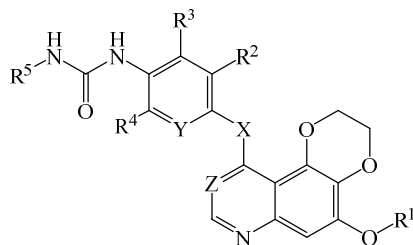


CLAIMS

WHAT IS CLAIMED IS:

1. A compound represented by formula (I),



Formula (I)

wherein,

X is O or NH;

Y is CH;

Z is CH;

R¹ is H, C₁-C₉ alkyl, C₃-C₇ cycloalkyl, 4- to 7-membered heterocyclyl, C₁-C₆ alkyl substituted with C₃-C₇ cycloalkyl, C₁-C₆ alkyl substituted with 4- to 7-membered heterocyclyl, or C₁-C₉ alkyl substituted with one or more of the following: hydroxyl, C₁-C₆ alkoxy, C₁-C₆ alkylthio, amino substituted with mono- or di-C₁-C₆ alkyl or unsubstituted amino,

the above 4- to 7-membered heterocyclyl is a 4- to 7-membered heterocyclyl containing 1 to 2 atoms selected from the group consisting of N, O, and S, which is unsubstituted, or substituted with C₁-C₆ alkyl, or C₁-C₃ acyl, or is oxidized by 1 to 2 oxygen atoms;

R² is H or halogen;

R³ is H or halogen;

R⁴ is H or halogen;

R⁵ is H, C₁-C₉ alkyl, C₃-C₈ cycloalkyl, C₁-C₆ alkyl substituted with C₃-C₈ cycloalkyl, unsubstituted aryl or heteroaryl, or an aryl or heteroaryl group substituted with one or more of the following: C₁-C₃ alkyl, C₁-C₃ alkoxy, C₁-C₃ alkylthio, amino substituted with mono- or di-C₁-C₃ alkyl, unsubstituted amino, halogen, trifluoromethyl, aryloxy and methylsulfonyl; and

the heteroaryl group is a monocyclic or bicyclic group containing 5 to 10 ring atoms,

which contains 1 to 3 atoms selected from the group consisting of N, O, and S in the ring;
or a pharmaceutically acceptable salt, a stereoisomer, a hydrate, or a solvate thereof.

2. The compound according to claim 1, wherein R¹ is H, C₁-C₆ alkyl, C₃-C₆ cycloalkyl, 5- to 6-membered heterocyclyl, C₁-C₃ alkyl substituted with C₃-C₆ cycloalkyl, C₁-C₃ alkyl substituted with 5- to 6-membered heterocyclyl, or C₁-C₆ alkyl substituted with one or more of the following: hydroxyl, C₁-C₃ alkoxy, C₁-C₃ alkylthio, amino substituted with mono- or di-C₁-C₃ alkyl, or unsubstituted amino, and

wherein the 5- to 6-membered heterocyclyl is a 5- to 6-membered heterocyclyl containing 1 to 2 atoms selected from the group consisting of N, O, and S, which is unsubstituted, or substituted with C₁-C₃ alkyl, or C₁-C₃ acyl, or is oxidized by 1 to 2 oxygen atoms;

or a pharmaceutically acceptable salt, a stereoisomer, a hydrate, or a solvate thereof.

3. The compound according to claim 2, wherein R¹ is selected from the group consisting of H, methyl, ethyl, propyl, isopropyl, methoxyethyl, methoxypropyl, methoxybutyl, methoxypentyl, methoxyhexyl, tetrahydrofuran-3-yl, tetrahydro-2H-pyran-4-yl, tetrahydropyrrol-1-ylethyl, tetrahydropyrrol-1-ylpropyl, piperidin-1-ylethyl, piperidin-1-ylpropyl, piperazin-1-ylethyl, piperazin-1-ylpropyl, morpholin-4-ylethyl, morpholin-4-ylpropyl, methylpiperazin-4-ylethyl, methylpiperazin-4-ylpropyl, N-formylpiperazin-4-ylethyl, N-formylpiperazin-4-ylpropyl, N-acetylpiperazin-4-ylethyl, N-acetylpiperazin-4-ylpropyl, (1,1-dioxothiomorpholin)-4-ylethyl, (1,1-dioxothiomorpholin)-4-ylpropyl, methylthioethyl, methylthiopropyl, dimethylaminoethyl, dimethylaminopropyl, dimethylaminobutyl, diethylaminoethyl, diethylaminopropyl, hydroxyethyl, hydroxypropyl, hydroxybutyl, hydroxypentyl, hydroxyhexyl, aminoethyl, aminopropyl, aminobutyl, 2-methyl-2-hydroxypropyl, 3-methyl-3-hydroxybutyl, (3S)-3-aminobutyl, (3R)-3-aminobutyl, (3S)-3-hydroxybutyl and (3R)-3-hydroxybutyl;

or a pharmaceutically acceptable salt, a stereoisomer, a hydrate, or a solvate thereof.

4. The compound according to claim 1, wherein R¹ is selected from the group consisting of butyl, isobutyl, pentyl, isopentyl, hexyl, cyclopropylmethyl, cyclopropylethyl, cyclopropylpropyl, cyclobutylmethyl, cyclobutylethyl, cyclobutylpropyl, 4,4-dimethylpiperidin-1-ylethyl, 4,4-dimethylpiperidin-1-ylpropyl, dimethylaminopentyl, dimethylaminohexyl, and oxetan-3-yl;

or a pharmaceutically acceptable salt, a stereoisomer, a hydrate, or a solvate thereof.

5. The compound according to claim 1, wherein the halogen in R², R³, and R⁴ is F, Cl or Br;

or a pharmaceutically acceptable salt, a stereoisomer, a hydrate, or a solvate thereof.

6. The compound according to claim 1, wherein R⁵ is H, C₁-C₆ alkyl, C₃-C₆ cycloalkyl, C₁-C₃ alkyl substituted with C₃-C₆ cycloalkyl, unsubstituted aryl or heteroaryl, or an aryl or heteroaryl group substituted with one or more of the following: C₁-C₃ alkyl, C₁-C₃ alkoxy, C₁-C₃ alkylthio, amino substituted with mono- or di-C₁-C₃ alkyl, unsubstituted amino, halogen, trifluoromethyl, aryloxy or methylsulfonyl; and

wherein the heteroaryl group is a monocyclic or bicyclic group containing 5 to 10 ring atoms, which contains 1 to 2 atoms selected from the group consisting of N, O, and S in the ring;

or a pharmaceutically acceptable salt, a stereoisomer, a hydrate, or a solvate thereof.

7. The compound according to claim 1, wherein R⁵ is selected from the group consisting of H, C₁-C₆ alkyl, C₃-C₆ cycloalkyl, C₁-C₃ alkyl substituted with C₃-C₆ cycloalkyl, unsubstituted phenyl, naphthyl or heteroaryl, or a phenyl, naphthyl or heteroaryl group substituted with one or more of the following: methyl, ethyl, propyl, isopropyl, methoxy, ethoxy, propoxy, isopropoxy, methylthio, ethylthio, propylthio, isopropylthio, amino, methylamino, ethylamino, dimethylamino, diethylamino, fluorine, chlorine, bromine, trifluoromethyl, phenoxy or methylsulfonyl; and

wherein the heteroaryl group is selected from the group consisting of pyridinyl, pyrimidinyl, quinolinyl, quinazolinyl, oxazolyl, isoxazolyl, thiazolyl, thiadiazolyl, pyrazolyl,

imidazolyl, and pyrrolyl;

or a pharmaceutically acceptable salt, a stereoisomer, a hydrate, or a solvate thereof.

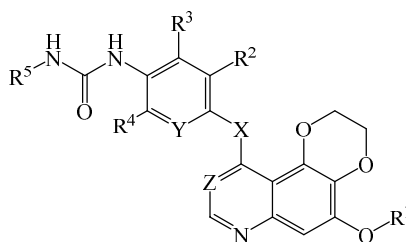
8. The compound according to claim 1, wherein R⁵ is selected from the group consisting of H, methyl, ethyl, propyl, isopropyl, isopentyl, cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, phenyl, 2-methoxyphenyl, 3-methoxyphenyl, 4-methoxyphenyl, 2-fluorophenyl, 3-fluorophenyl, 4-fluorophenyl, 4-phenoxyphenyl, 3-(methylsulfonyl)phenyl, 4-(methylsulfonyl)phenyl, 2,4-difluorophenyl, 2,5-difluorophenyl, 3,4-difluorophenyl, 2,4-dichlorophenyl, 2,5-dichlorophenyl, 3,4-dichlorophenyl, 2-fluoro-4-(trifluoromethyl)phenyl, 2-fluoro-5-(trifluoromethyl)phenyl, 3-fluoro-4-(trifluoromethyl)phenyl, 3-fluoro-5-(trifluoromethyl)phenyl, 3-(trifluoromethyl)-4-fluorophenyl, 2-fluoro-4-chlorophenyl, 2-fluoro-5-chlorophenyl, 3-fluoro-4-chlorophenyl, 3-fluoro-5-chlorophenyl, 3-chloro-4-fluorophenyl, 2-chloro-4-(trifluoromethyl)phenyl, 2-chloro-5-(trifluoromethyl)phenyl, 3-chloro-4-(trifluoromethyl)phenyl, 3-chloro-5-(trifluoromethyl)phenyl, 3-(trifluoromethyl)-4-chlorophenyl, 2-chloro-4-fluorophenyl, 2-chloro-5-fluorophenyl, 3-chloro-4-fluorophenyl, pyridin-2-yl, pyridin-3-yl, pyridin-4-yl, 2-methoxy-pyridin-4-yl, 3-methyl-isoxazol-5-yl, and naphthalen-1-yl;

or a pharmaceutically acceptable salt, a stereoisomer, a hydrate, or a solvate thereof.

9. The compound according to claim 1, wherein R⁵ is selected from the group consisting of butyl, isobutyl, 2-methylphenyl, 3-methylphenyl, 4-methylphenyl, 2-methyl-5-(trifluoromethyl)phenyl, 2-methyl-4-(trifluoromethyl)phenyl, 3-methyl-4-(trifluoromethyl)phenyl, 3-methyl-5-(trifluoromethyl)phenyl, 2-chloro-4-methylphenyl, 2-chloro-5-methylphenyl, and 3-chloro-4-methylphenyl;

or a pharmaceutically acceptable salt, a stereoisomer, a hydrate, or a solvate thereof.

10. A compound represented by formula (I),



Formula (I)

wherein,

X is O or NH;

Y is CH;

Z is CH;

R¹ is C₁-C₆ alkyl substituted with 1 to 3 substituents selected from the group consisting of C₁-C₃ acyl, halogen, trifluoromethyl, cyano, -CONH₂, -NR^aR^b and 4- to 7-membered heteroalicyclic group, wherein the 4- to 7-membered heteroalicyclic group is a 4- to 7-membered heteroalicyclic group containing 1 to 2 atoms selected from the group consisting of N, O, and S as ring atoms, and the 4- to 7-membered heteroalicyclic group is substituted with 1 to 3 substituents selected from the group consisting of halogen, C₁-C₃ alkyl, hydroxyl, -NH₂, and C₁-C₃ acyl,

R^a and R^b are each independently H, C₁-C₆ alkyl, C₃-C₆ cycloalkyl, C₁-C₆ alkyl substituted with C₁-C₃ alkoxy, C₁-C₆ alkyl substituted with C₁-C₃ alkylthio, or C₁-C₆ alkyl substituted with substituted amino or unsubstituted amino, wherein the substituted amino is substituted with mono- or di-C₁-C₃ alkyl;

R², R³, and R⁴ are each independently H or halogen;

R⁵ is H, C₁-C₉ alkyl, C₃-C₈ cycloalkyl, C₁-C₆ alkyl substituted with C₃-C₈ cycloalkyl, unsubstituted aryl or heteroaryl, or an aryl or heteroaryl group substituted with 1 to 3 substituents -B, wherein the substituents -B are each independently hydroxyl, cyano, C₁-C₃ alkyl, C₁-C₃ alkoxy, C₁-C₃ alkylthio, amino substituted with mono- or di-C₁-C₃ alkyl, unsubstituted amino, halogen, trifluoromethyl, aryloxy or methylsulfonyl; and

wherein the heteroaryl group is a monocyclic or bicyclic group containing 5 to 10 ring atoms, which contains 1 to 3 atoms selected from the group consisting of N, O, and S in the ring;

or a pharmaceutically acceptable salt, a stereoisomer, a hydrate, or a solvate thereof.

11. The compound according to claim 10, wherein R¹ is C₁-C₆ alkyl substituted with 1 to 3 substituents selected from the group consisting of -F, trifluoromethyl, cyano, -CONH₂, -NR^aR^b, and 4- to 7-membered heteroalicyclic group, wherein the 4- to 7-membered heteroalicyclic group contains 1 to 2 atoms selected from the group consisting of N, O, and S as ring atoms, and the 4- to 7-membered heteroalicyclic group is substituted with 1 to 3 substituents selected from the group consisting of -F, C₁-C₃ alkyl, hydroxyl, -NH₂, and C₁-C₃ acyl,

R^a and R^b are each independently H, C₁-C₃ alkyl, C₃-C₆ cycloalkyl, C₁-C₃ alkyl substituted with C₁-C₃ alkoxy, C₁-C₃ alkyl substituted with C₁-C₃ alkylthio, or C₁-C₃ alkyl substituted with substituted amino or unsubstituted amino, wherein the substituted amino is substituted with mono- or di-C₁-C₃ alkyl;

R⁵ is H, C₁-C₆ alkyl, C₃-C₆ cycloalkyl, C₁-C₃ alkyl substituted with C₃-C₆ cycloalkyl, unsubstituted phenyl, naphthyl or heteroaryl; or a phenyl, naphthyl or heteroaryl group substituted with 1 to 3 substituents -B, wherein the substituents -B are each independently methyl, ethyl, propyl, isopropyl, methoxy, ethoxy, propoxy, isopropoxy, methylthio, ethylthio, propylthio, isopropylthio, amino, methylamino, ethylamino, dimethylamino, diethylamino, fluorine, chlorine, bromine, trifluoromethyl, phenoxy or methylsulfonyl; and

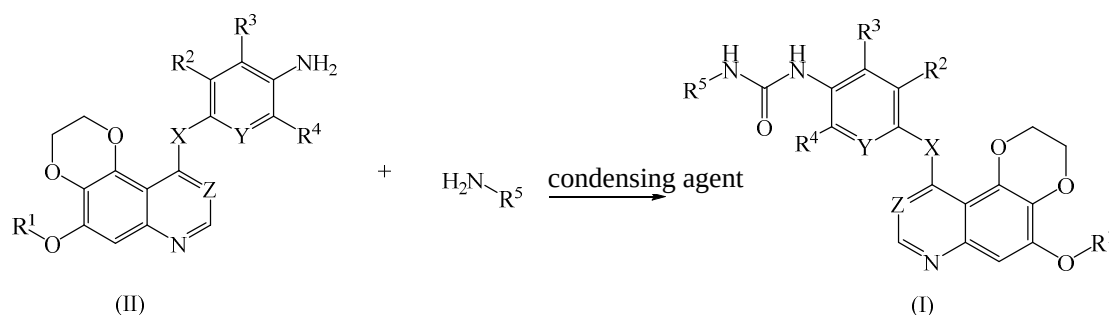
wherein the heteroaryl group is selected from the group consisting of pyridinyl, pyrimidinyl, quinolinyl, quinazolinyl, oxazolyl, isoxazolyl, thiazolyl, thiadiazolyl, pyrazolyl, imidazolyl, and pyrrolyl;

or a pharmaceutically acceptable salt, a stereoisomer, a hydrate, or a solvate thereof.

12. The compound according to any one of claims 1-11, wherein the pharmaceutically acceptable salt of the compound is selected from the group consisting of one or more of hydrochloride, hydrobromide, hydroiodide, perchlorate, sulfate, nitrate, phosphate, formate, acetate, propionate, glycolate, lactate, succinate, maleate, tartrate, malate, citrate, fumarate, gluconate, benzoate, mandelate, methanesulfonate, isethionate, benzenesulfonate, oxalate, palmitate, 2-naphthalenesulfonate, p-toluenesulfonate, cyclohexylsulfamate, salicylate, hexonate, trifluoroacetate, aluminum salt, calcium salt, chloroprocaine salt, choline salt,

diethanolamine salt, ethylenediamine salt, lithium salt, magnesium salt, potassium salt, sodium salt and zinc salt.

13. A method of preparing the compound, or the pharmaceutically acceptable salt, stereoisomer, hydrate, or solvate thereof according to any one of claims 1-11, comprising reacting a compound of Formula (II) with $\text{H}_2\text{N-R}^5$ to prepare the compound of Formula (I), wherein X, Y, Z, R^1 , R^2 , R^3 , R^4 and R^5 are as defined in any one of claims 1-11,



14. A pharmaceutical composition comprising the compound of Formula (I) or the pharmaceutically acceptable salt, hydrate, or solvate thereof according to any one of claims 1-11 and one or more pharmaceutically acceptable carrier(s) or excipient(s).

15. A pharmaceutical composition, comprising the compound of Formula (I) or the pharmaceutically acceptable salt, hydrate, or solvate thereof according to any one of claims 1-11 as an active ingredient, optionally further comprising one or more other therapeutic agents, and one or more pharmaceutically acceptable carriers or excipients.

16. The compound according to claim 1, wherein:

X is O;

Y is CH;

Z is CH;

R^1 is $\text{C}_1\text{-C}_6$ alkyl

R^2 is H or halogen;

R^3 is H or halogen;

R⁴ is H or halogen;

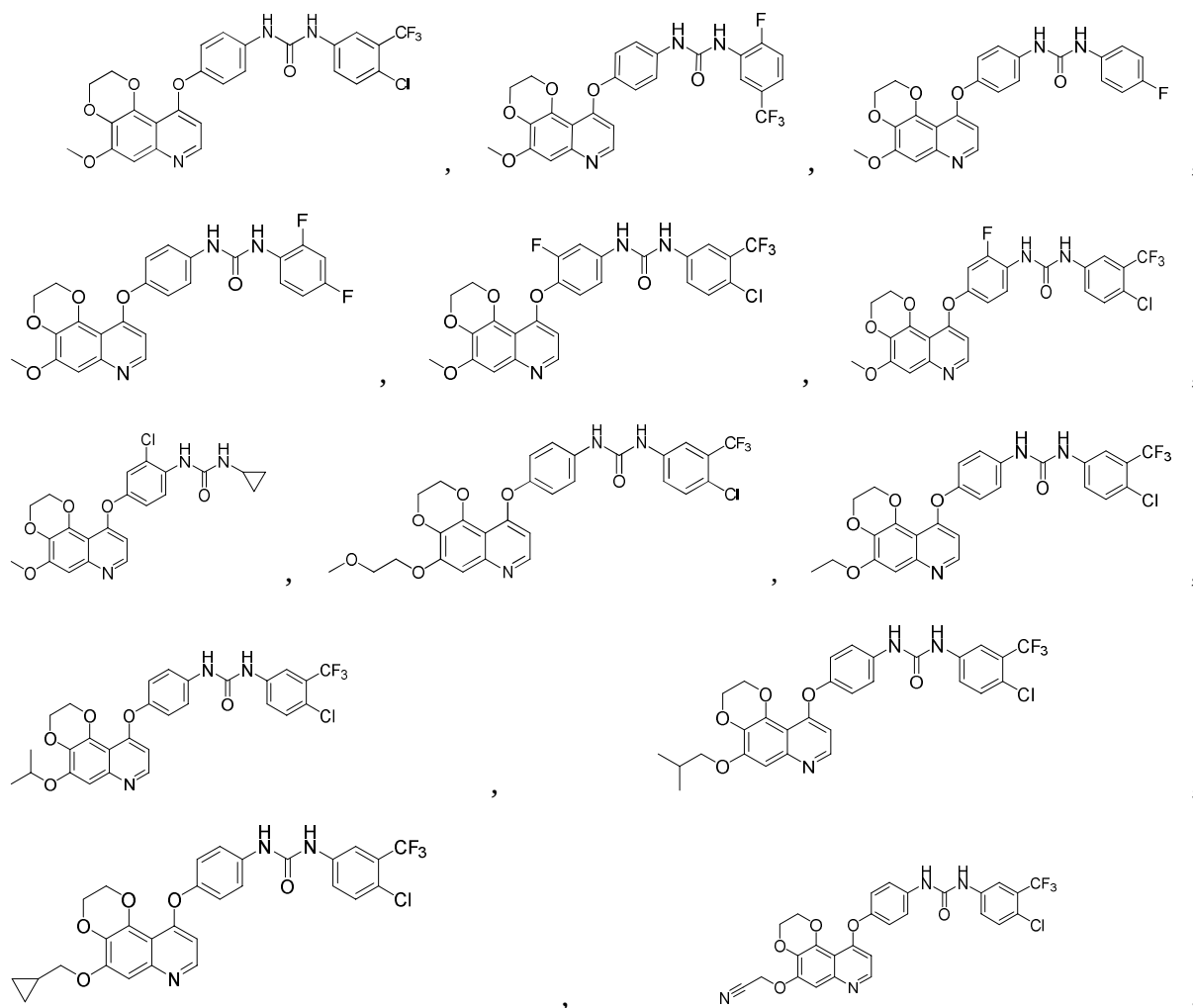
R⁵ is an aryl group substituted with one or more of the following: C₁-C₃ alkyl, halogen, or trifluoromethyl groups;

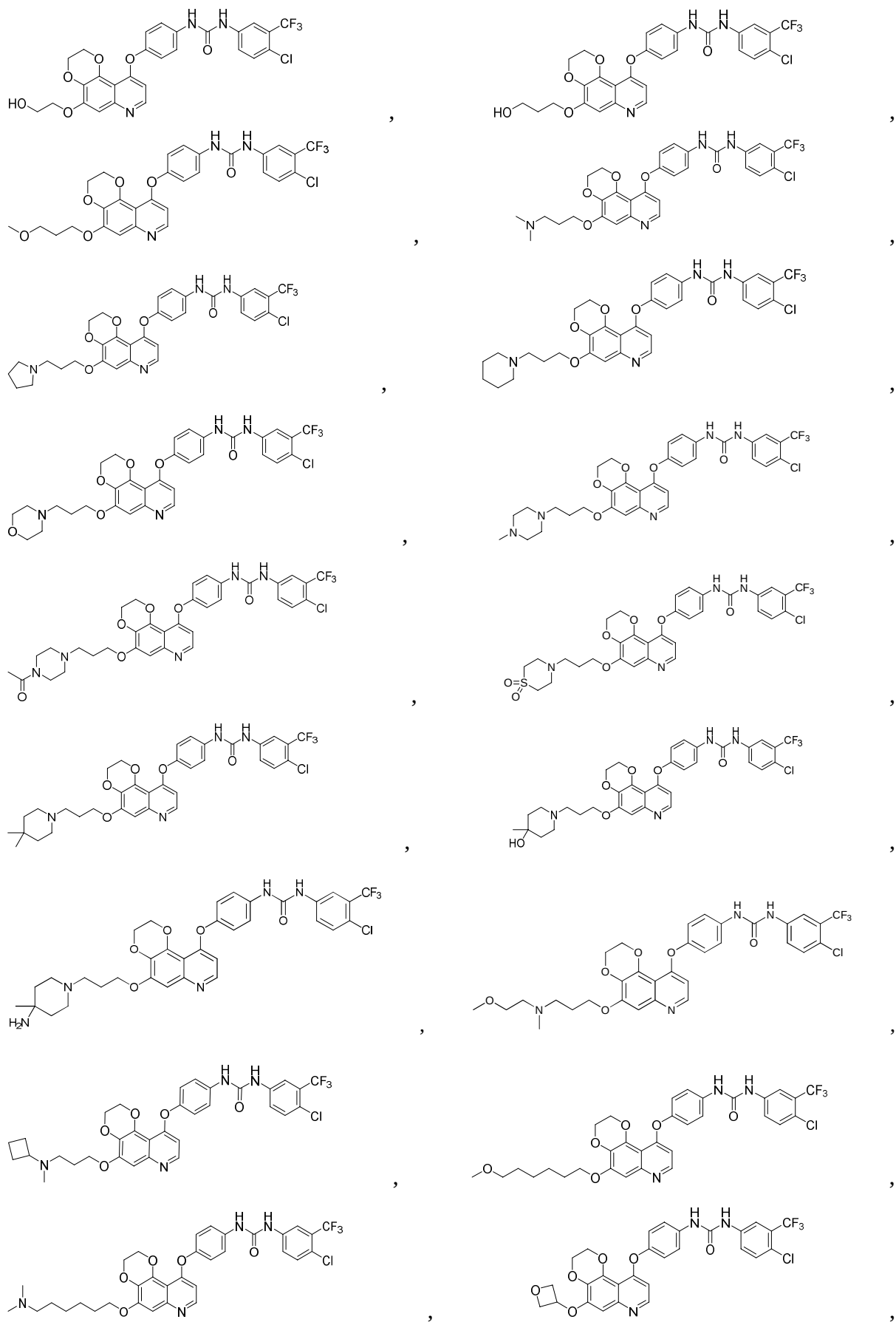
or a pharmaceutically acceptable salt, a stereoisomer, a hydrate, or a solvate thereof.

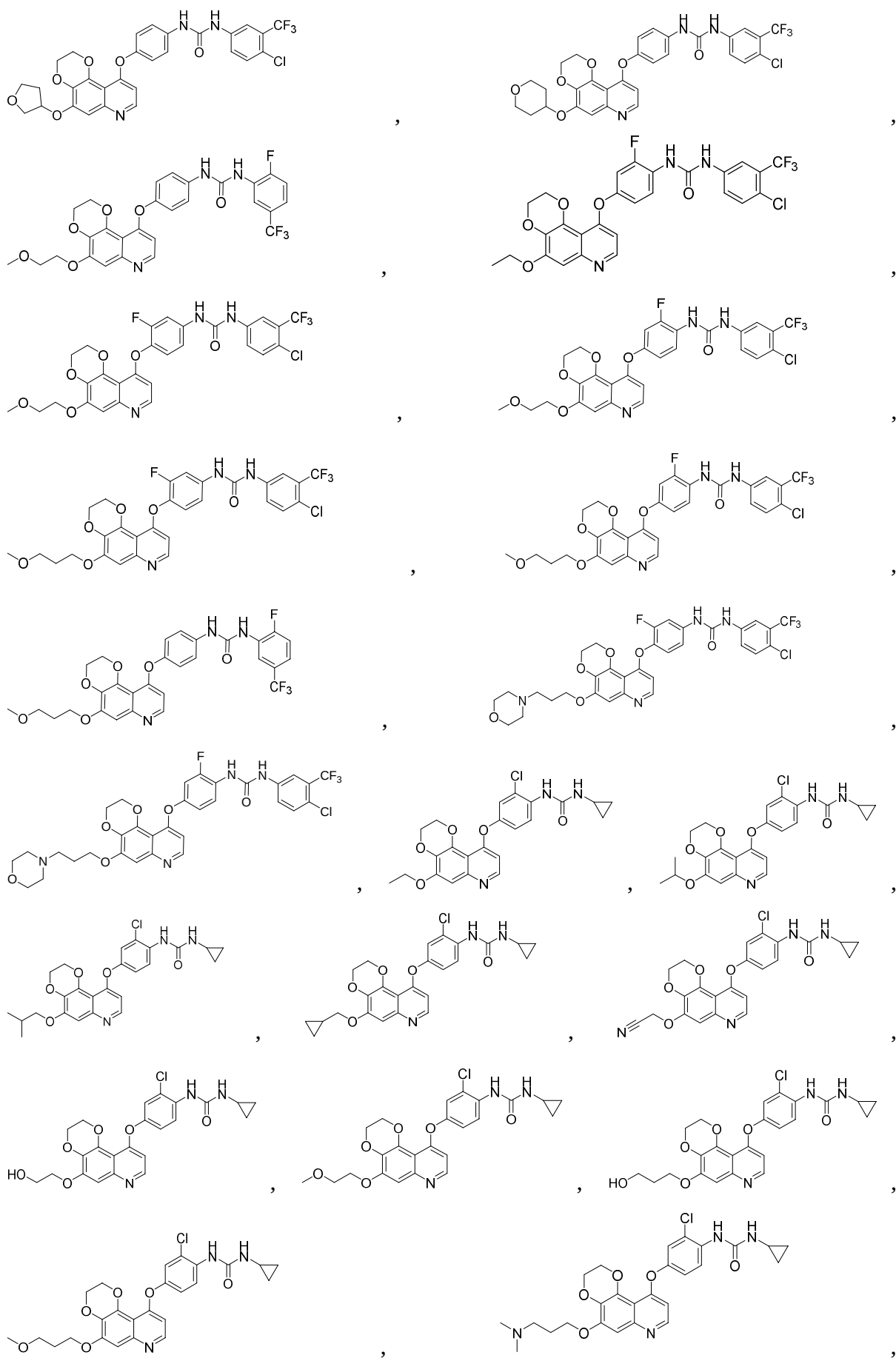
17. The compound according to claim 16, wherein: R¹ is methyl, ethyl, propyl, or isopropyl, and R⁵ is a phenyl substituted with one or more of the following: methyl, ethyl, propyl, isopropyl, fluorine, chlorine, bromine, or trifluoromethyl groups;

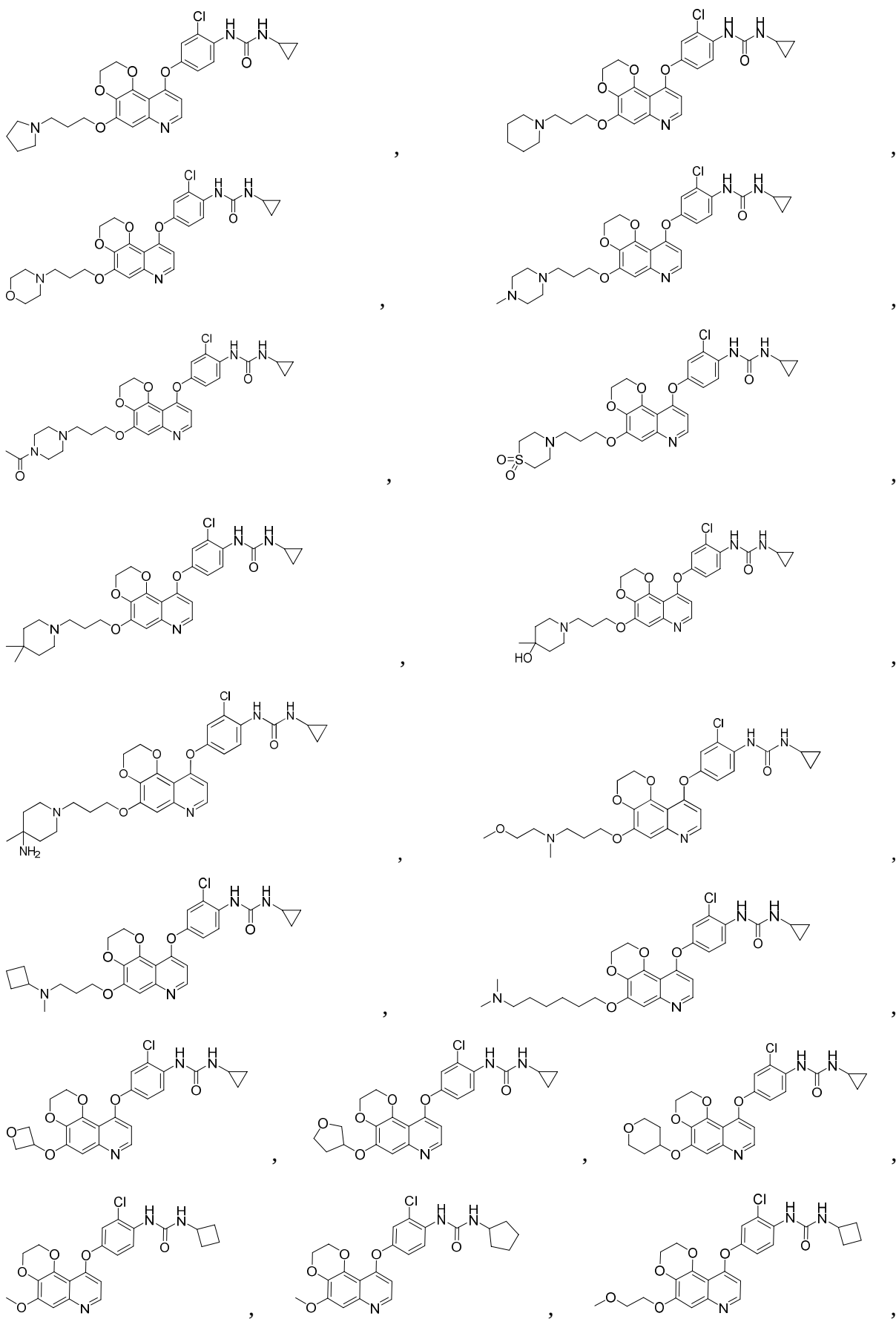
or a pharmaceutically acceptable salt, a stereoisomer, a hydrate, or a solvate thereof.

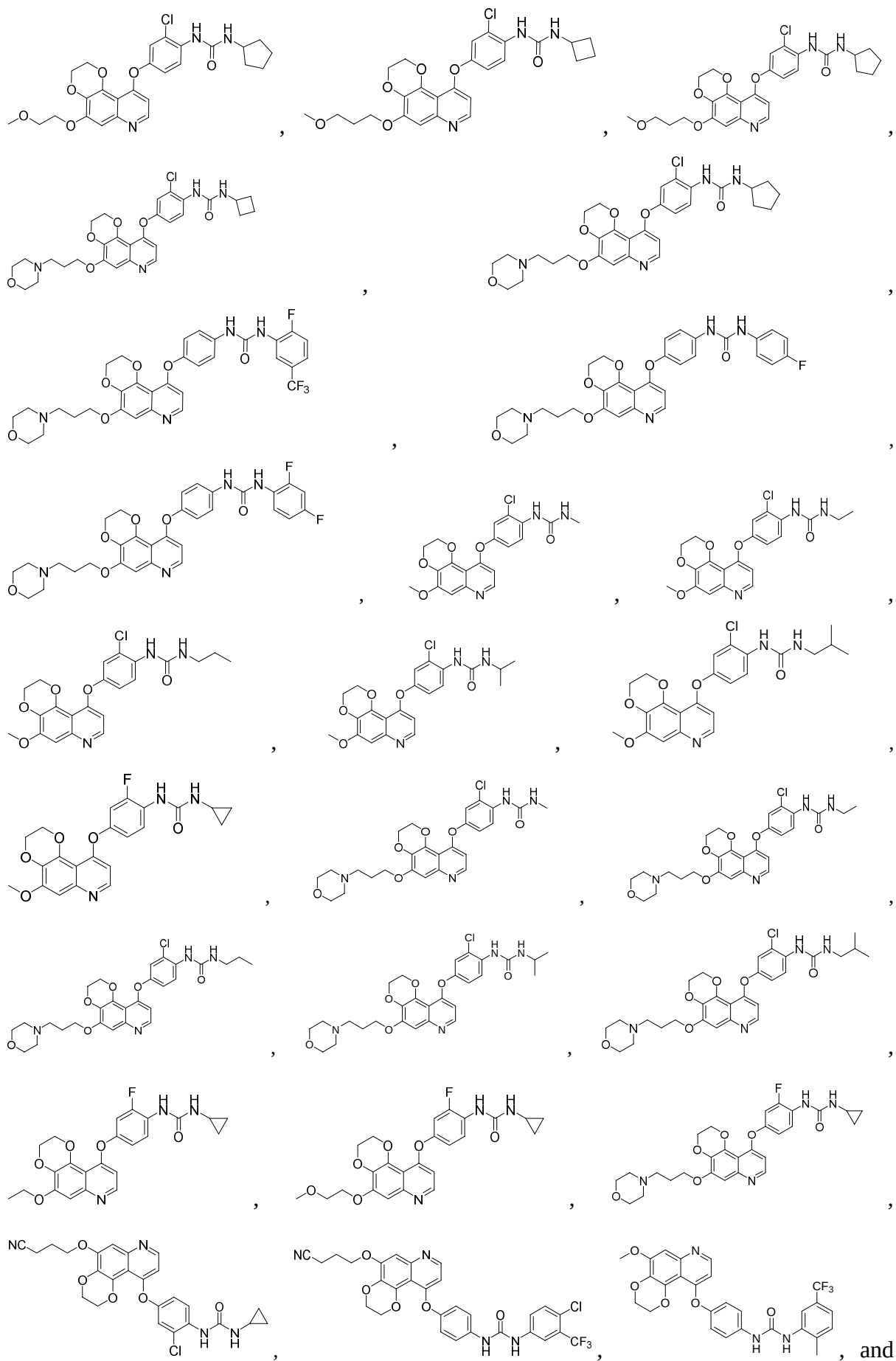
18. A compound according to claim 1, wherein the compound is selected from the group consisting of:

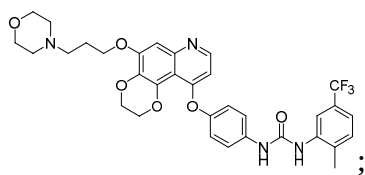












or a pharmaceutically acceptable salt, a stereoisomer, a hydrate, or a solvate thereof.