{3-8}heterocycloalkyl, or C_{3-8}cycloalkyl is optionally further substituted with 1 or more substituents selected from deuterium, OH, halogen, cyano, =O, C_{1-6} alkyl, C_{1-6} alkoxy, -$NR^{q4}R^{q5}$, C_{3-8} cycloalkyl, and C_{3-8}heterocycloalkyl, wherein the substituent C_{1-6} alkyl, C_{1-6} alkoxy, C_{3-8} cycloalkyl, or C_{3-8}heterocycloalkylis optionally further substituted with 1 to 3 substituents selected from OH, halogen, C_{1-6} alkyl, and =O; or
at least one pair of R^{q0} and an atom to which they are attached form a 4-10 membered carbocycle or a 5-10 membered heterocycle, wherein the 5-10 membered heterocycle contains 1 to 2 heteroatoms selected from N, O and S, the 4-10 membered carbocycle or the 5-10 membered heterocycle is optionally further substituted with 1 or more substituents selected from OH, halogen, and C_{1-6} alkyl, and the substituent C_{1-6} alkyl is optionally further substituted with a substituent selected from OH, halogen, =O, and C_{3-8} cycloalkyl;
R^{q1} is selected from C_{1-6} alkyl, C_{1-6} alkoxy and C_{6-10} aryl;
R^{q2} and R^{q3} are selected from H and C_{1-6} alkyl;
R^{q4} and R^{q5} are selected from H, C_{1-6} alkyl, -NH(C=NR^{q1})$NR^{q2}R^{q3}$, -S(=O)$_2NR^{q2}R^{q3}$, -C(=O)R^{q1} and -C(=O)$NR^{q2}R^{q3}$, wherein the C_{1-6} alkyl is optionally further substituted with 1 or more substituents selected from OH, halogen, C_{1-6} alkyl, C_{1-6} alkoxy, C_{6-10} aryl, C_{5-10} heteroaryl, C_{3-8} cycloalkyl and C_{3-8}heterocycloalkyl; or R^{q4} and R^{q5} form a 3-8 membered heterocycle with an N atom, the heterocycle containing 1 to 3 heteroatoms selected from N, O and S;
W is selected from O and NHR_a;
W_1 is O;
R_a is selected from H, cyano, hydroxy, C_{1-6} alkyl and C_{1-6} alkoxy;
X is NH;
Y is CR_bR_c;
R_b and R_c are each independently selected from H, C_{1-6} alkyl and 3-10 membered carbocyclyl, wherein the C_{1-6} alkyl is optionally further substituted with 1 to 4 substituents selected from F, Cl, Br, I, and C_{1-6} alkyl; or
R_b and $R_c$form a double bond;

R and R_1 are each independently selected from deuterium, H, F, Cl, Br, I, CN, C_{1-6} alkyl, C_{1-6} alkoxy, 3-10 membered carbocyclyl, and 4-10 membered heterocyclyl, wherein the 4-10 membered heterocyclyl contains 1 to 3 heteroatoms selected from N, O and S, and the C_{1-6}alkyl, C_{1-6}alkoxy, 3-10 membered carbocyclyl or 4-10 membered heterocyclyl is optionally further substituted with 1 to 4 substituents selected from OH, F, Cl, Br, I, CN, =O, C_{1-6} alkyl, C_{1-6} alkoxy,C_{1-6} haloalkyl, and C_{1-6} haloalkoxy; or
R and R_1, together with an atom to which they are attached, form a 4-8 membered ring, wherein the 4-8 membered ring contains 0 to 4 heteroatoms selected from N, O and S, and is optionally further substituted with 0 to 4 substituents selected from H, F, Cl, Br, I, and OH;
C is 3-10 membered cycloalkyl;
R_2 is selected from H, F, Cl, Br, I, OH, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl and C_{1-6} alkoxy;
G1, G2 and G3 are each independently selected from N and CH;
q and r are selected from 0, 1 and 2;
n is selected from 0, 1, 2 and 3.

2. The compound or the stereoisomer, solvate, deuteride, pharmaceutically acceptable salt or cocrystal thereof according to claim 1, wherein the compound is selected from compounds shown as formulas (II) and (II-1):



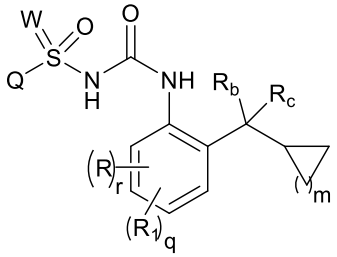
(II) or



(II-1)

wherein,
Q, R, R_1, R_2, C, G1, G2, G3, r, q and n are defined in the same way as in general formula (I).

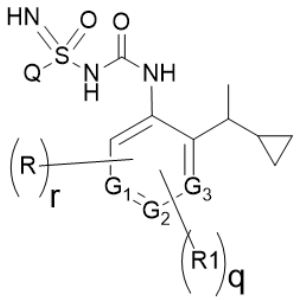
3. The compound or the stereoisomer, solvate, deuteride, or pharmaceutically acceptable salt or cocrystal thereof according to claim 1, wherein the compound is selected from a compound shown as formula (II-2):



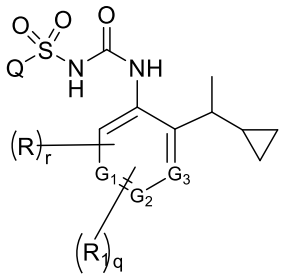
(II-2),

wherein, Q, W, R, R_1, R_b, R_c, r and q are defined in the same way as in general formula (I);
m is selected from 1, 2 and 3.

4. The compound or the stereoisomer, solvate, deuteride, pharmaceutically acceptable salt or cocrystal thereof according to any one of claims 2 to 3, wherein the compound is selected from compounds shown as formulas (III) and (III-1):



(III) or

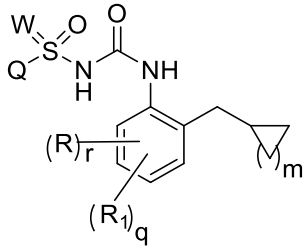


(III-1)

wherein, Q, R, R_1, G1, G2, G3, r and q are defined in the same way as in general formula (I).

5. The compound or the stereoisomer, solvate, deuteride, pharmaceutically acceptable salt or cocrystal thereof according to claim 4, wherein:
Q is selected from 5 membered heteroaryl, wherein the 5 membered heteroaryl contains 1 to 3 heteroatoms selected from N, O and S, and the 5 membered heteroaryl is optionally substituted with 0 to 4 R^{q0};
R^{q0} are the same or different and are each independently selected from C_{1-4} alkyl, halogen, OH, cyano, $-NH_2$, C_{2-4} alkenyl, C_{3-6} cycloalkyl, C_{3-6}heterocycloalkyl, $-NHC_{1-4}$ alkyl and $-N(C_{1-4}$ alkyl$)_2$, wherein the C_{3-6}heterocycloalkyl contains 1 to 3 heteroatoms selected from N and O, and the C_{1-4}alkyl, C_{3-6}heterocycloalkyl and C_{3-6}cycloalkyl are optionally further substituted with 1 or more substituents selected from deuterium, OH, halogen, cyano, C_{1-4} alkyl and $-NR^{q4}R^{q5}$;
R^{q4} and R^{q5} are selected from H and C_{1-4} alkyl;
R and R_1 are each independently selected from deuterium, H, F, CN, OH, C_{1-6} alkyl and 4-6 membered heterocyclyl, wherein the 4-6 membered heterocyclyl contains 1 to 3 heteroatoms selected from N and O, and the C_{1-6}alkyl or 4-6 membered heterocycle is optionally further substituted with 1 to 4 substituents selected from OH, F, CN and C_{1-6} alkoxy; or
R and R_1, together with an atom to which they are attached, form a 4-5 membered ring;
G1, G2 and G3 are each independently selected from CH;
q and r are selected from 0, 1 and 2.

6. The compound or the stereoisomer, solvate, deuteride, pharmaceutically acceptable salt or cocrystal thereof according to claim 3, wherein the compound is selected from a compound shown as formula (IV):



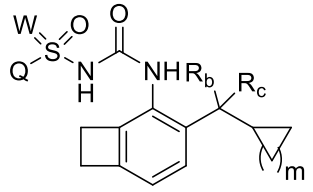
(IV)

wherein, Q, W, R, R_1, r and q are defined in the same way as in general formula (I);
m is selected from 1, 2 and 3.

7. The compound or the stereoisomer, solvate, deuteride, pharmaceutically acceptable salt or cocrystal thereof according to claim 6, wherein:
Q is selected from 5 membered heteroaryl, wherein the 5 membered heteroaryl contains 1 to 3 heteroatoms selected from N, O and S, and the 5 membered heteroaryl is optionally substituted with 0 to 4 R^{q0};
R^{q0} are the same or different and are each independently selected from C_{1-4} alkyl, halogen, OH, cyano, $-NH_2$, C_{2-4} alkenyl, C_{3-6} cycloalkyl, C_{3-6}heterocycloalkyl, $-NHC_{1-4}$ alkyl and $-N(C_{1-4}$ alkyl$)_2$, wherein the C_{3-6}heterocycloalkyl contains 1 to 3 heteroatoms selected from N and O,

and the C_{1-4}alkyl, C_{3-6}heterocycloalkyl and C_{3-6}cycloalkyl are optionally further substituted with 1 or more substituents selected from deuterium, OH, halogen, cyano, C_{1-4} alkyl, $-NR^{q4}R^{q5}$, C_{3-6} cycloalkyl and C_{3-6}heterocycloalkyl;
R^{q4} and R^{q5} are selected from H and C_{1-4} alkyl;
W is selected from O and NH;
R and R_1 are each independently selected from deuterium, H, F, CN, OH, C_{1-6} alkyl and 4-6 membered heterocyclyl, wherein the 4-6 membered heterocyclyl contains 1 to 3 heteroatoms selected from N and O, and the C_{1-6}alkyl or 4-6 membered heterocycle is optionally further substituted with 1 to 4 substituents selected from OH, F, CN and C_{1-6} alkoxy; or
R and R_1, together with an atom to which they are attached, form a 4-5 membered ring;
q and r are selected from 0, 1 and 2;
m is selected from 1, 2 and 3.

8. The compound or the stereoisomer, solvate, deuteride, pharmaceutically acceptable salt or cocrystal thereof according to claim 3, wherein the compound is selected from a compound shown as formula (V):

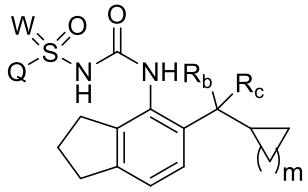


(V)

wherein, Q, W, R_b and R_c are defined in the same way as in general formula (I);
m is selected from 1, 2 and 3.

9. The compound or the stereoisomer, solvate, deuteride, pharmaceutically acceptable salt or cocrystal thereof according to claim 8, wherein:
Q is selected from 5 membered heteroaryl, wherein the 5 membered heteroaryl contains 1 to 3 heteroatoms selected from N, O and S, and the 5 membered heteroaryl is optionally substituted with 0 to 4 R^{q0};
R^{q0} are the same or different and are each independently selected from C_{1-4} alkyl, halogen, OH, cyano, $-NH_2$, C_{2-4} alkenyl, C_{3-6} cycloalkyl, C_{3-6}heterocycloalkyl, $-NHC_{1-4}$ alkyl and $-N(C_{1-4}$ alkyl$)_2$, wherein the C_{3-6}heterocycloalkyl contains 1 to 3 heteroatoms selected from N and O, and the C_{1-4}alkyl, C_{3-6}heterocycloalkyl and C_{3-6}cycloalkyl are optionally further substituted with 1 or more substituents selected from deuterium, OH, halogen, cyano, C_{1-4} alkyl and $-NR^{q4}R^{q5}$;
R^{q4} and R^{q5} are selected from H and C_{1-4} alkyl;
W is selected from O and NH;
R_b and R_c are each independently selected from H, C_{1-4} alkyl and 3-5 membered carbocyclyl, or R_b and R_c form a double bond;
q and r are selected from 0, 1 and 2;
m is selected from 1, 2 and 3.

10. The compound or the stereoisomer, solvate, deuteride, pharmaceutically acceptable salt or cocrystal thereof according to claim 3, wherein the compound is selected from a compound shown as formula (VI):

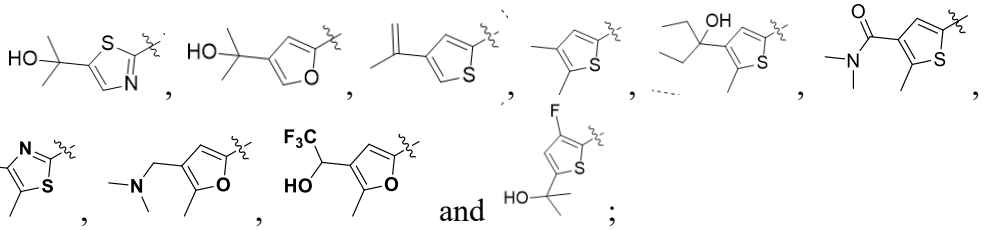


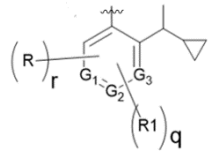
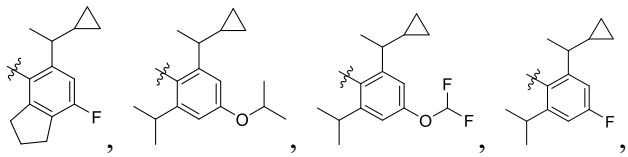
(VI)

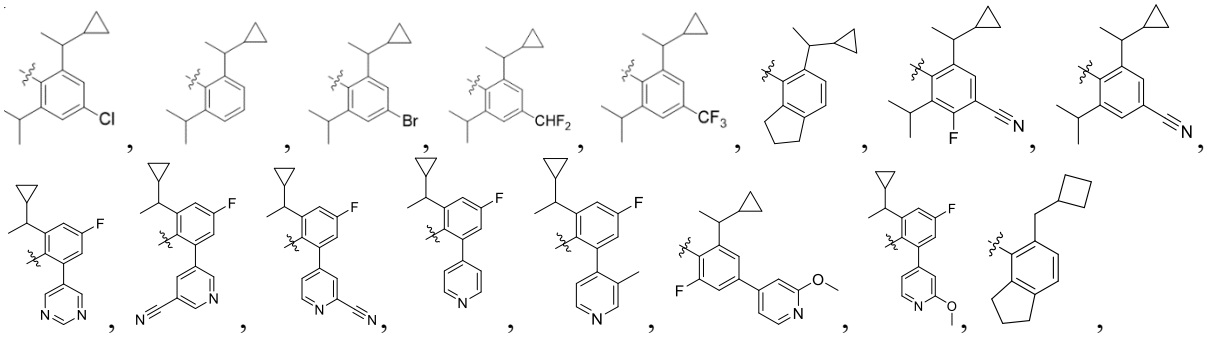
wherein, Q, W, R_b and R_c are defined in the same way as in general formula (I);
m is selected from 1, 2 and 3.

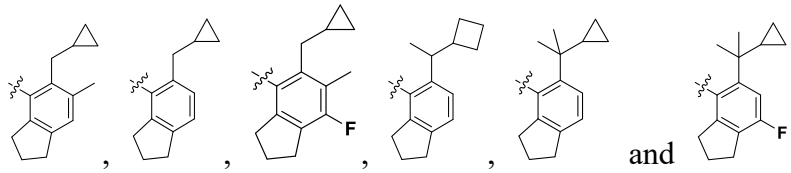
11. The compound or the stereoisomer, solvate, deuteride, pharmaceutically acceptable salt or cocrystal thereof according to claim 10, wherein:
Q is selected from 5 membered heteroaryl, wherein the 5 membered heteroaryl contains 1 to 3 heteroatoms selected from N, O and S, and the 5 membered heteroaryl is optionally substituted with 0 to 4 R^{q0};
R^{q0} are the same or different and are each independently selected from C_{1-4} alkyl, halogen, OH, cyano, $-NH_2$, C_{2-4} alkenyl, C_{3-6} cycloalkyl, C_{3-6}heterocycloalkyl, $-NHC_{1-4}$ alkyl and $-N(C_{1-4}$ alkyl$)_2$, wherein the C_{3-6}heterocycloalkyl contains 1 to 3 heteroatoms selected from N and O, and the C_{1-4}alkyl, C_{3-6}heterocycloalkyl and C_{3-6}cycloalkyl are optionally further substituted with 1 or more substituents selected from deuterium, OH, halogen, cyano, C_{1-4} alkyl and $-NR^{q4}R^{q5}$;
R^{q4} and R^{q5} are selected from H and C_{1-4} alkyl;
W is selected from O and NH;
R_b and R_c are each independently selected from H, C_{1-4} alkyl and 3-5 membered carbocyclyl;
q and r are selected from 0, 1 and 2;
m is selected from 1, 2 and 3.

12. The compound or the stereoisomer, solvate, deuteride, pharmaceutically acceptable salt or cocrystal thereof according to any one of claims 1 to 11, wherein:

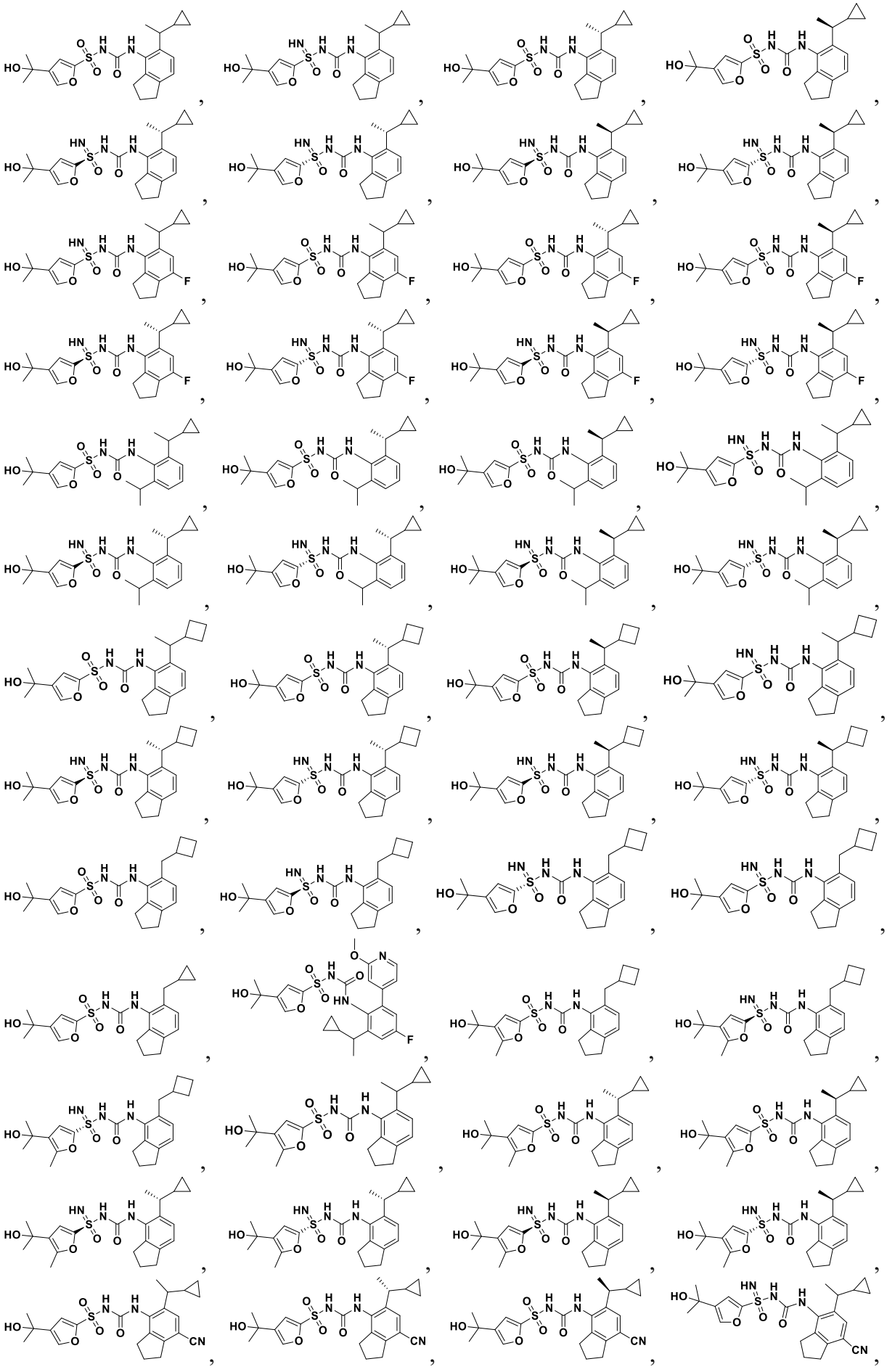
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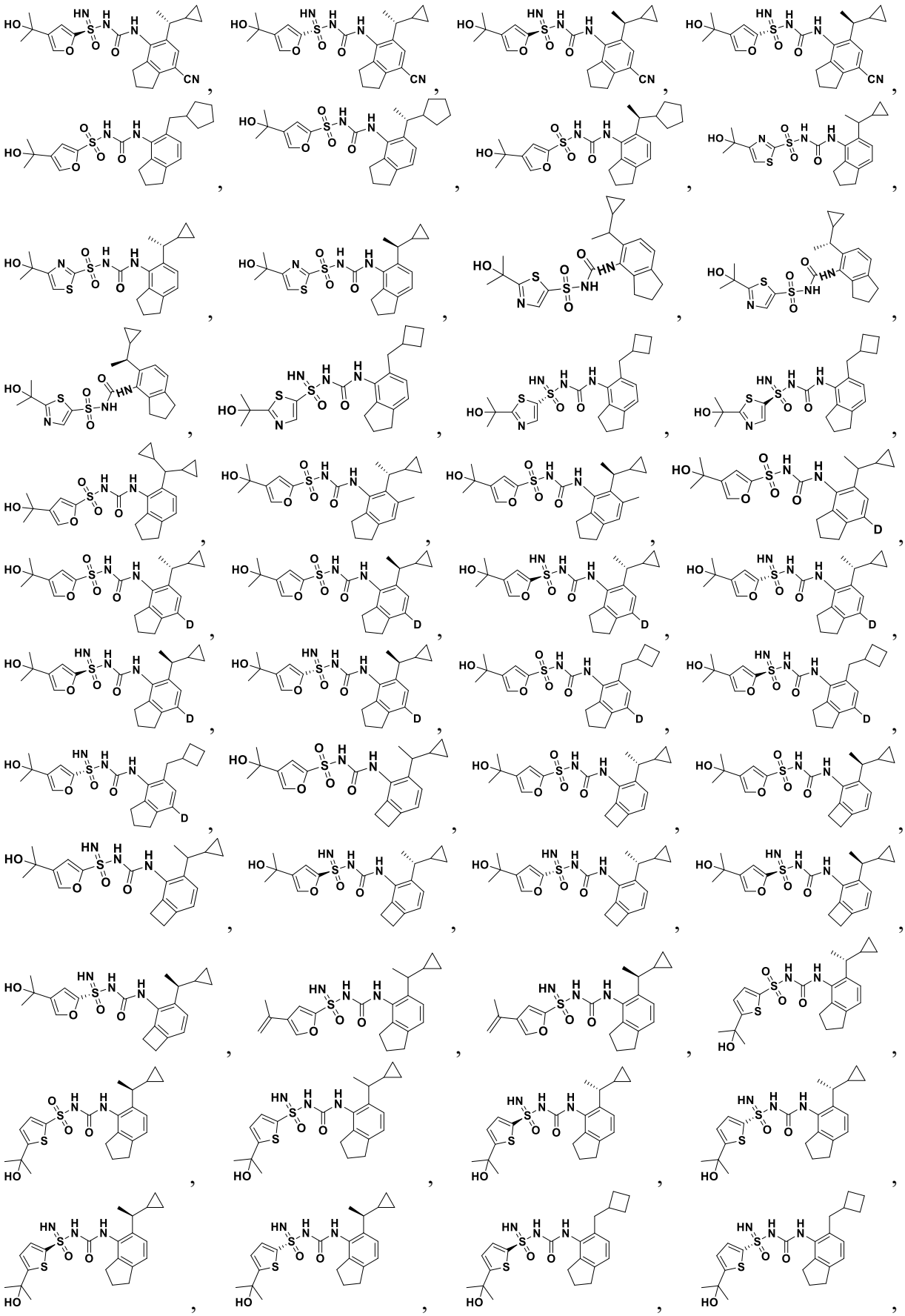

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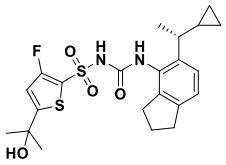
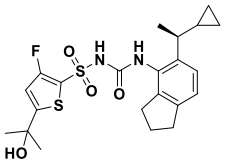
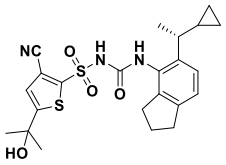
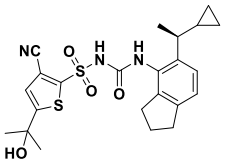
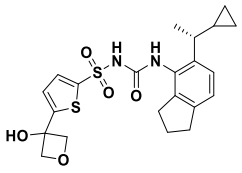
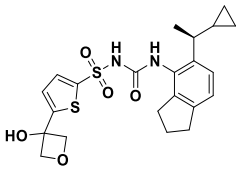
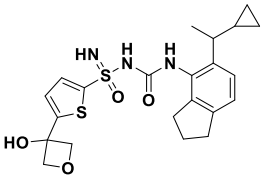
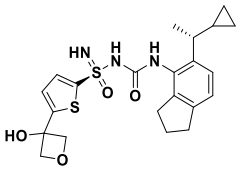
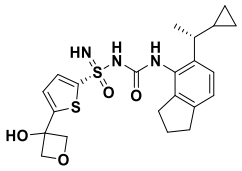
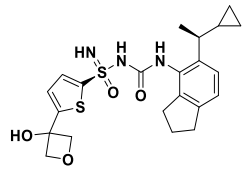
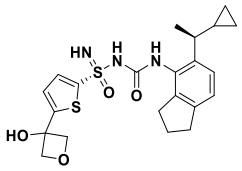
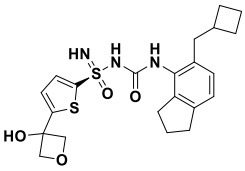
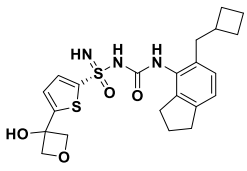
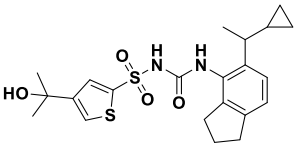
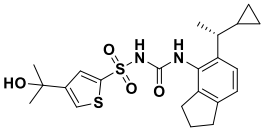
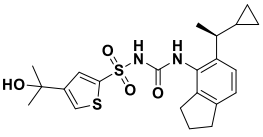
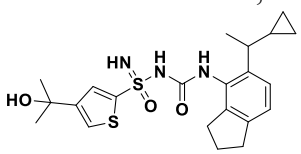
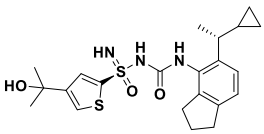
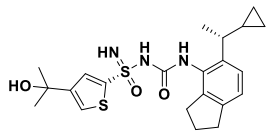
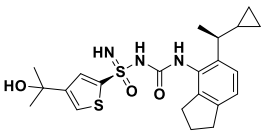
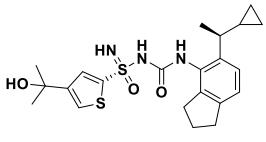
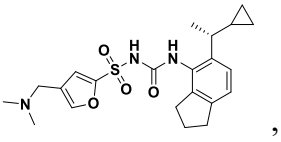
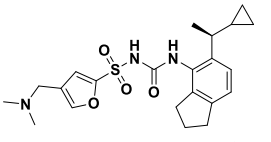
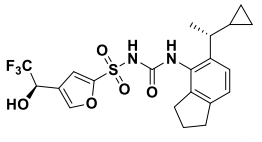
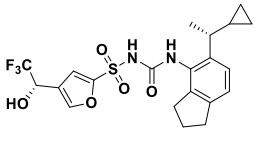
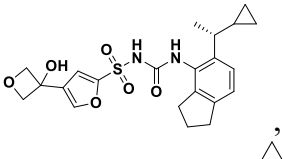
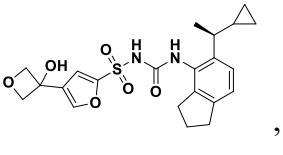
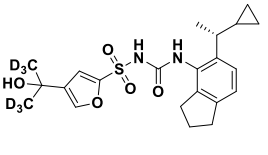
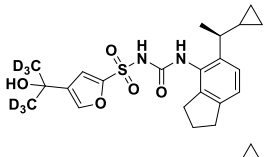
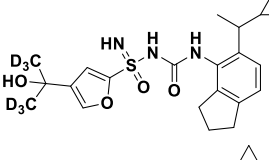
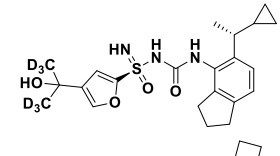
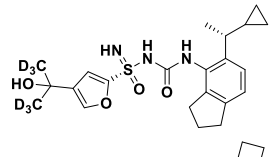
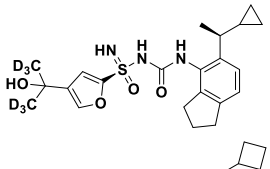
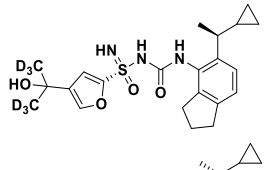
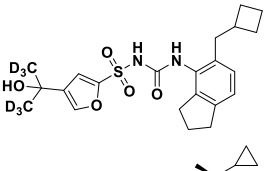
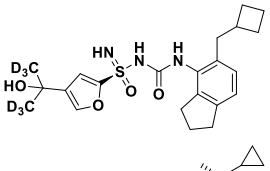
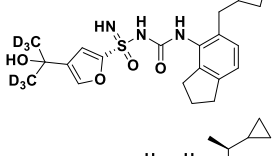
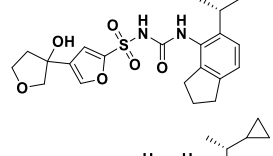
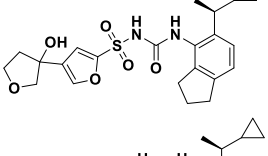
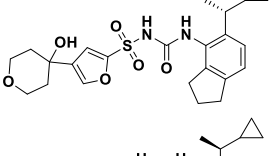




13. The compound or the stereoisomer, solvate, deuteride, pharmaceutically acceptable salt or cocrystal thereof according to any one of claims 1 to 12, wherein the compound is selected from one of the following structures:






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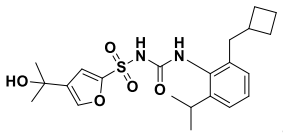
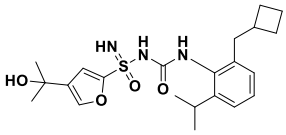
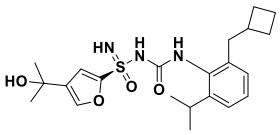
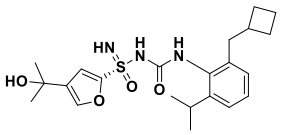
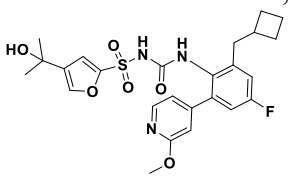
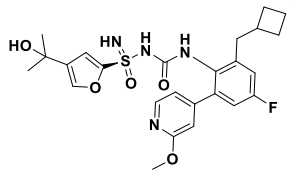
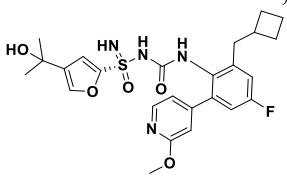
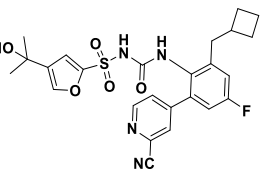
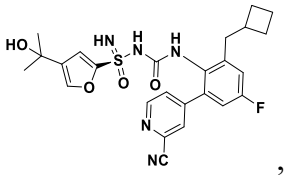
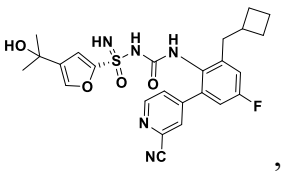
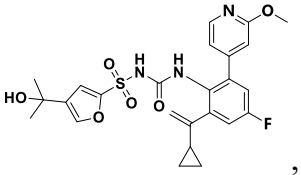
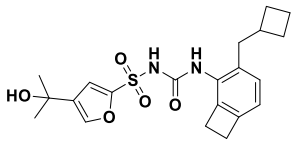
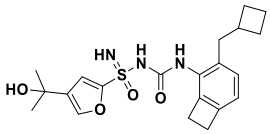
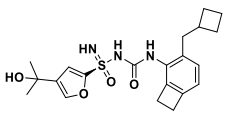
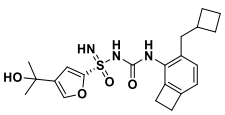
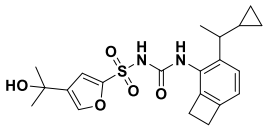
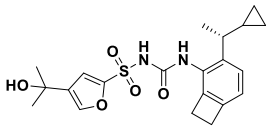
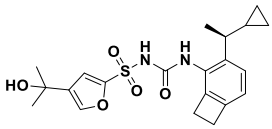
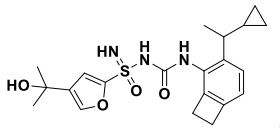
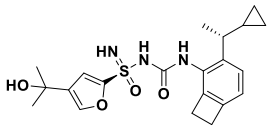
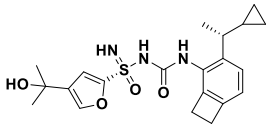
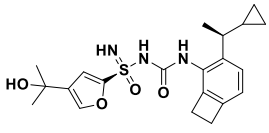
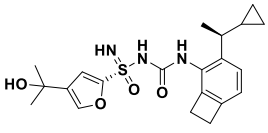
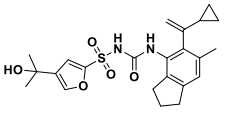
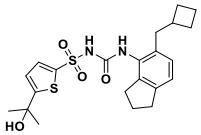
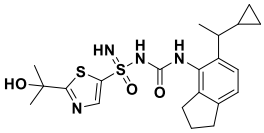
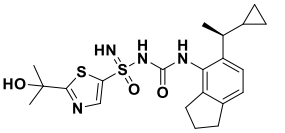
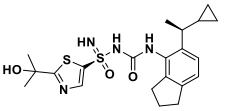
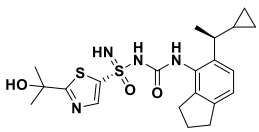
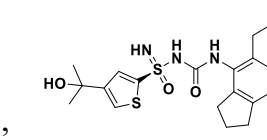
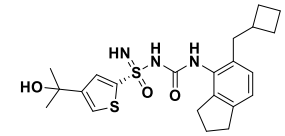
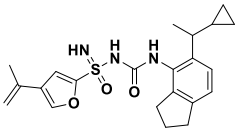
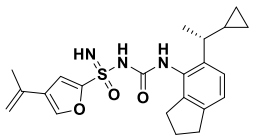
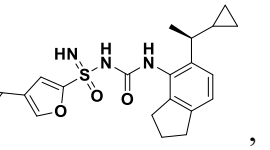
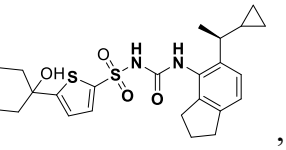
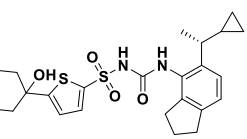
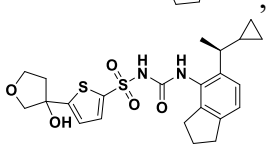
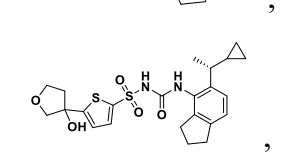
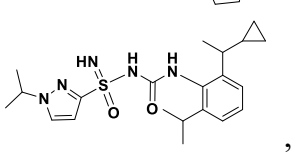
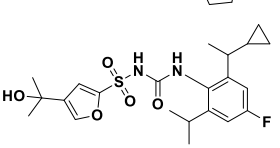
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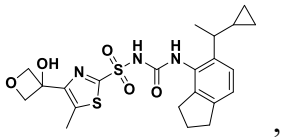
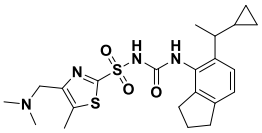
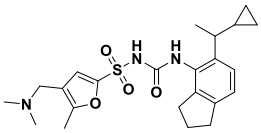
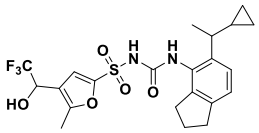
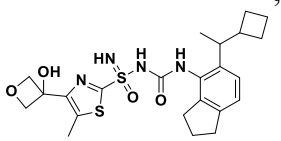
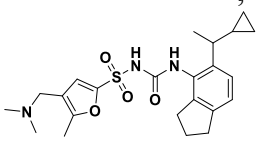
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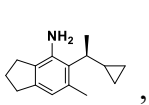
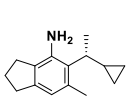
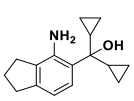
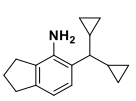
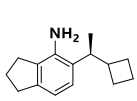
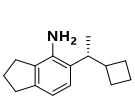
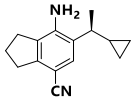
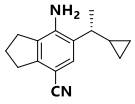
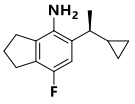
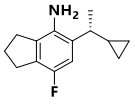
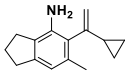
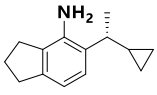
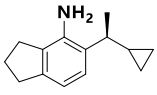
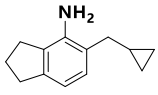
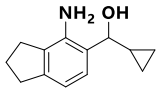
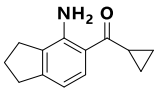
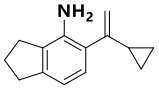
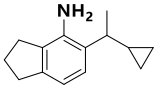
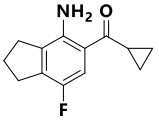
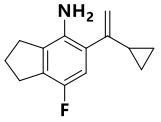
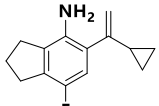
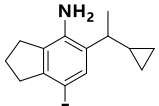
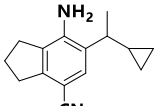
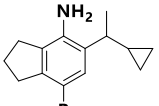
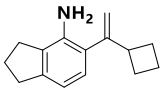
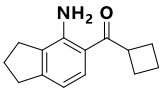
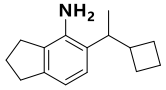
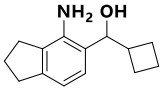
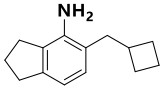
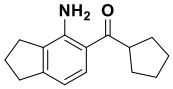
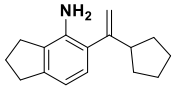
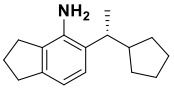
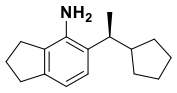
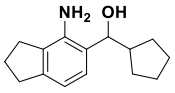
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14. An intermediate for preparing the compound according to any one of claims 1 to 13, wherein the intermediate is selected from one of the following structures:


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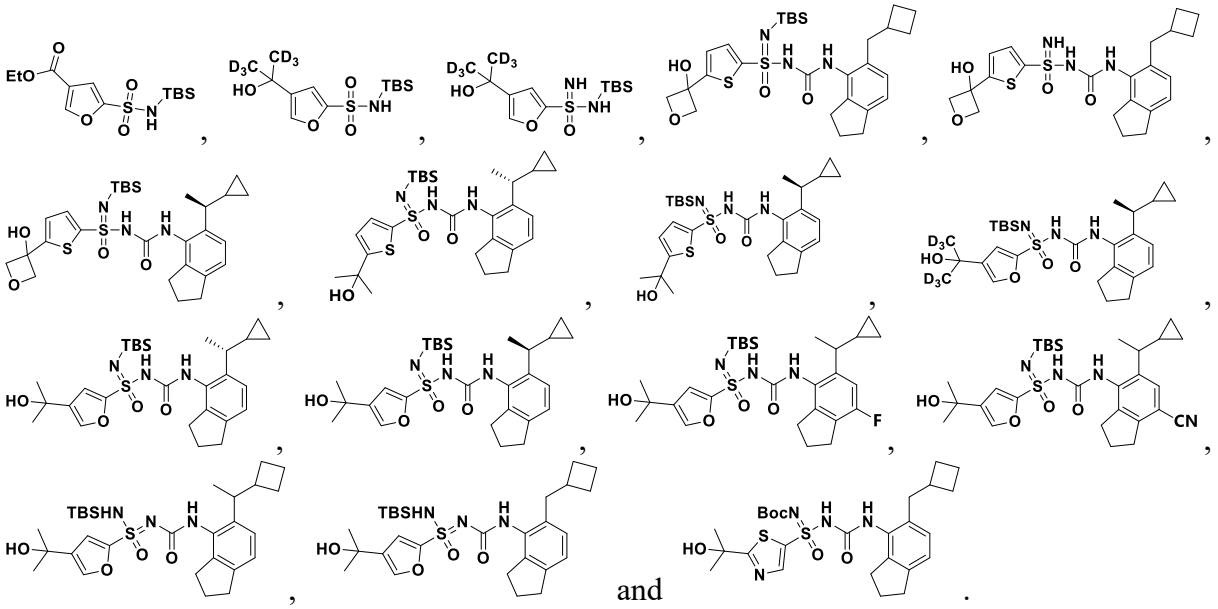
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15. A pharmaceutical composition, comprising the compound or the stereoisomer, solvate, deuteride, pharmaceutically acceptable salt, or cocrystal thereof according to any one of claims 1 to 13, and one or more pharmaceutically acceptable carriers and/or excipients.

16. Use of the pharmaceutical composition according to claim 15 or the compound or the stereoisomer, solvate, deuteride, pharmaceutically acceptable salt, or cocrystal thereof according to any one of claims 1 to 13 as an NLRP3 inhibitor.

17. Use of the pharmaceutical composition according to claim 15 or the compound or the stereoisomer, solvate, deuteride, pharmaceutically acceptable salt, or cocrystal thereof according to any one of claims 1 to 13 in preparing a medicament for treating a disease,
wherein the disease is selected from inflammatory diseases, autoimmune diseases, cardiovascular system diseases, cancers, renal system diseases, gastrointestinal diseases, respiratory system diseases, endocrine system diseases and central nervous system diseases.

18. The use according to claim 17, wherein the disease is selected from cryopyrin-associated periodic syndrome (CAPS), Muckle-Wells syndrome (MWS), familial cold autoinflammatory syndrome (FCAS), neonatal-onset multisystem inflammatory disease (NOMID), familial Mediterranean fever (FMF), non-alcoholic steatohepatitis, alcoholic liver disease, graft-versus-host disease, multiple sclerosis (MS), rheumatoid arthritis, type I diabetes, type II diabetes, psoriasis, Alzheimer's disease, atherosclerosis, gout or chronic kidney disease.