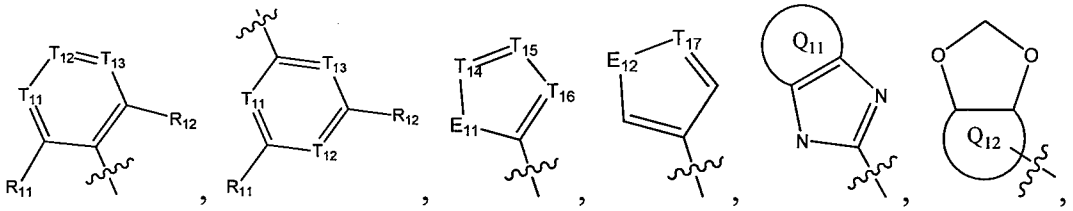
[5] wherein, A is selected from



$(R_{20})_3C\text{-}E_{13}$-;

[6] each of $T_{11\text{-}17}$ is independently selected from N, $C(R_{13})$;

[7] each of $E_{11\text{-}13}$, L_1, L_2 is independently selected from $N(R_{14})$, $C(=O)N(R_{15})$, $S(=O)_2N(R_{16})$, $C{=}N(R_{17})$, $C(R_{18})(R_{19})$, S, C(=O)O, C(=O), C=S, S(=O) or $S(=O)_2$;

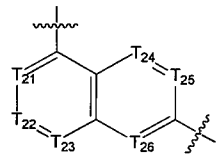
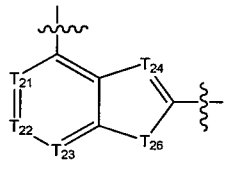
[8] each of L_1, L_2 can also be independently selected from a single bond;

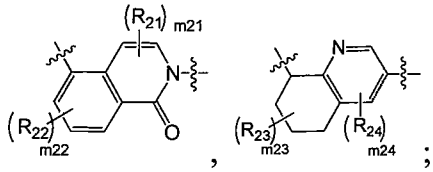
[9] each of $R_{11\text{-}13}$, $R_{18\text{-}19}$ is independently selected from H, F, Cl, Br, I, CN, OH, SH, NH_2, an optionally R_{01}-substituted $C_{1\text{-}6}$ alkyl or heteroalkyl or alkyl-heteroatom group or heteroalkyl-heteroatom group, an optionally R_{02}-substituted $C_{3\text{-}8}$ cyclic group or heterocyclic group or cycle-heteroatom group or heterocycle -heteroatom group; preferably selected from a methyl, a trifluoromethyl, a trifluoromethoxy, F, Cl, Br, I, CN, a methylaminocarbonyl, a methylsulfonyl, a trifluoromethylsulfonyl, a trifluoromethoxy, a cyclopropyl, a morpholinylsulfonyl, a 2-imidazolyl, a dimethylamino, a *n*-, or *iso*-propyl;

[10] each of $R_{14\text{-}17}$ is independently selected from H, an optionally R_{01}-substituted $C_{1\text{-}6}$ alkyl or $C_{3\text{-}6}$ cycloalkyl;

[11] R_{20} is selected from H, F, Cl, Br, I, CN, OH, SH, NH_2, a methoxy, a methylamino, a dimethylamino;

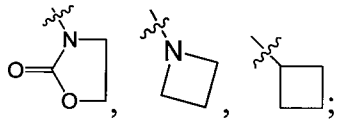
[12] each of $Q_{11\text{-}12}$ is independently selected from a phenyl, a pyridyl, a thienyl, a furyl;

[13] a structural unit  can be replaced by  ,

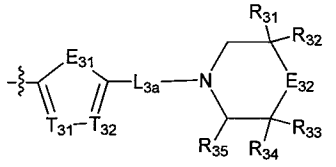
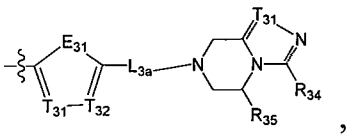
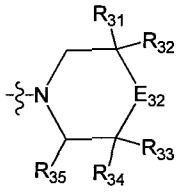
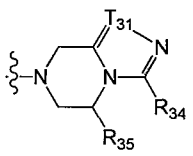
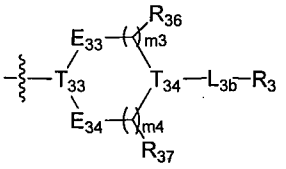
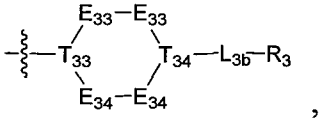
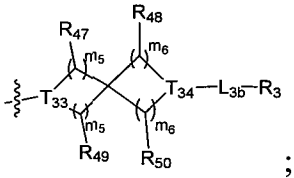
 ;

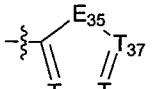
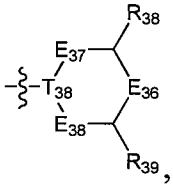
[14] each of $T_{21\text{-}26}$ is independently selected from N, $C(R_{25})$; T_{25} can also be selected from $N^{\oplus}(R_{25})$;

[15] each of $R_{21\text{-}25}$ is independently selected from H, F, Cl, Br, I, CN, OH, SH, NH_2, an optionally R_{01}-substituted $C_{1\text{-}6}$ alkyl or heteroalkyl or alkyl-heteroatom group or

heteroalkyl-heteroatom group, an optionally R_{02}-substituted C_{3-8} cyclic group or heterocyclic group or cycle -heteroatom group or heterocycle-heteroatom group; preferably selected from F, Cl, Br, I, CN, OH, a methyl, an ethyl, an isopropyl, a methoxy, a trifluoromethyl, a difluoromethoxy, a *n*-, or *iso*-propoxy, a cyclopropyl, a formamido, a methanesulfonylamino, a dimethylamino, a dimethylaminoethoxy, a methylsulfonyl, a carbomethoxy,  ;

[16]each of m_{21-24} is independently selected from 0,1 or 2;

[17]B is selected from  ,  ,  ,  ,  ,  ,  ;

[18]R_3 is selected from  ,  , H, an optionally R_{01}-substituted C_{1-6} alkyl or heteroalkyl or alkyl-heteroatom group or heteroalkyl-heteroatom group, an optionally R_{02}-substituted C_{3-8} cyclic group or heterocyclic group or cycle-heteroatom group or heterocycle-heteroatom group;

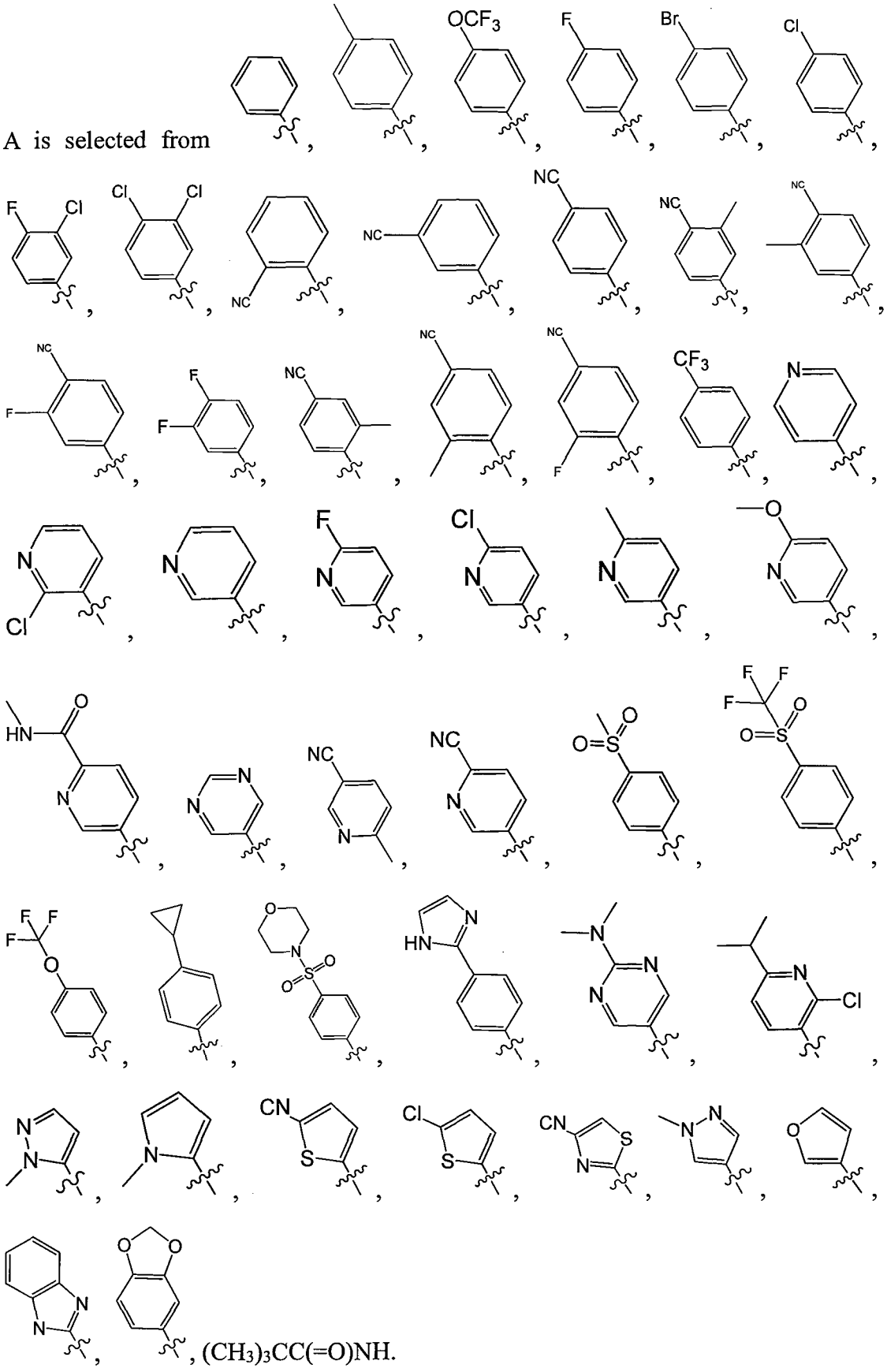
[19]each of E_{31-38}, L_{3a}, L_{3b} is independently selected from $N(R_{40})$, $N(R_{40})(CH_2)_{1-3}$, $C(=O)N(R_{40})(CH_2)_{1-3}$, $C(=O)N(R_{41})$, $S(=O)_2N(R_{42})$, $C=N(R_{43})$, $C(R_{44})(R_{45})$, S, C(=O)O, C(=O), C=S, S(=O), $S(=O)_2$, O or $C(=O)C(R_{44})(R_{45})$;

[20]each of L_{3a}, L_{3b} can also be independently selected from a single bond or a C_{1-5} alkyl;

[21]each of E_{31}, E_{35} can also be independently selected from $-T_{39}=T_{40}-$;

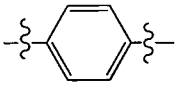
[22]each of T_{31-40} is independently selected from N, $C(R_{46})$;

[23]each of R_{40-43} is independently selected from H, an optionally R_{01}-substituted C_{1-6}

[38]perferably, the compound or the pharmaceutically acceptable salt thereof, wherein A is selected from  , $(CH_3)_3CC(=O)NH$.

optionally R_{3001}-substituted C_{1-3} alkyl or alkoxy or alkyl amino or cyclopropyl;

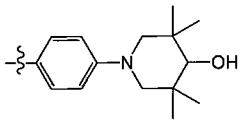
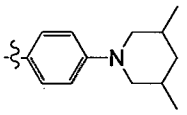
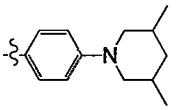
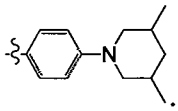
[47] R_{3001} is selected from OH, $N(CH_3)_2$, $NH(CH_3)$, NH_2, F, Cl, Br, I, CN, a methyl, a methoxy, the number of R_{3001} is selected from 1, 2 or 3;

[48] optionally, the structural unit  in the general structure can be replaced by a pyridyl, a thienyl, a furyl;

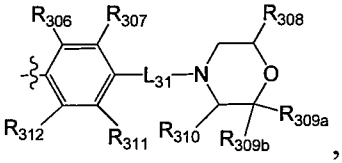
[49] optionally,

[50] each of $R_{301-305}$ is independently selected from a methyl, H, OH, NH_2, F, Cl, Br, I, CN;

[51] further optionally,

[52] B is selected from  ,  ,  ,  .

[53] optionally, the compound or the pharmaceutically acceptable salt thereof, wherein B is selected from

 , wherein

[54] each of $R_{306-308}$, R_{309a}, R_{309b}, $R_{310-312}$ is independently selected from H, OH, NH_2, F, Cl, Br, I, CN, an optionally R_{3001}-substituted C_{1-3} alkyl or alkoxy or alkyl amino or cyclopropyl;

[55] R_{3001} is selected from OH, $N(CH_3)_2$, $NH(CH_3)$, NH_2, F, Cl, Br, I, CN, a methyl, a methoxy, the number of R_{3001} is selected from 1, 2 or 3;

[56] L_{31} is selected from a single bond, $R_{3002}N(R_{3003})R_{3004}$, O, S, C(=O)O, C(=O), C=S, S(=O) and/or $S(=O)_2$, R_{3002} is selected from a single bond or C(=O);

[57] R_{3003} is selected from H, a C_{1-3} alkyl or a cyclopropyl;

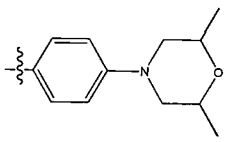
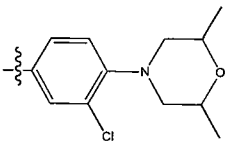
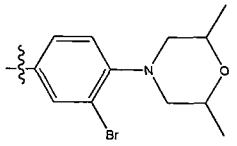
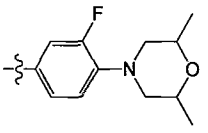
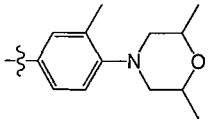
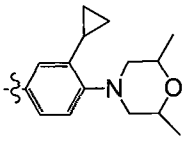
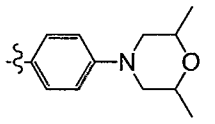
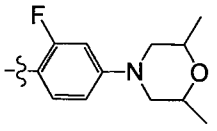
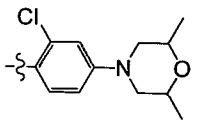
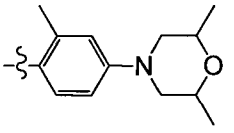
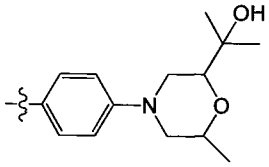
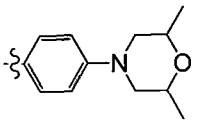
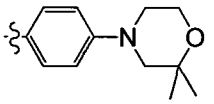
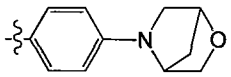
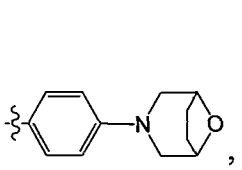
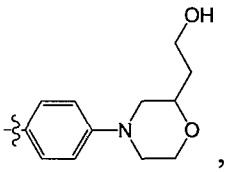
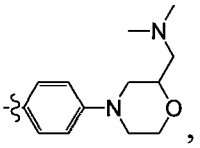
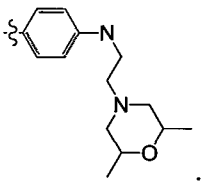
[58] R_{3004} is selected from $(CH_2)_{0-3}$;

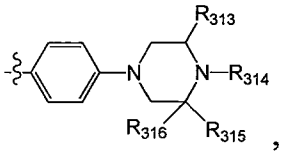
[59] optionally, R_{308} and R_{309a}, R_{308} and R_{310} form a linking bond $(CH_2)_{1-3}$ together;

[60] preferably, the R_{308} and R_{310} form a linking bond CH_2 together, R_{308} and R_{309a} form a linking bond CH_2CH_2 together.

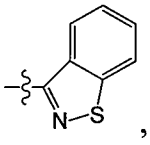
[61]preferably, each of $R_{306-308}$, R_{309a}, R_{309b}, $R_{310-312}$ is independently selected from a methyl, a cyclopropyl, $C(CH_3)_2(OH)$, CH_2CH_2OH, $CH_2N(CH_3)_2$, H, OH, NH_2, F, Cl, Br, I, CN.

[62]preferably, L_{31} is selected from a single bond, $NHCH_2CH_2$;

[63]preferably, B is selected from  ,  ,  ,  ,  ,  ,  ,  ,  ,  ,  ,  ,  ,  ,  ,  ,  ,  .

[64]preferably, the compound or the pharmaceutically acceptable salt thereof, wherein B is selected from  , wherein

each of R_{313}, R_{315}, R_{316} is independently selected from H, OH, NH_2, F, Cl, Br, I, CN, an optionally R_{3001}-substituted C_{1-3} alkyl or alkoxy or alkyl amino or cyclopropyl;

[65]R_{314} is selected from H, OH, NH_2, F, Cl, Br, I, CN, an optionally R_{3001}-substituted C_{1-3} alkyl or alkoxy or alkyl amino or cyclopropyl, $(CH_2)_{0-3}R_{3005}$,  , wherein R_{3005} is optionally substituted by R_{3001};

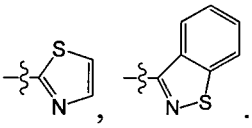
[66]R_{3005} is selected from a C_{3-6} cycloalkyl, a phenyl, a pyridyl, a thienyl, a furyl, an imidazolyl, an oxazolyl, a thiazolyl, an isothiazolyl, each of the above-mentioned group

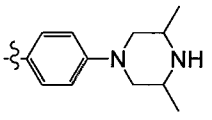
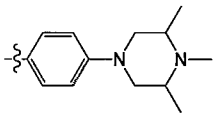
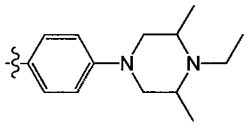
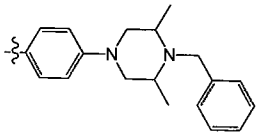
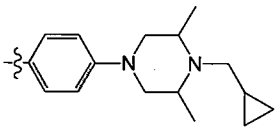
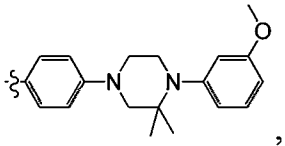
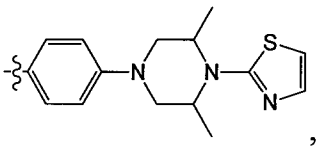
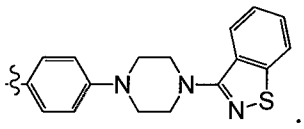
is optionally fused with a benzene ring;

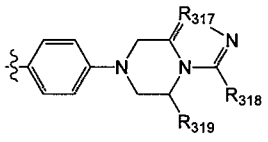
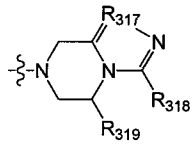
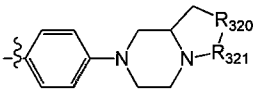
[67]R_{3001} is selected from OH, $N(CH_3)_2$, $NH(CH_3)$, NH_2, F, Cl, Br, I, CN, a methyl, a methoxy, the number of R_{3001} is selected from 1, 2 or 3;

[68]optionally, the  in the general structure can be replaced by a pyridyl, a thienyl, a furyl, an imidazolyl, an oxazolyl, a thiazolyl, an isothiazolyl.

[69]Preferably, each of R_{313}, R_{315}, R_{316} is independently selected from H, a methyl;

[70]preferably, R_{314} is selected from H, a methyl, an ethyl, a phenyl methylene, a cyclopropyl methylene, a methoxyphenyl,  .

[71]Preferably, B is selected from  ,  ,  ,  ,  ,  ,  ,  .

[72]Preferably, the compound or the pharmaceutically acceptable salt thereof, wherein B is selected from  ,  ,  , wherein

[73]R_{317} is selected from CR_{3006} or N;

[74]each of R_{318}, R_{319}, $R_{3006\text{-}3008}$ is independently selected from H, OH, NH_2, F, Cl, Br, I, CN, an optionally R_{3001}-substituted $C_{1\text{-}3}$ alkyl or alkoxy or alkyl amino or cyclopropyl;

[75]each of $R_{320\text{-}321}$ is independently selected from $C(R_{3007})(R_{3008})$, O, $CON(R_{3009})$, $N(R_{3010})$, $C{=}N(R_{3011})$, S, C(=O)O, C(=O), C=S, S(=O) and/or $S(=O)_2$;

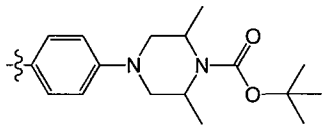
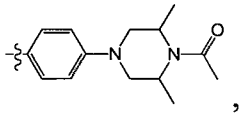
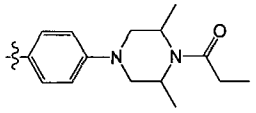
[76]each of $R_{3009\text{-}3011}$ is independently selected from H, an optionally R_{3001}-substituted $C_{1\text{-}3}$ alkyl or cyclopropyl;

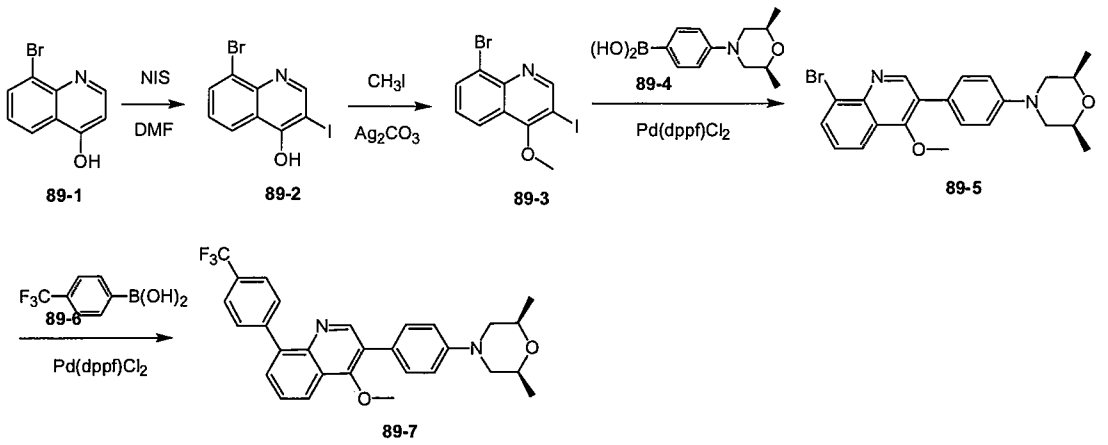
[77]R_{3001} is selected from OH, $N(CH_3)_2$, $NH(CH_3)$, NH_2, F, Cl, Br, I, CN, a methyl, a methoxyl, the number of R_{3001} is selected from 1, 2 or 3;

$C(CH_3)_2OH$.

[92]Preferably, L_{32} is selected from C(=O), $S(=O)_2$;

[93]preferably, R_{323} is selected from a *tert*-butoxy, a methyl, a methoxy, an ethyl, an ethoxy, an propoxy, an isopropyl, a *n*-propyl, an isopropoxy, a cyclopropyl, a methylamino, a phenyl, a pyridyl, a 3-methyl pyridyl, an imidazolyl, $C(CH_3)_2OH$;

[94]preferably, B is selected from  ,  ,  ,



[286] Step 1: NIS (3.8 g, 22 mmol) was added into a solution of compound 89-1 (4.9 g, 22 mmol) in DMF (40 mL) in portions. The reaction mixture was stirred at room temperature for 2h. After the reaction was complete as detected by LC-MS, the reaction mixture was poured into H_2O (500 mL). The product 89-2 was obtained by filtration (5.5 g, 71%) as brown solid. **MS ESI** calcd for C_9H_5BrINO $[M+H]^+$ 350, found350.

[287] Step 2: CH_3I (1.2 g, 8.7 mmol) was added into a solution of compound 89-2 (2.0 g, 5.8 mmol) and Ag_2CO_3 (2.4 g, 8.7 mmol) in DMF (20 mL). The reaction mixture was stirred at 60 °C for 2 h. After the reaction was complete as detected by LC-MS, the reaction mixture was poured into H_2O; then extracted with EtOAc (80×3 mL), the organic phase was dried over anhydrous sodium sulfate. After concentration, the crude product was further purified by column chromatography (PE: EtOAc=5:1) to deliver compound 89-3 (464 mg, 22%) as white solid. **MS ESI** calcd for $C_{10}H_7BrINO$ $[M+H]^+$ 364, found 364.

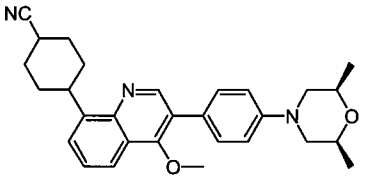
[288] Step 3: Compound 89-3 (1089 mg, 3 mmol), compound 89-4 (1050 mg, 3.3 mmol), $Pd(dppf)Cl_2$ (110 mg, 0.15 mmol) and Na_2CO_3 (636 mg, 6 mmol) were added into THF (20 mL) / H_2O (2 mL), under nitrogen gas atmosphere, the reaction mixture was stirred at 60°C overnight. After the reaction was complete, the mixture was filtrated, the filtrate was extracted with EtOAc, the organic phase was washed with brines, dried over anhydrous sodium sulfate, concentrated under reduced pressure to deliver crude product 4 (140 mg, 11%) as white solid. **MS ESI** calcd for $C_{22}H_{23}BrN_2O_2$ $[M+H]^+$ 427, found 427.

[289] Step 4: Compound 89-5 (70 mg, 0.16 mmol), compound 89-6 (46 mg, 0.24 mmol) were added into a solution of $Pd(dppf)Cl_2$ (15mg, 0.02 mmol), Na_2CO_3 (34mg, 0.32 mmol) in THF (10 mL) / H_2O (1 mL), under nitrogen gas atmosphere, the reaction mixture was stirred at 80°C overnight. After the reaction was complete, the mixture was filtrated, the filtrate was extracted with EtOAc, the organic phase was washed with brines, dried over anhydrous sodium sulfate, concentrated under reduced pressure to deliver the title compound (35 mg, 45%) as light yellow solid. **^{1}H NMR** (400MHz, $CDCl_3$) δ 8.91 (s, 1H), 8.32-8.30 (m, 1H), 7.83-7.57 (m, 8H), 7.04 (d, J=8.8Hz, 2H), 3.84-3.83 (m, 2H), 3.71 (s, 3H), 3.57 (d, J= 11.2Hz, 2H), 2.51 (t, J= 11.2Hz, 2H), 1.30

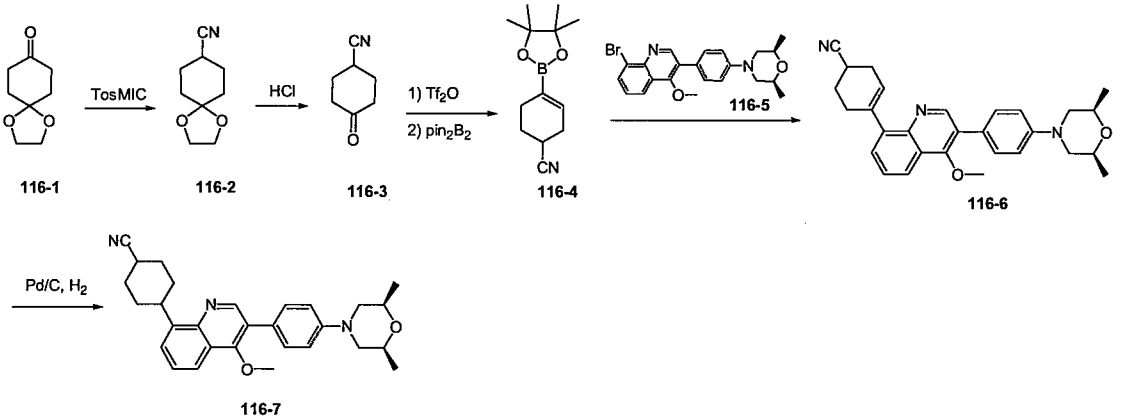
reaction mixture was stirred at -65 °C for further 4 h. After the reaction was complete, the reaction mixture was quenched with saturated NH_4Cl solution and extracted with EtOAc. The combined extraction liquid was washed with brines, dried over sodium sulfate and concentrated to dry, finally purified by column chromatography (PE:EtOAc = 1:1) to deliver compound 115-2 (120 mg, yield 41%) as white solid. **MS ESI** calcd for $C_{34}H_{50}N_2O_2Sn$ $[M+H]^+$ 639, found 639.

[293] Step 2: Compound 115-2 (100 mg, 0.16 mmol), compound 115-3 (30 mg, 0.16 mmol), Na_2CO_3 (43 mg, 0.4 mmol) and $Pd(dppf)Cl_2$ (10 mg, 0.016 mmol) were added into dioxane (2 mL). Under nitrogen gas atmosphere, the reaction mixture was heated to 120°C and stirred for 16h. The reaction mixture was poured into H_2O, extracted with EtOAc. The combined extraction liquid was washed with brines, dried over sodium sulfate and concentrated to dry, finally purified by column chromatography (PE:EtOAc = 1:1) to deliver the title compound (25 mg, yield 34%) as white solid. **^{1}H NMR** (400 MHz, $CDCl_3$) δ 8.95 (s, 1H), 8.85 (d, J= 2.0 Hz, 1H), 8.33 (d, J= 2.0 Hz, 1H), 8.10 (s, 1H), 7.60-7.70 (m, 1H), 7.56 (d, J= 8.4 Hz, 2H), 7.02 (d, J= 8.4 Hz, 2H), 3.75-3.85 (m, 2H), 3.57 (s, 3H), 3.52-3.60 (m, 2H), 3.40-3.50 (m, 2H), 1.29 (s, 3H), 1.27 (s, 3H). **MS ESI** calcd for $C_{26}H_{24}N_4O_2S$ $[M+H]^+$ 457, found 457.

Embodiment 116



4-(3-(4-((2S,6R)-2,6-dimethylmorpholino)phenyl)-4-methoxyquinolin-8-yl) cyclohexane carbonitrile



[294] Step 1: *t*-BuOK (18.5 g, 165.2 mmol) was added into a solution of compound 116-1 (10 g, 64 mmol) and TosMIC (17.6 g, 90.27 mmol) in DME (10 mL) at 0 °C. The reaction mixture was stirred at 0°C for 2h. After the reaction was complete, the reaction mixture was quenched with saturated NH_4Cl solution and extracted with

EtOAc. The combined extraction liquid was washed with brines, dried over sodium sulfate and concentrated to dry, finally purified by column chromatography (PE:EtOAc = 1:1) to deliver 116-2 (6.7 g, yield 50%) as colorless oil.

[295] Step 2: A mixture of compound 116-2 (3 g, 18 mmol) in *conc.* hydrochloric acid / H_2O (v/v = 1:1, 20 mL) was stirred at room temperature for 2h. The reaction mixture was adjusted to pH = 8 with NaOH, and extracted with EtOAc. The combined extraction liquid was washed with brines, dried over sodium sulfate and concentrated to dry, finally purified by column chromatography (PE:EtOAc = 1:1) to deliver compound 116-3 (1.5 g, yield 68%) as colorless oil.

[296] Step 3: LiHMDS (9.5 mL, 9.5 mmol) was added dropwise into a solution of compound 116-3 (1 g, 8 mmol) in THF (20 mL) at 0 °C. After the addition, the reaction mixture was stirred for further 30min. Then $PhN(SO_2CF_3)$ (3.6 g, 8.6 mmol) was added into the solution. The obtained mixture was stirred at 25°C for 6h, finally quenched with H_2O and extracted with EtOAc. The combined extraction liquid was washed with brines, dried over sodium sulfate and concentrated to dry to deliver sulfonate as yellow oil. The obtained sulfonate, $Pd(dppf)Cl_2$ (80.4 mg, 0.11 mmol), bis(pinacolato)diboron (0.67 g, 2.6 mmol) and KOAc (0.65 g, 6.6 mmol) were added into dioxane (15 mL), under nitrogen gas atmosphere, the reaction mixture was heated to 100°C and stirred for 18h. The reaction mixture was poured into H_2O, extracted with EtOAc. The combined extraction liquid was washed with brines, dried over sodium sulfate and concentrated to dry, finally purified by column chromatography (PE:EtOAc = 5:1) to deliver compound 116-4 (0.5 g, yield 28%) as white solid.

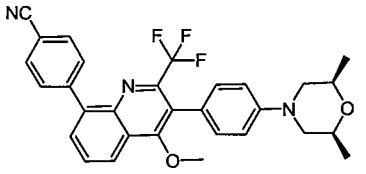
[297] Step 4: A mixture of $Pd(dppf)Cl_2$ (180.8 mg, 0.23 mmol), compound 116-4 (500 mg, 2.1 mmol), compound 116-5 (1 g, 2.3 mmol) and Na_2CO_3 (556 mg, 5.25 mmol) was added into dioxane (20 mL). Under nitrogen gas atmosphere, the obtained suspension was heated to 80°C and stirred for 4h. The reaction mixture was poured into H_2O, extracted with EtOAc. The combined extraction liquid was washed with brines, dried over sodium sulfate and concentrated to dry, finally purified by column chromatography (PE:EtOAc = 5:1) to deliver compound 116-6 (400 mg, yield 42%) as white solid. **MS ESI** calcd for $C_{29}H_{31}N_3O_2$ $[M+H]^+$ 454, found 454.

[298] Step 5: Pd/C (100 mg, 10%) and compound 116-6 (100 mg, 0.22 mmol) were added into EtOAc (20 mL). Under hydrogen gas atmosphere provided by hydrogen balloon, the reaction mixture was stirred at room temperature for 50h. The reaction mixture was filtrated, the filtrate was concentrated to dry, finally purified by preparative HPLC to deliver the title compound (50 mg, yield 46%) as white solid. **^{1}H NMR** (400 MHz, $CDCl_3$) δ 8.90 (s, 1H), 8.14 (d, J= 8.4 Hz, 1H), 7.50-7.65 (m, 6H), 7.06 (d, J= 8.8 Hz, 2H), 4.00-4.15 (m, 1H), 3.80-3.95 (m, 2H), 3.69 (s, 3H), 3.55-3.65 (m, 2H), 3.15-3.20 (m, 1H), 2.45-2.55 (m, 2H), 1.90-2.25 (m, 7H), 1.55-1.65 (m, 1H), 1.33 (s, 3H), 1.31 (s, 3H). **MS ESI** calcd for $C_{29}H_{33}N_3O_2$ $[M+H]^+$ 456, found 456.

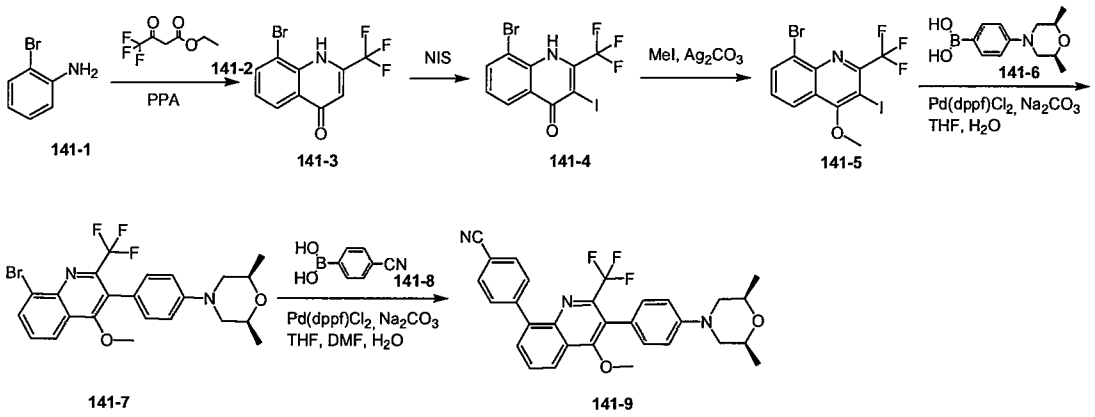
Embodiment 117

$[M+H]^+$ 492 found 492.

Embodiment 141



4-(3-(4-((2S,6R)-2,6-dimethylmorpholino)phenyl)-4-methoxy-2-(trifluoromethyl) quinolin-8-yl)benzonitrile



[334] Step 1: Compound 141-1 (10 g, 58.5 mmol) was added dropwise into a mixture of compound 140-2 (10.7 g, 58.5 mmol) and PPA (40 g) at 100°C, the period of additionwas no less than 15min. After the addition, the reaction mixture was heated to 150°C and stirred for 12h. After cooling, the reaction mixture was diluted with sodium hydroxide (160 mL, 10 wt.%). The obtained precipitate was filtrated, the filtrate was acidfied with *conc.* hydrochloric acid. The obtained precipitate was filtrated, recrystallized with ethanol to deliver compound 141-3 (10.5 g, yield 62%) as white solid. **MS ESI** calcd for $C_{10}H_5BrF_3NO$ $[M+H]^+$ 292, found 292.

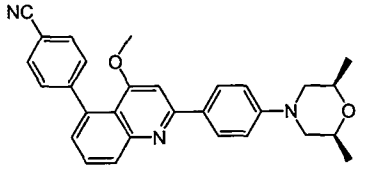
[335] Step 2: NIS (8.1 g, 36 mmol) was added into a solution of compound 141-3 (10.5 g, 36 mmol) in DMF (100 mL) in portions. The reaction mixture was stirred at room temperature for 1h. Then the reaction mixture was poured into H_2O (1 L) and filtrated, the filtrate cake was dissolved in EtOAc, dried over sodium sulfate, concentrated to deliver compound 141-4 (14.3 g, yield 95%) as yellow solid. **MS ESI** calcd for $C_{10}H_4BrF_3INO$ $[M+H]^+$ 418, found 418.

[336] Step 3: MeI (0.22 mL, 3.6mmol) was added dropwise into a suspension of compound 141-4 (1 g, 2.4 mmol) and Ag_2CO_3 (1.5g, 4.8mmol) in toluene (10 mL). Then the reaction mixture was stirred at 70°C for 2h. The reaction mixture was poured into H_2O, extracted with EtOAc. The combined extraction liquid was washed with brines, dried over Na_2SO_4 and concentrated to dry, finally purified by column chromatography(PE:EtOAc=10:1)to deliver compound 141-5 (550 mg, yield55%) as yellow-brown solid. **MS ESI** calcd for $C_{11}H_6BrF_3INO$ $[M+H]^+$ 432, found 432.

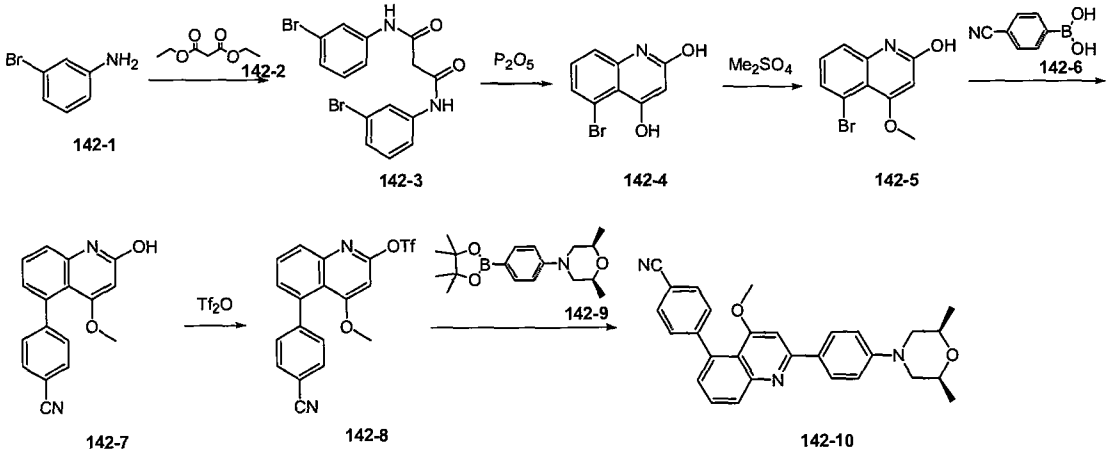
[337] Step 4: A mixture of compound 141-5 (550 mg, 1.27 mmol), compound 140-6 (299 mg, 1.27 mmol), $Pd(dppf)Cl_2$ (93 mg, 0.127 mmol) and Na_2CO_3 (269 mg, 2.54 mmol) was added into a mixed solvent of THF (5 mL) and H_2O (1 mL), under nitrogen gas atmosphere, the reaction mixture was heated to 60 °C and stirred overnight. The reaction mixture was poured into H_2O, extracted with EtOAc. The combined extraction liquid was washed with brines, dried over Na_2SO_4 and concentrated to dry to deliver compound 141-7 (170 mg, yield 27%) as yellow-brown solid. **MS ESI** calcd for $C_{23}H_{22}BrF_3N_2O_2$ $[M+H]^+$ 495, found 495.

[338] Step 5: A mixture of compound 141-7 (170 mg, 0.34 mmol), compound 140-8 (60.6 mg, 0.41 mmol), $Pd(dppf)Cl_2$ (25 mg, 0.034 mmol) and Na_2CO_3 (72 mg, 0.68 mmol) was added into a mixed solvent of THF (10 mL), DMF(2 mL) and H_2O (2 mL), under nitrogen gas atmosphere, the reaction mixture was heated to 110°C and stirred overnight. The organic phase was separated and washed with brines, dried over Na_2SO_4 and concentrated to dry, finally purified by preparative HPLC to deliver the title compound (60 mg, yield 34%) as white solid. **^{1}H NMR** (400 MHz, $CDCl_3$) δ 8.26 (d, J= 8.0 Hz, 1H), 7.82-7.95 (m, 3H), 7.70-7.80 (m, 3H), 7.35-7.50 (m, 4H), 3.95-4.20 (m, 3H), 3.65-3.80 (m, 2H), 3.63 (s, 3H), 2.76-2.90 (m, 2H), 1.33 (s, 3H), 1.32 (s, 3H). **MS ESI** calcd for $C_{30}H_{26}F_3N_3O_2$ $[M+H]^+$ 518, found 518.

Embodiment 142



4-(2-(4-((2R,6S)-2,6-dimethylmorpholino)phenyl)-4-methoxyquinolin-5-yl) benzonitrile

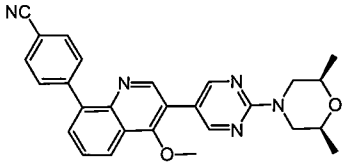


[339] Step 1: Compound 142-1 (3.0 g, 17.4 mmol) and compound 142-2 (1.4 g, 8.7 mmol) were heated to 180°C under microwave and stirred for 3h. After cooling, the obtained solid was washed with EtOAc to deliver compound 142-3 (2.4 g, yield 22.2%) as yellow-brown solid. **MS ESI** calcd for $C_{15}H_{12}Br_2N_2O_2$ $[M+H]^+$ 411, found 411.

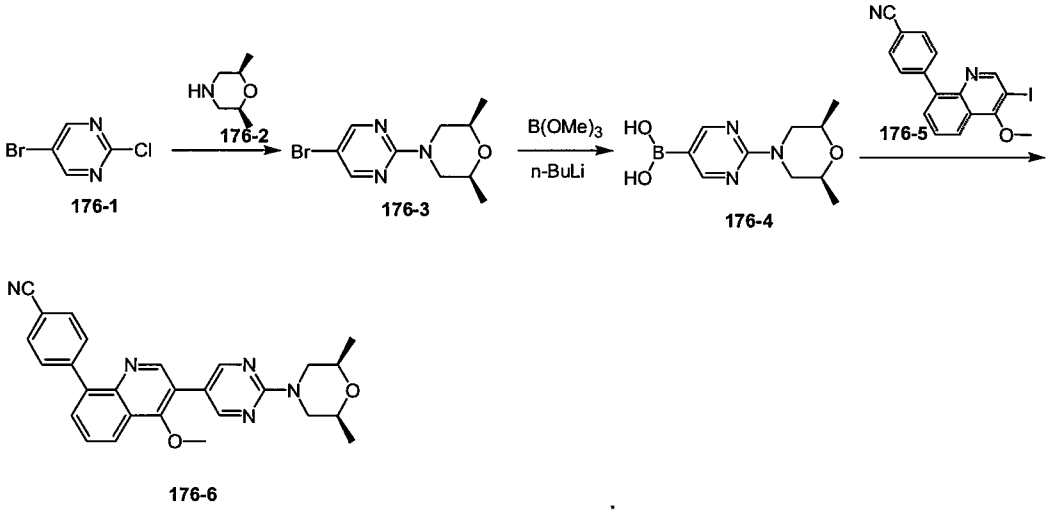
brines, dried over sodium sulfate and concentrated under reduced pressure to deliver compound 175-8 (663 mg, 100%) as yellow solid. The crude product was used in the next step directly without further purification. **MS ESI** calcd for $C_{20}H_{21}BrN_4O_2$ $[M+H]^+$ 429, found 429.

[409] Step 8: A solution of $Pd(dppf)Cl_2$ (117 mg, 0.16 mmol) and sodium carbonate (329 mg, 3.1 mmol) in $THF/H_2O/DMF(10/2/2)$ was added into a solution of compound 175-8 (663 mg, 1.55 mmol), 4-cyanophenyl boric acid (251 mg, 1.7 mmol), stirred at 90°C for 3h. The reaction mixture was filtrated, and partitioned between EtOAc and H_2O, the organic phase was dried and concentrated. The crude product was purified by preparative HPLC to deliver the title compound (90 mg, yield 13%) as yellow solid. **^{1}H NMR** (400 MHz, Methanol-d_4) δ 8.96 (s, 1H), 8.65 (d, J= 9.6 Hz, 1H), 8.56 (d, J= 10.0 Hz, 1H), 8.06 (d, J= 8.4 Hz, 1H), 7.92 (d, J= 8.4 Hz, 1H), 7.81-7.61 (m, 6H), 4.29 (d, J= 12.8 Hz, 2H), 3.81-3.71 (m, 2H), 3.30 (s, 3H), 2.81 (t, J= 12.0 Hz, 2H), 1.28 (d, J= 5.6 Hz, 6H). **MS ESI** calcd for $C_{27}H_{25}N_5O_2$ $[M+H]^+$ 452, found 452.

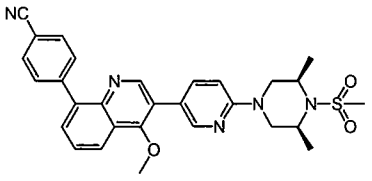
Embodiment 176



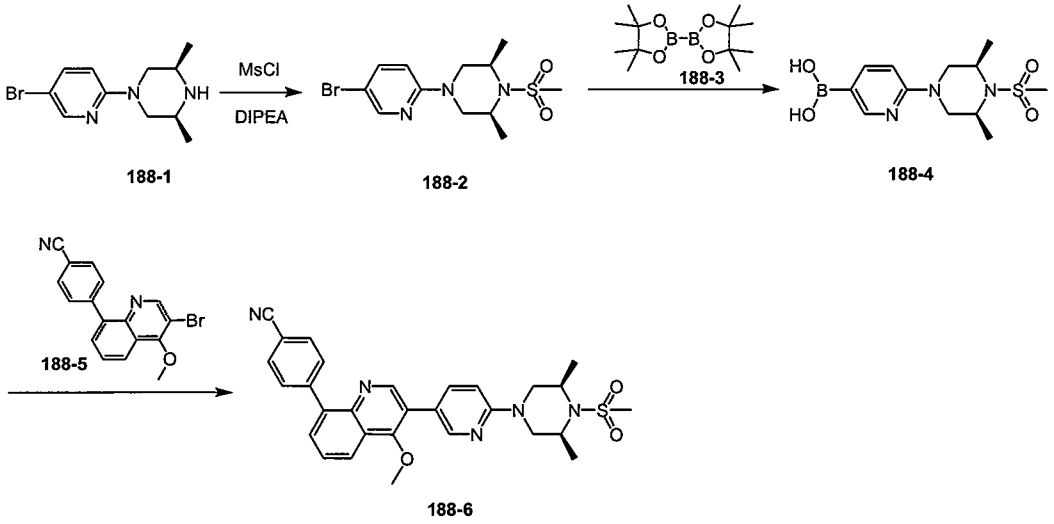
4-(3-(2-((2*S*,6*R*)-2,6-dimethylmorpholino)pyrimidin-5-yl)-4-methoxyquinolin-8-yl) benzonitrile



[410] Step 1: Compound 176-1 (3 g, 15.5 mmol) was dissolved in compound 176-2 (1.8 g, 15.5 mmol), then stirred for 2h at 100°C. The solution was partitioned between EtOAc and H_2O, the organic phase was washed with brines, dried over anhydrous sodium sulfate, filtrated and concentrated under reduced pressure to deliver compound 176-3 (3.1 g, 74%) as white solid. **MS ESI** calcd for $C_{10}H_{14}BrN_3O$ $[M+H]^+$ 272, found 272.



4-(3-(6-(4-methylsulfonyl-3,5-dimethylpiperazin-1-yl)pyridin-3-yl)-4-methoxyquinoli n-8-yl)benzonitrile



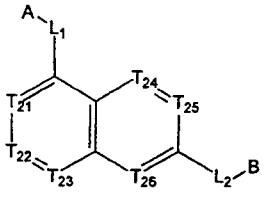
[425] Step 1: MsCl (290 mg, 2.4 mmol) was added dropwise into a solution of compound 188-1 (540 mg, 2 mmol) and DIPEA (774 mg, 6 mmol) in DCM (10 mL), the reaction mixture was stirred at room temperature for 30 min, and monitored by LCMS till the reaction was complete. The mixture was poured into H_2O, extracted with EtOAc, the organic phase was dried over anhydrous sodium sulfate, concentrated to give a crude product, which was purified by silica gel column chromatography (MeOH:EtOAc=5:1) to deliver compound 188-2 (500 mg, yield 72%) as white solid. **MS ESI** calcd for $C_{12}H_{18}BrN_3O_2S[M+H]^+$ 350, found 350.

[426] Step 2: $Pd(dppf)Cl_2$ (102 mg, 0.14 mmol) was added into a solution of compound 188-2 (500 mg, 1.4 mmol), 188-3 (432 mg, 1.7 mmol) and AcOK (300 mg, 2.8 mmol) in dioxane (10 mL), the reaction mixture was stirred at 70°C for 2h, and monitored by LCMS till the reaction was complete. Then the mixture was poured into H_2O, extracted with EtOAc, the organic phase was dried over anhydrous sodium sulfate, concentrated to give a crude product, which was purified by silica gel column chromatography (PE:EtOAc=1:1) to deliver compound 188-4 (460 mg, yield 100%) as yellow solid. **MS ESI** calcd for $C_{12}H_{20}BN_3O_4S[M+H]^+$ 314, found 314.

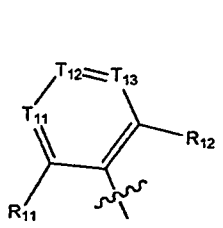
[427] Step 3: The title compound (120 mg, 23%) was synthesized according to the above-mentioned method as yellow solid. **^{1}H NMR** (400 MHz, $CDCl_3$) δ 8.90 (s, 1H), 8.50 (d, J = 2.0 Hz, 1H), 8.33 (d, J = 6.8 Hz, 1H), 7.90-7.73 (m, 7H), 6.82 (d, J = 8.8 Hz, 1H), 4.28-4.22 (m, 4H), 3.80 (s, 3H), 3.29 (dd, J = 4.4, 12.8 Hz 2H), 2.96 (s, 3H), 1.51 (d, J= 7.2 Hz, 6H). **MS ESI** calcd for $C_{29}H_{29}N_5O_3S[M+H]^+$ 528, found 528.

What is claimed is:

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



wherein, A is selected from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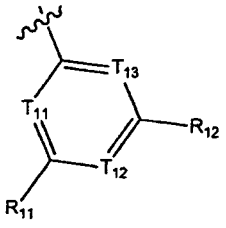
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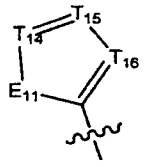
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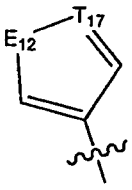
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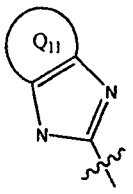
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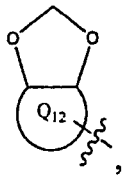

,

$(R_{20})_3C\text{-}E_{13}$-;

each of $T_{11\text{-}17}$ is independently selected from N, $C(R_{13})$;

each of $E_{11\text{-}13}$, L_1, L_2 is independently selected from $N(R_{14})$, $C(=O)N(R_{15})$, $S(=O)_2$ $N(R_{16})$, C=N (R_{17}), $C(R_{18})(R_{19})$, S, C(=O)O, C(=O), C=S, S(=O) or $S(=O)_2$;

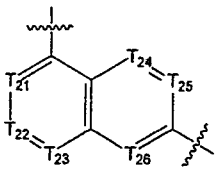
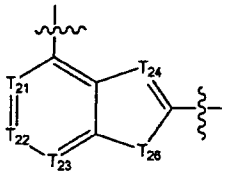
each of L_1, L_2 can also be independently selected from a single bond;

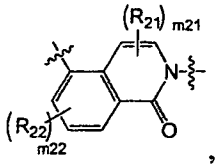
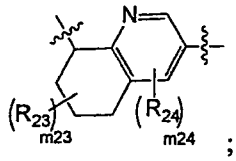
each of $R_{11\text{-}13}$, $R_{18\text{-}19}$ is independently selected from H, F, Cl, Br, I, CN, OH, SH, NH_2, an optionally R_{01}-substituted $C_{1\text{-}6}$ alkyl or heteroalkyl or alkyl-heteroatom group or heteroalkyl-heteroatom group, an optionally R_{02}-substituted $C_{3\text{-}8}$ cyclic group or heterocyclic group or cycle-heteroatom group or heterocycle-heteroatom group]; or selected from a methyl, a trifluoromethyl, a trifluoromethoxy, F, Cl, Br, I, CN, a methylamino carbonyl, a methylsulfonyl, a trifluoromethylsulfonyl, a trifluoromethoxy, a cyclopropyl, a morpholinylsulfonyl, a 2-imidazolyl, a dimethylamino, a *n*-, or *iso*-propyl;

each of $R_{14\text{-}17}$ is independently selected from H, an optionally R_{01}-substituted $C_{1\text{-}6}$ alkyl or $C_{3\text{-}6}$ cycloalkyl;

R_{20} is selected from H, F, Cl, Br, I, CN, OH, SH, NH_2, a methoxy, a methylamino, a dimethylamino;

each of $Q_{11\text{-}12}$ is independently selected from a phenyl, a pyridyl, a thienyl, a furyl;

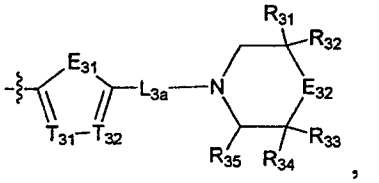
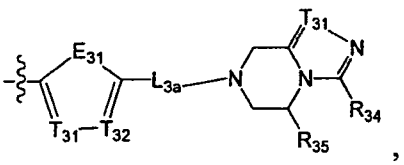
a structural unit  can be replaced by  ,

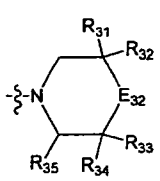
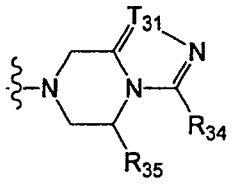
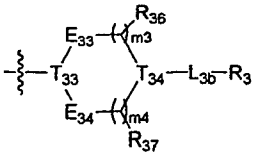
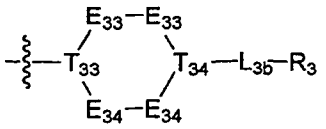
 ,  ;

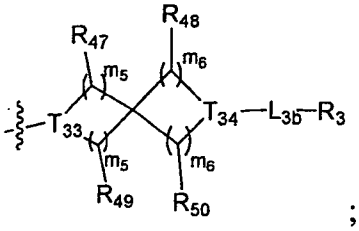
each of $T_{21\text{-}26}$ is independently selected from N, $C(R_{25})$; also T_{25} can be selected from $N^{\oplus}(R_{25})$;

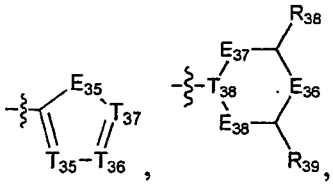
each of $R_{21\text{-}25}$ is independently selected from H, F, Cl, Br, I, CN, OH, SH, NH_2, an optionally R_{01}-substituted $C_{1\text{-}6}$ alkyl or heteroalkyl or alkyl-heteroatom group or heteroalkyl-heteroatom group, an optionally R_{02}-substituted $C_{3\text{-}8}$ cyclic group or heterocyclic group or cycle -heteroatom group or heterocycle-heteroatom group; or selected from F, Cl, Br, I, CN, OH, a methyl, an ethyl, an isopropyl, a methoxy, a trifluoromethyl, a difluoromethoxy, a *n*-, or *iso*-propoxy, a cyclopropyl, a formamido, a methanesulfonylamino, a dimethylamino, a dimethylaminoethoxy, a methylsulfonyl, a carbomethoxy,  ;

each of $m_{21\text{-}24}$ is independently selected from 0,1 or 2;

B is selected from  ,  ,

 ,  ,  ,  ,

 ;

R_3 is selected from  , H, an optionally R_{01}-substituted C_{1-6} alkyl or heteroalkyl or alkyl-heteroatom group or heteroalkyl-heteroatom group, an optionally R_{02}-substituted C_{3-8} cyclic group or heterocyclic group or cycle-heteroatom group or heterocycle-heteroatom group;

each of E_{31-38}, L_{3a}, L_{3b} is independently selected from $N(R_{40})$, $N(R_{40})$ $(CH_2)_{1-3}$, $C(=O)N(R_{40})(CH_2)_{1-3}$, $C(=O)N(R_{41})$, $S(=O)_2$ $N(R_{42})$, $C=N(R_{43})$, $C(R_{44})(R_{45})$, S, $C(=O)O$, $C(=O)$, C=S, S(=O), $S(=O)_2$, O or $C(=O)C(R_{44})$ (R_{45});

each of L_{3a}, L_{3b} can also be independently selected from a single bond or C_{1-5} alkyl;

each of E_{31}, E_{35} can also be independently selected from $-T_{39}=T_{40}-$;

each of T_{31-40} is independently selected from N, $C(R_{46})$;

each of R_{40-43} is independently selected from H, an optionally R_{01}-substituted C_{1-6} alkyl or C_{3-6} cycloalkyl, an optionally R_{01}-substituted C_{1-6} alkyl acyl or C_{3-6} cycloalkyl acyl, an optionally R_{01}-substituted C_{1-6} alkyl sulfonyl or C_{3-6} cycloalkyl sulfonyl, an optionally R_{01}-substituted 5-6 membered aryl acyl, an optionally R_{01}-substituted 5-6 membered heteroaryl acyl, an optionally R_{01}-substituted 5-6 membered aryl sulfonyl, an optionally R_{01}-substituted C_{1-6} alkyoxycarbonyl, an optionally R_{01}-substituted C_{1-6} alkyl amino carbonyl;

each of R_{31-49}, R_{44-50} is independently selected from H, F, Cl, Br, I, CN, OH, SH, NH_2, C(=O)OH, an optionally R_{01}-substituted C_{1-6} alkyl or heteroalkyl or alkyl-heteroatom group or heteroalkyl-heteroatom group, an optionally R_{02}-substituted C_{0-3} alkyl-C_{3-8} cyclic group or heterocyclic group or cycle-heteroatom group or heterocycle-heteroatom group;

each of R_{01}, R_{02} is independently selected from F, Cl, Br, I, CN, OH, SH, NH_2, R_{03};

R_{03} is selected from a C_{1-6} alkyl amino, a di(C_{1-6} alkyl)amino, a C_{1-6} alkoxy, a C_{3-8} cycloalkyl amino, a C_{3-8} heterocycloalkyl amino, a C_{3-8} cycloalkoxy;

the heteroatom or the heteroatom group is independently selected from $C(=O)NR_{04}$, $N(R_{05})$, $C=N(R_{06})$, O, S, $C(=O)O$, $C(=O)$, C=S, S(=O), $S(=O)_2$ and/ or $S(=O)_2$ $N(R_{07})$;

each of R_{04-07} is independently selected from H, R_{08};

R_{08} is selected from a C_{1-6} alkyl or a C_{3-8} cycloalkyl;

R_{03}, R_{08} are optionally substituted by R_{001}, R_{001} is selected from OH, $N(CH_3)_2$, $NH(CH_3)$, NH_2, F, Cl, Br, I, CN, a methyl, a methoxy;

a number of R_{01}, R_{02}, R_{001}, the heteroatom or the heteroatom group is independently selected from 0, 1, 2, or 3;

each of m_3, m_4 is independently selected from 0 or 1, when m_3 or m_4 is selected from 0, the corresponding structural unit represents a single bond just for the linkage;

each of m_5, m_6 is independently selected from 1 or 2;

or, R_{31} and R_{32}, R_{31} and R_{33}, R_{31} and R_{35}, E_{33} and E_{34} form a linking bond $(CH_2)_{1-6}$ together, or $(CH_2)_2$, $(CH_2)_3$, $(CH_2)_4$, $(CH_2)_5$;

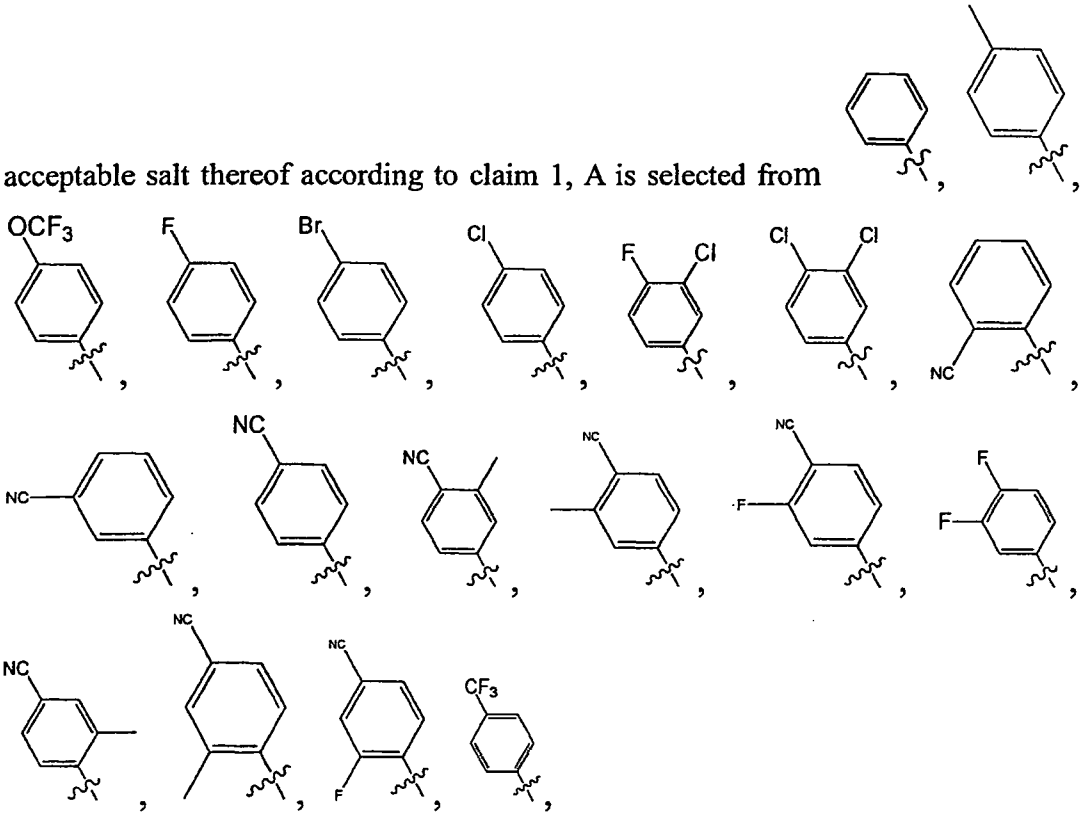
or, R_{32} and R_{32} connect with each other to form a 5-membered carbocyclic ring or a heterocyclic ring;

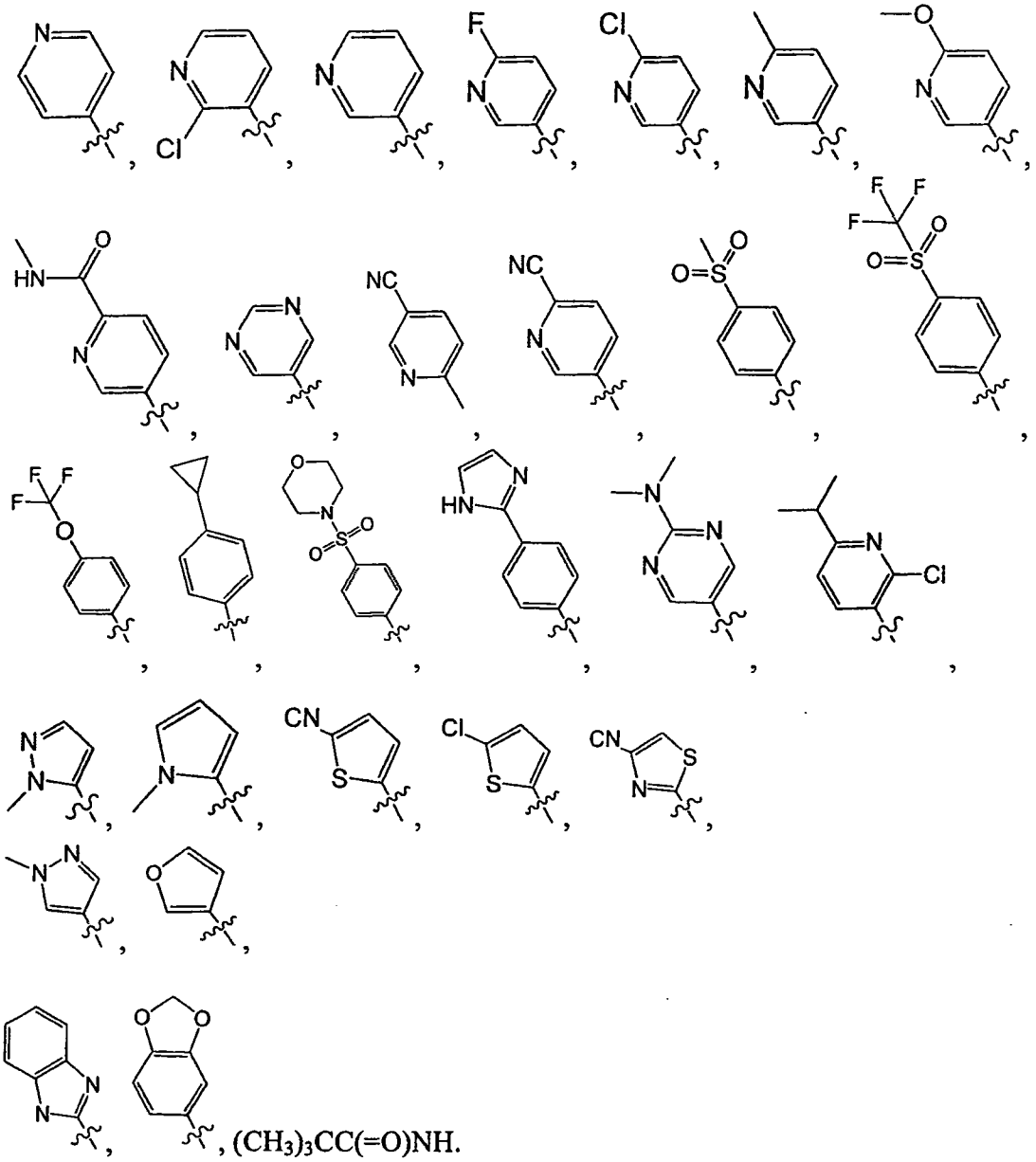
or, when E_{32} is selected from $N(R_{40})$ or O, R_{31} and R_{34} present a *cis*-arrangement; when E_{32} is selected from $C(R_{43})(R_{44})$, R_{31} and R_{34} present a *trans*-arrangement; when T_{34} is selected from N, R_{36} and R_{37} present a *cis*-arrangement; when T_{34} is selected from $C(R_{45})$, R_{36} and R_{37} present a *trans*-arrangement;

perferably,

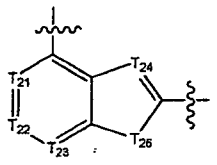
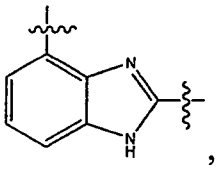
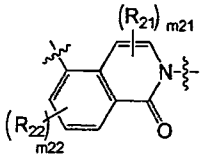
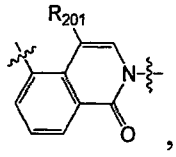
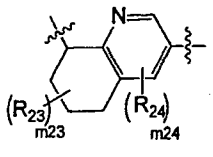
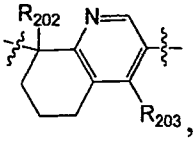
the C_{3-8} cyclic group or heterocyclic group or cycle-heteroatom group or heterocycle-heteroatom group is selected from a phenyl, a pyridyl, a thienyl, a furyl, an imidazolyl, an oxazolyl, a thiazolyl, an isothiazolyl.

2. The compound represented by formula (I), or the pharmaceutically acceptable salt thereof according to claim 1, A is selected from





, $(CH_3)_3CC(=O)NH$.

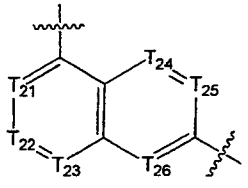
3. The compound represented by formula (I), or the pharmaceutically acceptable salt thereof according to claim 1, wherein the structural unit  is selected from  ,  is selected from  , the structural unit  is selected from  , wherein,

each of R_{201}, R_{202}, R_{203} is independently selected from H, F, Cl, Br, I, CN, OH, SH,

NH_2, an optionally R_{01}-substituted C_{1-6} alkyl or heteroalkyl or alkyl-heteroatom group or heteroalkyl-heteroatom group, an optionally R_{02}-substituted C_{3-8} cyclic group or heterocyclic group or cycle-heteroatom group or heterocycle-heteroatom group;

or, R_{201} is selected from methyl, F, Cl, Br, I; each of R_{202}, R_{203} is independently selected from a C_{1-6} alkoxyl, or a methoxy.

4. The compound represented by formula (I), or the pharmaceutically acceptable salt thereof according to claim 1 or 3, wherein the structural unit



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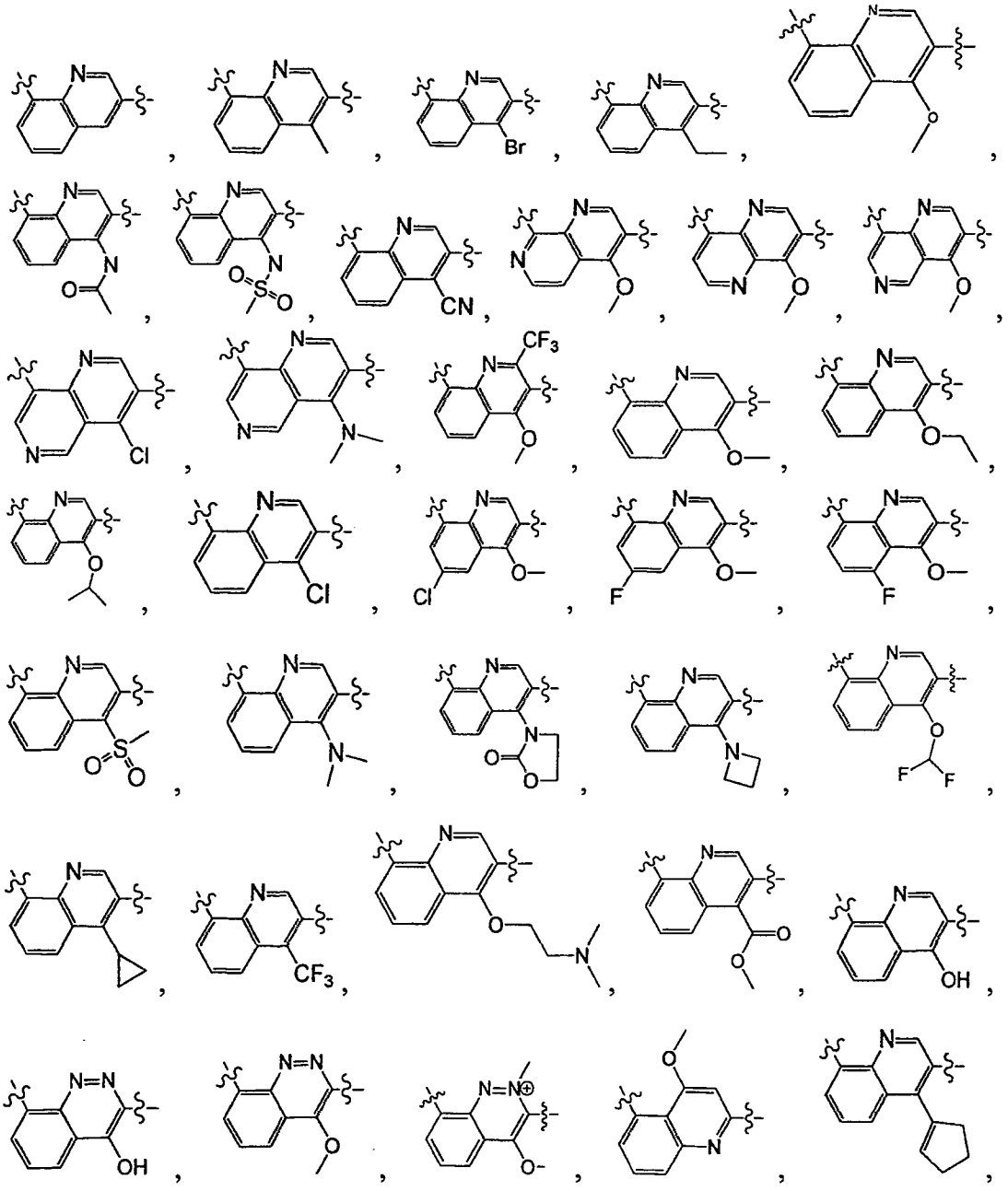
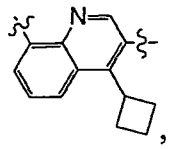
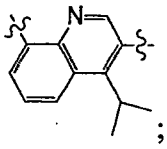
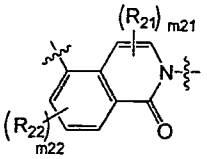
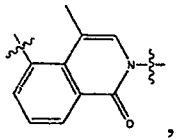
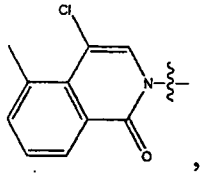
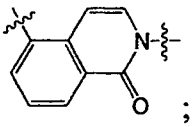
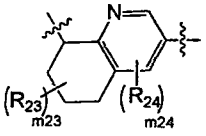
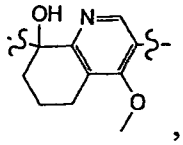
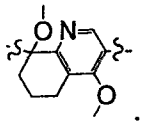
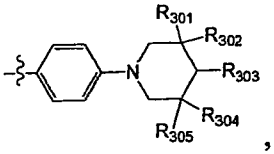


 ,  ;

the structural unit  is selected from:  ,  ,

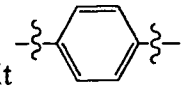
 ;

the structural unit  is selected from:  ,  .

5. The compound represented by formula (I), or the pharmaceutically acceptable salt thereof according to claim 1, wherein B is selected from  , wherein,

each of $R_{301-305}$ is independently selected from H, OH, NH_2, F, Cl, Br, I, CN, an optionally R_{3001}-substituted C_{1-3} alkyl or alkoxy or alkyl amino or cyclopropyl;

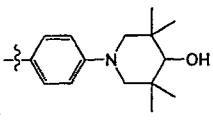
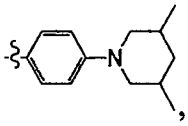
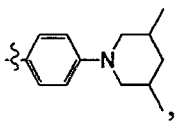
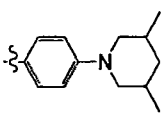
R_{3001} is selected from OH, $N(CH_3)_2$, $NH(CH_3)$, NH_2, F, Cl, Br, I, CN, a methyl, a methoxy, the number of R_{3001} is selected from 1, 2 or 3;

or, the structural unit  in the general structure can be replaced by a pyridyl, a thienyl, a furyl;

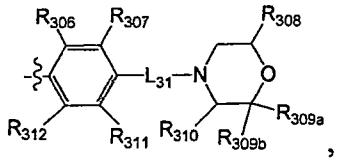
or,

each of $R_{301-305}$ is independently selected from a methyl, H, OH, NH_2, F, Cl, Br, I, CN;

or,

B is selected from  ,  ,  ,  .

6. The compound represented by formula (I), or the pharmaceutically acceptable salt thereof according to claim 1, wherein, B is selected from



, wherein,

each of $R_{306-308}$, R_{309a}, R_{309b}, $R_{310-312}$ is independently selected from H, OH, NH_2, F, Cl, Br, I, CN, an optionally R_{3001}-substituted C_{1-3} alkyl or alkoxy or alkyl amino or cyclopropyl;

R_{3001} is selected from OH, $N(CH_3)_2$, $NH(CH_3)$, NH_2, F, Cl, Br, I, CN, a methyl, a methoxy, the number of R_{3001} is selected from 1, 2 or 3;

L_{31} is selected from a single bond, $R_{3002}N(R_{3003})R_{3004}$, O, S, C(=O)O, C(=O), C=S, S(=O) and/or $S(=O)_2$, R_{3002} is selected from a single bond or C(=O);

R_{3003} is selected from H, a C_{1-3} alkyl or a cyclopropyl;

R_{3004} is selected from $(CH_2)_{0-3}$;

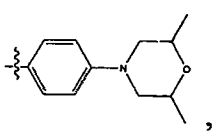
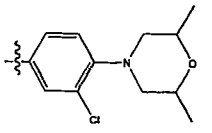
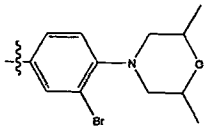
or, R_{308} and R_{309a}, R_{308} and R_{310} form a linking bond $(CH_2)_{1-3}$ together;

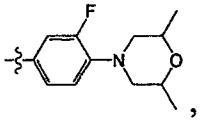
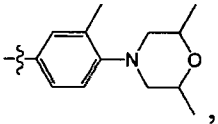
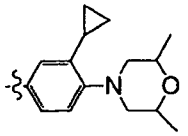
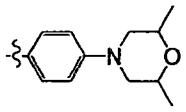
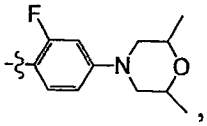
or,

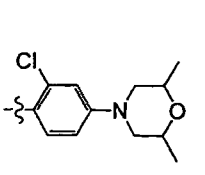
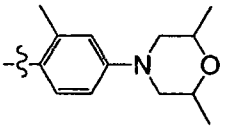
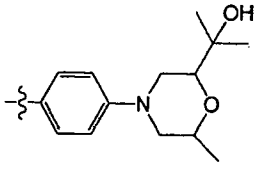
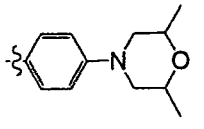
the R_{308} and R_{310} form a linking bond CH_2 together, R_{308} and R_{309a} form a linking bond CH_2CH_2 together;

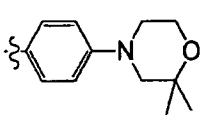
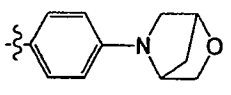
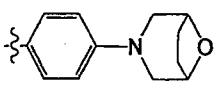
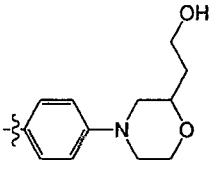
or, each of $R_{306-308}$, R_{309a}, R_{309b}, $R_{310-312}$ is independently selected from a methyl, a cyclopropyl, $C(CH_3)_2(OH)$, CH_2CH_2OH, $CH_2N(CH_3)_2$, H, OH, NH_2, F, Cl, Br, I, CN;

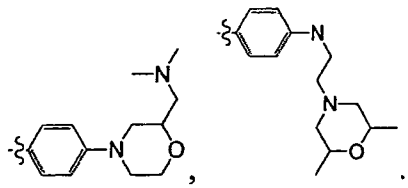
L_{31} is selected from a single bond, $NHCH_2CH_2$;

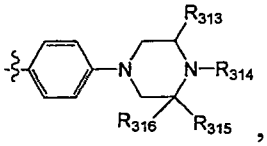
or, B is selected from  ,  ,  ,

 ,  ,  ,  ,  ,

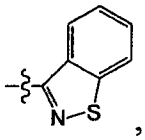
 ,  ,  ,  ,

 ,  ,  ,  ,



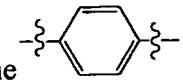
7. The compound represented by formula (I), or the pharmaceutically acceptable salt thereof according to claim 1, wherein, B is selected from  , wherein,

each of R_{313}, R_{315}, R_{316} is independently selected from H, OH, NH_2, F, Cl, Br, I, CN, an optionally R_{3001}-substituted C_{1-3} alkyl or alkoxy or alkyl amino or cyclopropyl;

R_{314} is selected from H, OH, NH_2, F, Cl, Br, I, CN, an optionally R_{3001}-substituted C_{1-3} alkyl or alkoxy or alkyl amino or cyclopropyl, $(CH_2)_{0-3}R_{3005}$,  , wherein R_{3005} is optionally substituted by R_{3001};

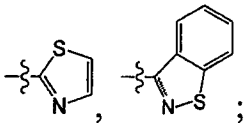
R_{3005} is selected from a C_{3-6} cycloalkyl, a phenyl, a pyridyl, a thienyl, a furyl, an imidazolyl, an oxazolyl, a thiazolyl, an isothiazolyl, each of the above-mentioned group is optionally fused with a benzene ring;

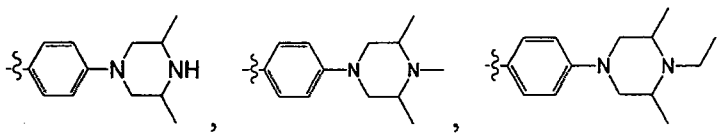
R_{3001} is selected from OH, $N(CH_3)_2$, $NH(CH_3)$, NH_2, F, Cl, Br, I, CN, a methyl, a methoxy, the number of R_{3001} is selected from 1, 2 or 3;

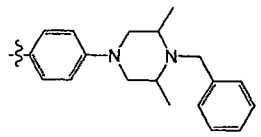
or, the  in the general structure can be replaced by a pyridyl, a thienyl, a furyl, an imidazolyl, an oxazolyl, a thiazolyl, an isothiazolyl;

or,

each of R_{313}, R_{315}, R_{316} is independently selected from H, a methyl;

R_{314} is selected from H, a methyl, an ethyl, a phenyl methylene, a cyclopropyl methylene, a methoxyphenyl,  ;

or, B is selected from  ,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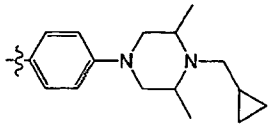
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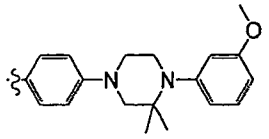
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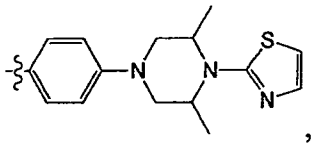
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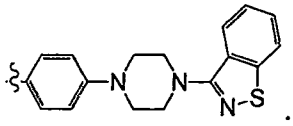
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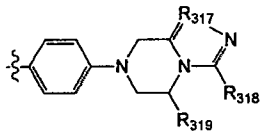
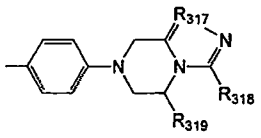
8. The compound represented by formula (I), or the pharmaceutically acceptable salt thereof according to claim 1, wherein B is selected from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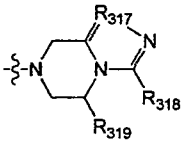
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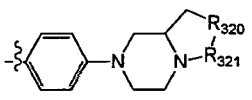
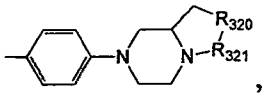


, wherein,

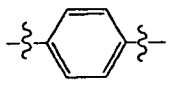
R_{317} is selected from CR_{3006} or N;

each of R_{318}, R_{319}, $R_{3006\text{-}3008}$ is independently selected from H, OH, NH_2, F, Cl, Br, I, CN, an optionally R_{3001}-substituted $C_{1\text{-}3}$ alkyl or alkoxy or alkyl amino or cyclopropyl;

each of $R_{320\text{-}321}$ is independently selected from $C(R_{3007})(R_{3008})$, O, $CON(R_{3009})$, $N(R_{3010})$, C=N (R_{3011}), S, C(=O)O, C(=O), C=S, S(=O) and/or $S(=O)_2$;

each of $R_{3009\text{-}3011}$ is independently selected from H, an optionally R_{3001}-substituted $C_{1\text{-}3}$ alkyl or cyclopropyl;

R_{3001} is selected from OH, $N(CH_3)_2$, $NH(CH_3)$, NH_2, F, Cl, Br, I, CN, a methyl, a methoxyl, the number of R_{3001} is selected from 1, 2 or 3;

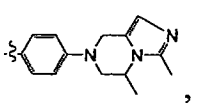
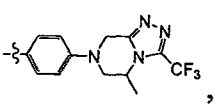
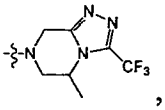
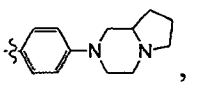
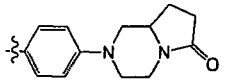
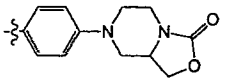
or, the  in the general structure can be replaced by a pyridyl, a thienyl, a furyl, an imidazolyl, an oxazolyl, a thiazolyl, an isothiazolyl;

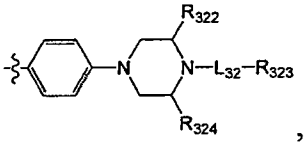
or,

R_{317} is selected from CR_{3006} or N; each of R_{3006}, R_{318}, R_{319} is selected from a methyl, a trifluoromethyl;

each of $R_{320\text{-}321}$ is independently selected from CH_2, O, C(=O);

or,

B is selected from  ,  ,  ,  ,  ,  .

9. The compound represented by formula (I), or the pharmaceutically acceptable salt thereof according to claim 1, wherein B is selected from  ,

wherein,

L_{32} is selected from $C(R_{3007})(R_{3008})$, O, $CON(R_{3009})$, $N(R_{3010})$, $C{=}N(R_{3011})$, S, C(=O)O, C(=O), C=S, S(=O) and/or $S(=O)_2$;

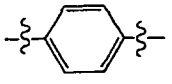
R_{323} is selected from a C_{1-6} alkyl, a C_{3-6} cycloalkyl, a phenyl, a pyridyl, an imidazolyl, a thienyl, a furyl, an oxazolyl, a thiazolyl, an isothiazolyl, each of the above-mentioned group is optionally substituted by R_{3012};

each of R_{322}, R_{324}, R_{3007}, R_{3008}, R_{3012} is independently selected from H, OH, NH_2, F, Cl, Br, I, CN, an optionally R_{3001}-substituted C_{1-3} alkyl or alkoxy or alkyl amino or cyclopropyl;

each of $R_{3009\text{-}3011}$ is independently selected from H, an optionally R_{3001}-substituted C_{1-3} alkyl or cyclopropyl;

R_{3001} is selected from OH, $N(CH_3)_2$, $NH(CH_3)$, NH_2, F, Cl, Br, I, CN, a methyl, a methoxy;

the number of each of R_{3001}, R_{3012} is selected from 1, 2 or 3;

or, the  in the general structure can be replaced by a pyridyl, a thienyl, a furyl, an imidazolyl, an oxazolyl, a thiazolyl, an isothiazolyl;

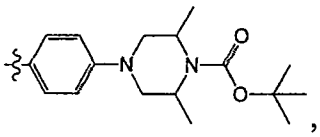
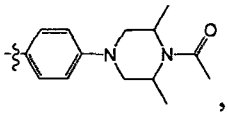
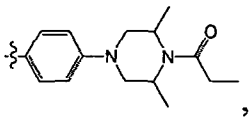
or,

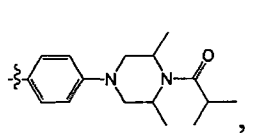
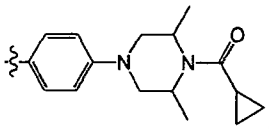
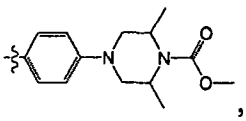
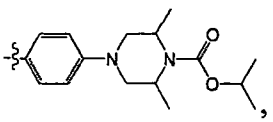
each of R_{322}, R_{324} is independently selected from H, a methyl, a phenyl, $C(CH_3)_2OH$;

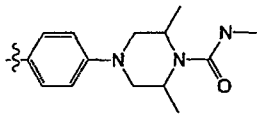
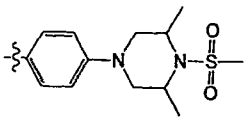
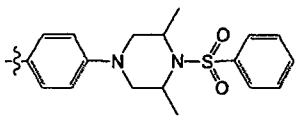
L_{32} is selected from C(=O), $S(=O)_2$;

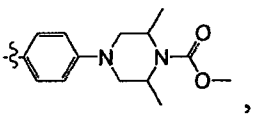
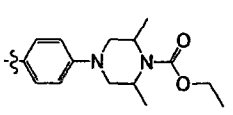
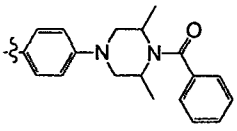
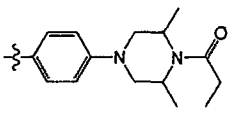
or, R_{323} is selected from a *tert*-butoxy, a methyl, a methoxy, an ethyl, an ethoxy, an propoxy, an isopropyl, a *n*-propyl, an isopropoxy, a cyclopropyl, a methylamino, a phenyl, a pyridyl, a 3-methyl pyridyl, an imidazolyl, $C(CH_3)_2OH$;

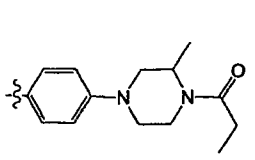
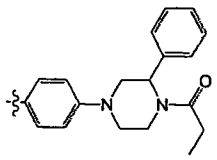
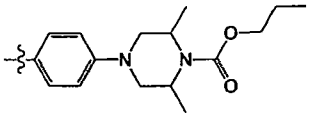
or,

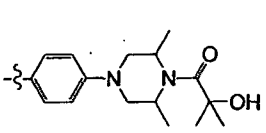
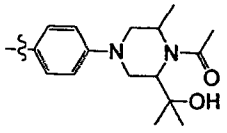
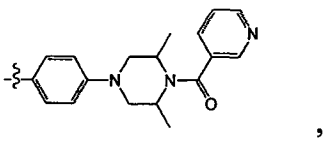
B is selected from  ,  ,  ,

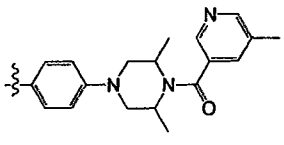
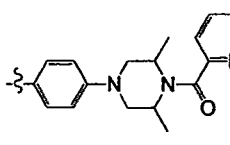
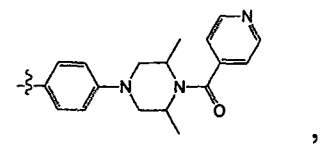
 ,  ,  ,  ,

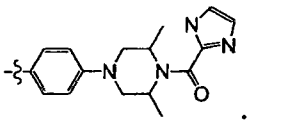
 ,  ,  ,

 ,  ,  ,  ,

 ,  ,  ,

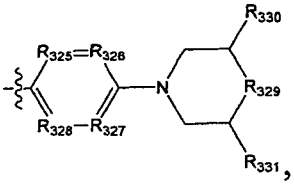
 ,  ,  ,

 ,  ,  ,

 , , ,

.

10. The compound represented by formula (I), or the pharmaceutically acceptable salt thereof according to claim 1, wherein B is selected from

 ,

wherein,

one or two of $R_{325\text{-}328}$ is selected from N, the rest are selected from $C(R_{3013})$;

R_{329} is selected from $N(R_{3014})$, O, $C(R_{3015})(R_{3016})$, $CON(R_{3017})$, $N(R_{3018})$, C=N (R_{3019}),

S, C(=O)O, C(=O), C=S, S(=O) and/or $S(=O)_2$;

R_{3014} is selected from $C(=O)R_{3020}$, $S(=O)_2R_{3020}$, a thiazolyl, an isothiazolyl, a phenyl, a pyridyl, an imidazolyl, a thienyl, a furyl, an oxazolyl

R_{3020} is selected from an optionally R_{3001}-substituted C_{1-3} alkyl or alkoxyl;

each of R_{3013}, R_{3015}, R_{3016}, $R_{330-331}$ is independently selected from H, OH, NH_2, F, Cl, Br, I, CN, C(=O)OH, an optionally R_{3001}-substituted C_{1-3} alkyl or alkoxy or alkyl amino or cyclopropyl;

each of $R_{3017-3019}$ is independently selected from H, an optionally R_{3001}-substituted C_{1-3} alkyl or cyclopropyl;

R_{3001} is selected from OH, $N(CH_3)_2$, $NH(CH_3)$, NH_2, F, Cl, Br, I, CN, a methyl, a methoxy, the number of R_{3001} is selected from 1, 2 or 3;

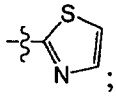
or, R_{330} and R_{331} form a linking bond $(CH_2)_{1-3}$ together;

or, when R_{329} is selected from $N(R_{3014})$ or O, R_{330} and R_{331} present a *cis*-arrangement; when R_{329} is selected from $C(R_{3015})(R_{3016})$, R_{330} and R_{331} present a *trans*-arrangement;

or,

one or two of $R_{325-328}$ is selected from N, the rest are selected from CH, CC(=O)OH or CCH_3;

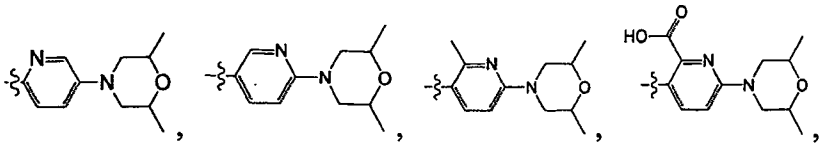
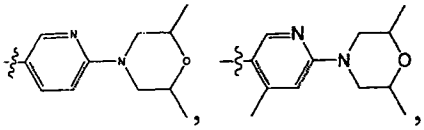
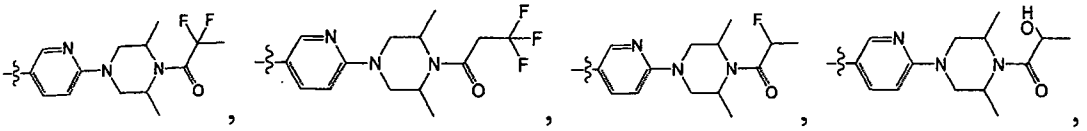
R_{329} is selected from $N(R_{3014})$, O;

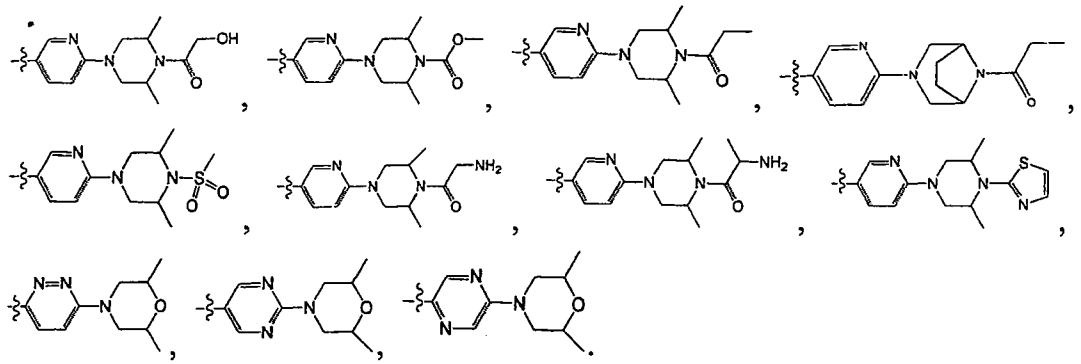
R_{3014} is selected from $C(=O)R_{3020}$,  ;

R_{3020} is selected from $C(CH_3)(F)_2$, CH_3, CF_3, CH_2CH_3, CH_2CF_3, $CH(F)(CH_3)$, $CH(OH)(CH_3)$, $CH_2(OH)$, $CH(NH_2)(CH_3)$, a methoxy, an ethoxy, an amino methyl;

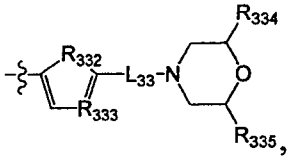
$R_{330-331}$ is selected from a methyl;

or,

B is selected from  ,  ,  .



11. The compound represented by formula (I), or the pharmaceutically acceptable salt thereof according to claim 1, wherein B is selected from

 , wherein,

R_{332} is selected from S, $N(R_{3021})$, O, $C(R_{3022})(R_{3023})$, $CON(R_{3024})$, $N(R_{3025})$, C=N (R_{3026}), S, C(=O)O, C(=O), C=S, S(=O) and/or $S(=O)_2$;

L_{33} is selected from a single bond, C(=O), S, O, $C(R_{3022})$(R_{3023}), $CON(R_{3024})$, $N(R_{3025})$, $C=N(R_{3026})$, S, C(=O)O, C=S, S(=O) and/or $S(=O)_2$;

R_{333} is selected from N, $C(R_{3027})$;

each of R_{3027}, R_{334}, R_{335}, R_{3022}, R_{3023} is independently selected from H, OH, NH_2, F, Cl, Br, I, CN, an optionally R_{3001}-substituted C_{1-3} alkyl or alkoxy or alkyl amino or cyclopropyl;

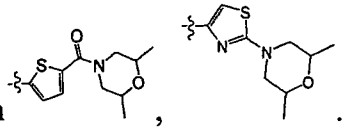
each of R_{3021}, $R_{3024-3026}$ is independently selected from H, an optionally R_{3001}-substituted C_{1-3} alkyl or cyclopropyl;

R_{3001} is selected from OH, $N(CH_3)_2$, $NH(CH_3)$, NH_2, F, Cl, Br, I, CN, a methyl, a methoxy, the number of R_{3001} is selected from 1, 2 or 3;

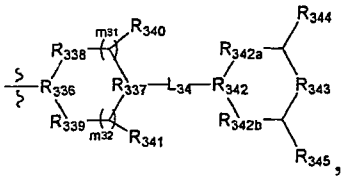
or,

R_{332} is selected from S, R_{333} is selected from N or CH, L_{33} is selected from a single bond, C(=O), each of R_{334}, R_{335} is selected from a methyl;

or,

B is selected from  .

12. The compound represented by formula (I), or the pharmaceutically acceptable salt thereof according to claim 1, wherein B is selected from


, wherein,

each of R_{336}, R_{337}, R_{342} is independently selected from N or $C(R_{3028})$;

each of R_{338}, R_{339} is selected from $C(R_{3029})$ (R_{3030}), or R_{338} and R_{339} connect to the same $(CH_2)_{1-3}$ together to form a ring;

each of m_{31}, m_{32} is independently selected from 0 or 1;

each of R_{342a}, R_{342b}, R_{343}, L_{34} is independently selected from a single bond, $C(=O)N(R_{3031})$, $C(=O)C(R_{3032})(R_{3033})$, $C(R_{3034})(R_{3035})$, $CON(R_{3036})$, $N(R_{3037})$, $C=N(R_{3038})$, O, S, C(=O)O, C(=O), C=S, S(=O) and/or $S(=O)_2$;

L_{34} can also be selected from a single bond;

each of R_{340}, R_{341}, R_{344}, R_{345}, R_{3028}, R_{3029}, R_{3030}, $R_{3032-3035}$ is independently selected from H, OH, NH_2, F, Cl, Br, I, CN, an optionally R_{3001}-substituted C_{1-3} alkyl or alkoxy or alkyl amino or cyclopropyl;

each of R_{3031}, $R_{3036-3038}$ is independently selected from H, an optionally R_{3001}-substituted C_{1-3} alkyl or cyclopropyl;

R_{3001} is selected from OH, $N(CH_3)_2$, $NH(CH_3)$, NH_2, F, Cl, Br, I, CN, a methyl, a methoxy, the number of R_{3001} is selected from 1, 2 or 3;

or,

each of R_{336}, R_{337}, R_{342} is independently selected from N or CH;

each of R_{338}, R_{339} is independently selected from CH_2, or R_{338} and R_{339} connect to the same CH_2CH_2 together to form a ring;

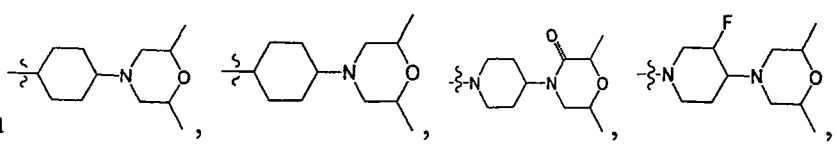
each of m_{31}, m_{32} is independently selected from 0 or 1;

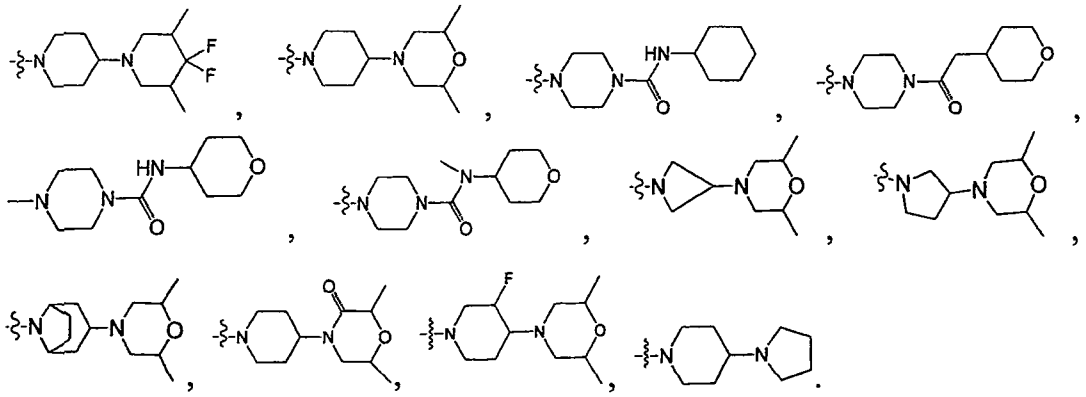
L_{34} is independently selected from a single bond, C(=O)NH, $C(=O)N(CH_3)$, $C(=O)CH_2$;

each of R_{340}, R_{341}, R_{344}, R_{345} is independently selected from H or a methyl;

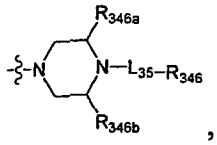
each of R_{342a}, R_{342b} is independently selected from C(=O) or CH_2;

or,

B is selected from 



13. The compound represented by formula (I), or the pharmaceutically acceptable salt thereof according to claim 1, wherein B is selected from



, wherein,

L_{35} is independently selected from a single bond, $C(=O)N(R_{3031})$, $C(=O)C(R_{3032})(R_{3033})$, $C(R_{3034})(R_{3035})$, $N(R_{3037})$, $C=N(R_{3038})$, O, S, C(=O)O, C(=O), C=S, S(=O) and/or $S(=O)_2$;

each of $R_{3032\text{-}3035}$ is independently selected from H, OH, NH_2, F, Cl, Br, I, CN, an optionally R_{3001}-substituted $C_{1\text{-}3}$ alkyl or alkoxy or alkyl amino or cyclopropyl;

each of R_{346}, R_{346a}, R_{346b} is independently selected from H, an optionally R_{3001}-substituted $C_{1\text{-}3}$ alkyl or alkoxy or alkyl acyl or alkyl sulfonyl or alkyl amino or cyclopropyl, an optionally R_{3001}-substituted cyclopropyl acyl or cyclopropyl sulfonyl;

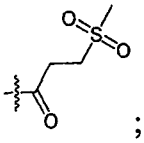
R_{346} can also be selected from a phenyl, a pyridyl, an imidazolyl, a thienyl, a furyl, an oxazolyl, a thiazolyl, an isothiazolyl, a pyrrolidyl, a 2-pyridonyl;

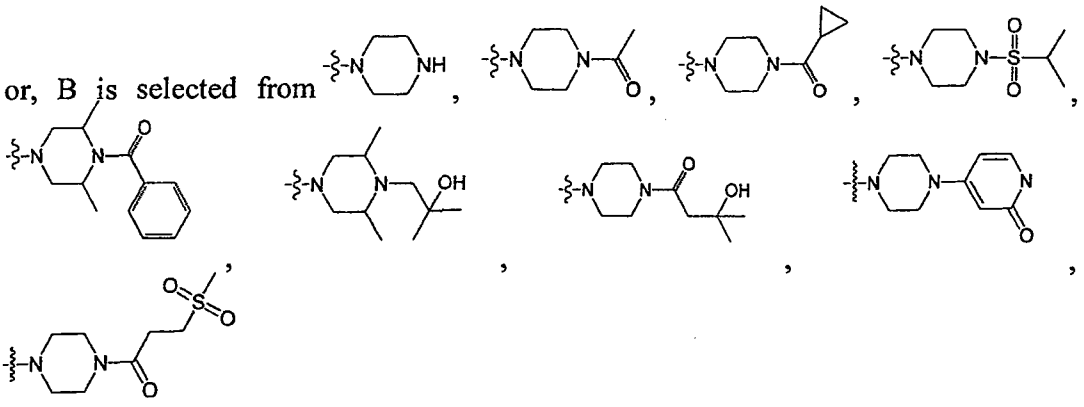
each of R_{3031}, R_{3037}, R_{3038} is independently selected from H, an optionally R_{3001}-substituted $C_{1\text{-}3}$ alkyl or cyclopropyl;

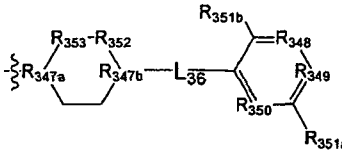
R_{3001} is selected from OH, $N(CH_3)_2$, $NH(CH_3)$, NH_2, F, Cl, Br, I, CN, $-S(=O)CH_3$, $-S(=O)_2CH_3$, a methyl, a methoxy, the number of R_{3001} is selected from 1, 2 or 3;

or,

L_{35} is selected from a single bond, C(=O), CH_2;

or, R_{346} is selected from H, a methyl, a phenyl, $C(CH_3)_2(OH)$, $CH_2C(CH_3)_2(OH)$, a cyclopropyl acyl, an isopropyl sulfonyl, a pyrrolidyl, a 2-pyridonyl,  ;

or, B is selected from 

14. The compound represented by formula (I), or the pharmaceutically acceptable salt thereof according to claim 1, wherein B is selected from  , wherein,

each of R_{347a}, R_{347b} is independently selected from N or $C(R_{3028})$;

none, one or two of $R_{348-350}$ is selected from N, the rest are selected from $C(R_{3039})$;

each of R_{352}, R_{353}, L_{36} is independently selected from a single bond, $-C(=O)N(R_{3031})-$, $-C(=O)C(R_{3032})$ $(R_{3033})-$, $C(R_{3034})(R_{3035})$, $CON(R_{3036})$, $N(R_{3037})$, $C=N(R_{3038})$, O, S, $C(=O)O$, $C(=O)$, C=S, S(=O) and /or $S(=O)_2$;

L_{36} can also be selected from a single bond;

each of R_{3028}, $R_{3032-3035}$, R_{3039}, R_{351a}, R_{351b} is independently selected from H, OH, NH_2, F, Cl, Br, I, CN, an optionally R_{3001}-substituted C_{1-3} alkyl or alkoxy or alkyl amino or cyclopropyl;

each of R_{3031}, $R_{3036-3038}$ is independently selected from H, an optionally R_{3001}-substituted C_{1-3} alkyl or cyclopropyl;

R_{3001} is selected from OH, $N(CH_3)_2$, $NH(CH_3)$, NH_2, F, Cl, Br, I, CN, a methyl, a methoxy, the number of R_{3001} is selected from 1, 2 or 3;

or,

L_{36} is selected from a single bond, $C(=O)NH$, $C(=O)CH_2$;

each of R_{347a}, R_{347b} is independently selected from N, CH or C(OH);

none, one or two of $R_{348-350}$ is selected from N, the rest are selected from $C(R_{3039})$;

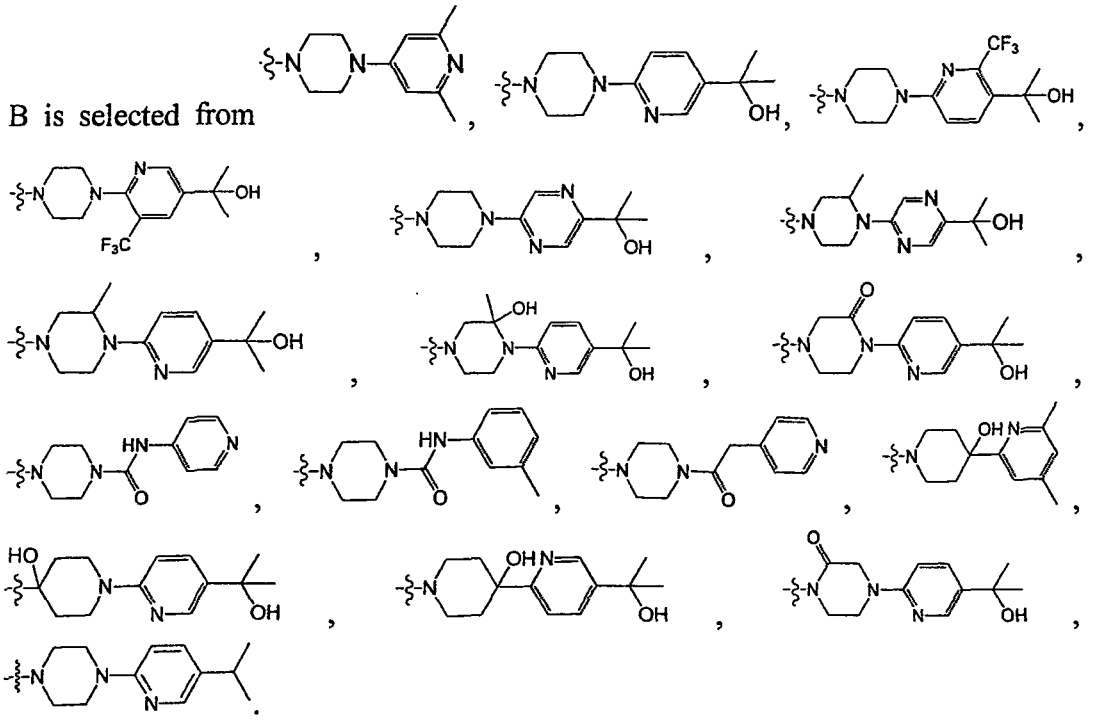
R_{3039} is selected from H, a methyl, a trifluoromethyl, $C(CH_3)_2(OH)$;

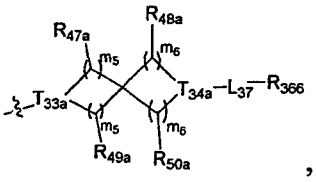
each of R_{351a}, R_{351b} is independently selected from H, a methyl, a trifluoromethyl, an

isopropyl;

each R_{352}, R_{353} is independently selected from C(=O), $C(CH_3)(OH)$;

or,

B is selected from 

15. The compound represented by formula (I), or the pharmaceutically acceptable salt thereof according to claim 1, wherein B is selected from  , wherein,

each of T_{33a}, T_{34a} is independently selected from N, CH or $C(R_{4001})$

L_{37} is independently selected from a single bond, a C_{1-3} alkyl, O, S, C(=O), C=S, S(=O) and/or $S(=O)_2$;

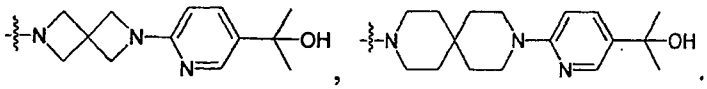
each of R_{366}, R_{47a}, R_{48a}, R_{49a}, R_{50a} is independently selected from H, an optionally R_{4001}-substituted C_{1-3} alkyl or alkoxy or alkyl acyl or alkyl sulfonyl or alkyl amino or cyclopropyl, an optionally R_{4001}-substituted cyclopropyl acyl or cyclopropyl sulfonyl;

R_{366} can also be selected from the group consisting of a phenyl, a pyridyl, an imidazolyl, a thienyl, a furyl, an oxazolyl, a thiazolyl and an isothiazolyl which is optionally substituted by R_{4001};

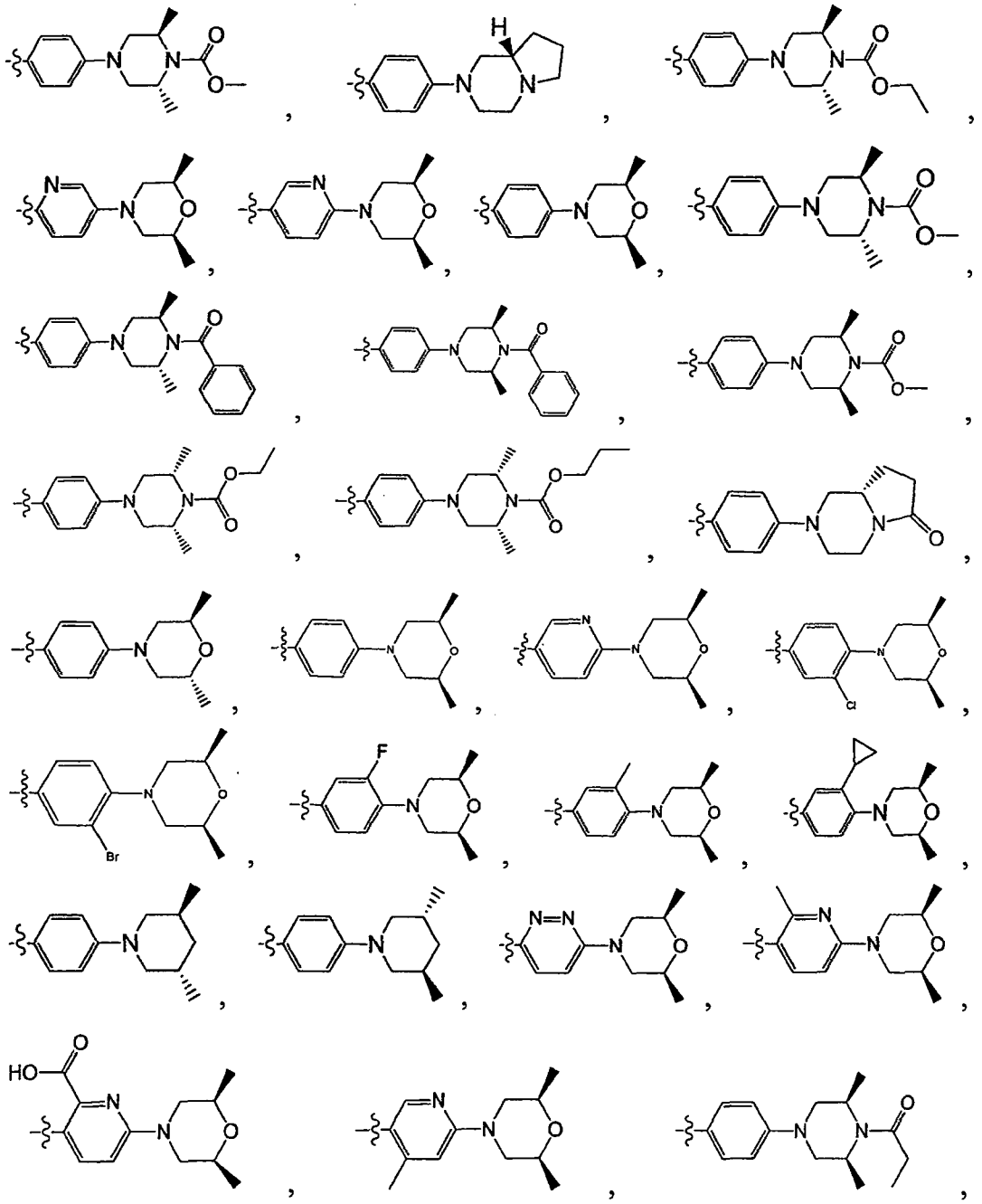
R_{4001} is selected from OH, $N(CH_3)_2$, $NH(CH_3)$, NH_2, $C(CH_3)_2(OH)$, F, Cl, Br, I, CN, a methyl, a methoxy, the number of R_{4001} is selected from 1, 2 or 3;

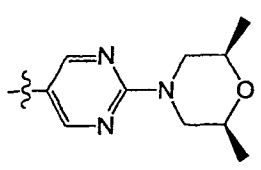
or,

L_{37} is selected from a single bond, C(=O), CH_2;

or, B is selected from  .

16. The compound represented by formula (I), or the pharmaceutically acceptable salt thereof according to claim 1, wherein B is selected from the group consisting of

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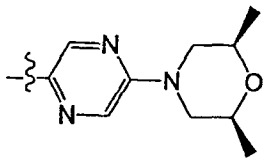
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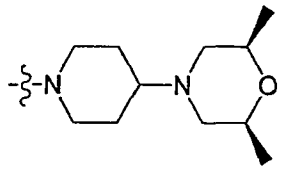
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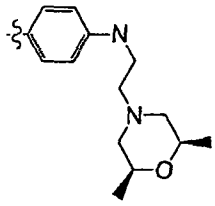
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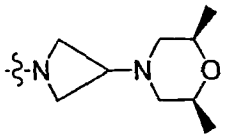
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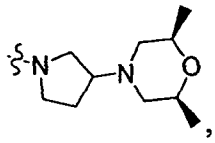
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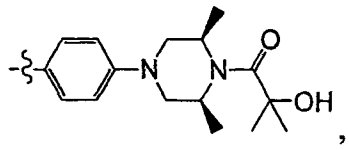
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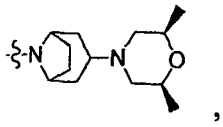
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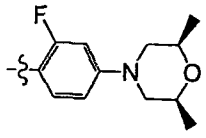
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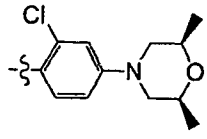
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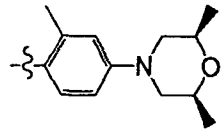
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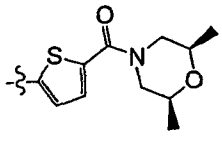
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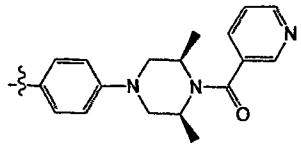
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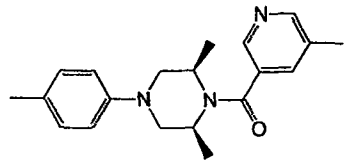
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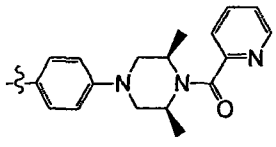
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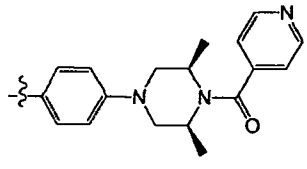
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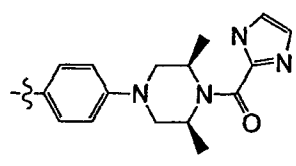
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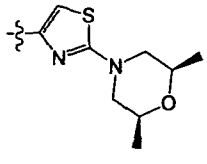
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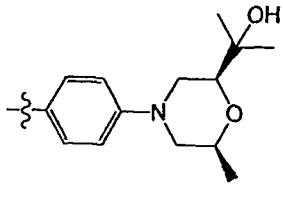
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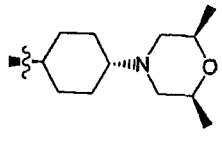
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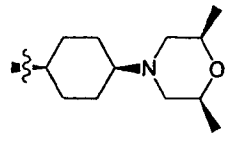
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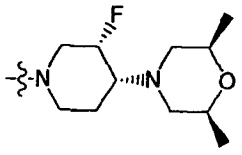
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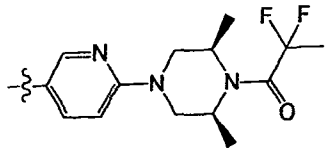
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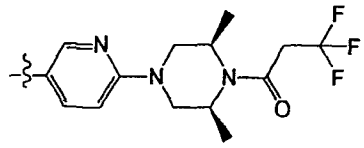
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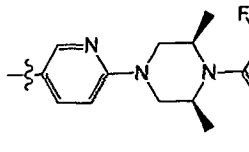
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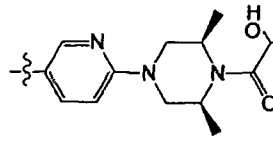
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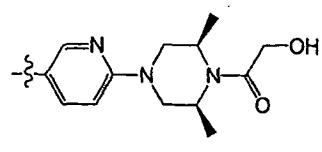
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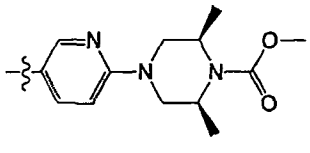
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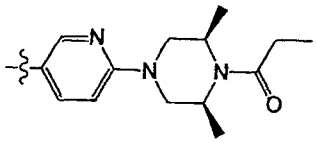
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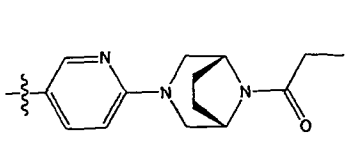
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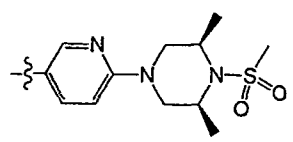
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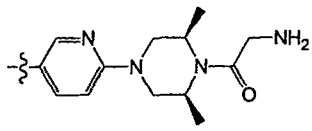
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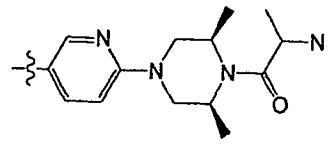
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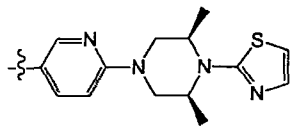
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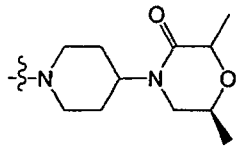
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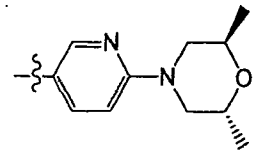
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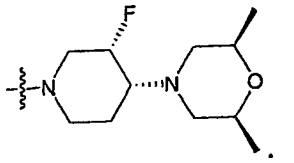
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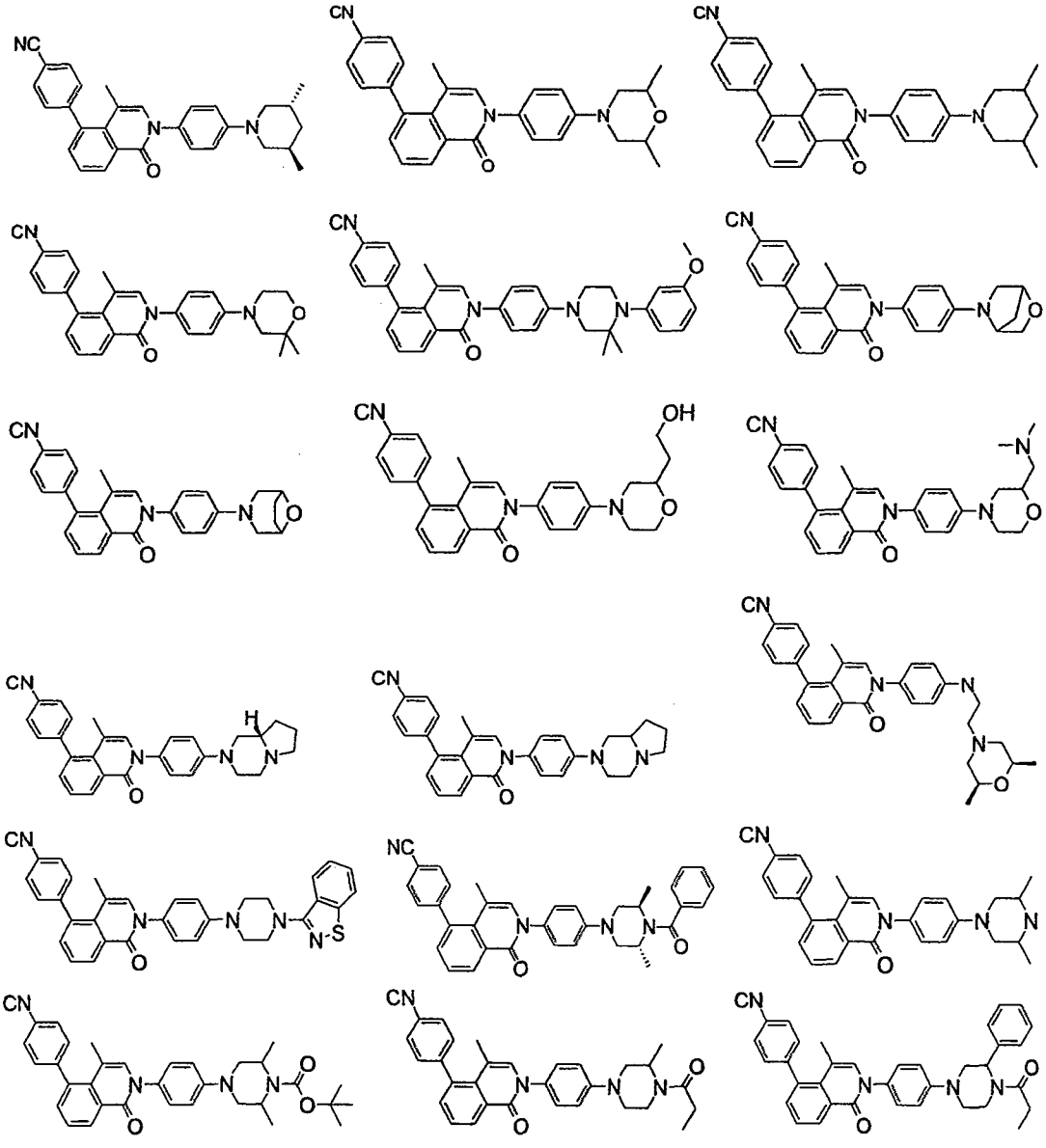
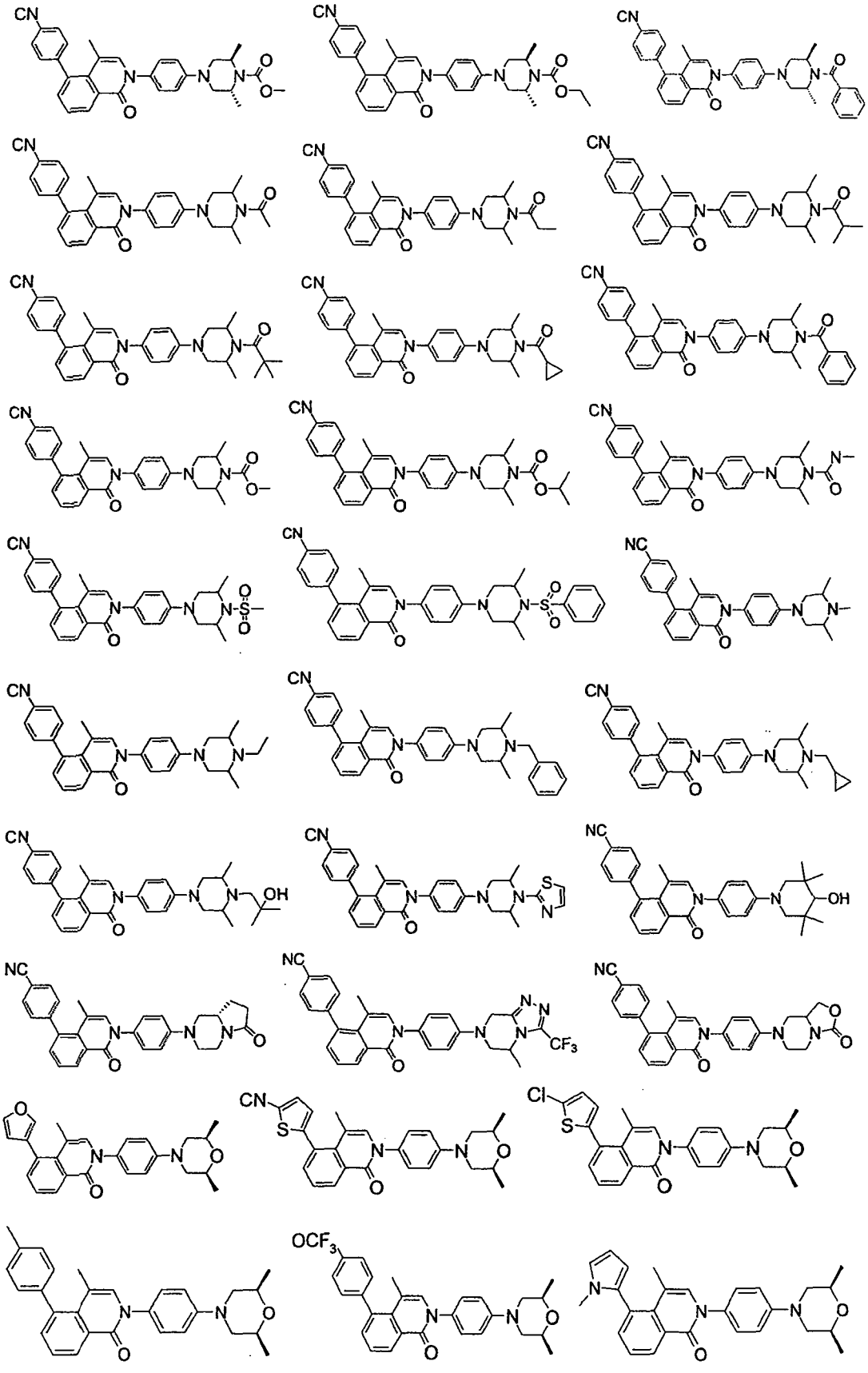
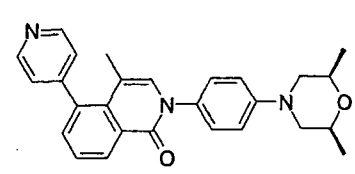
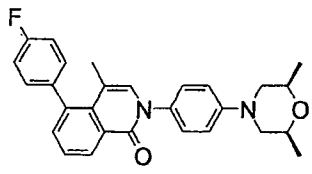
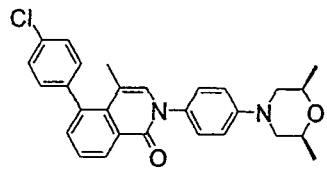
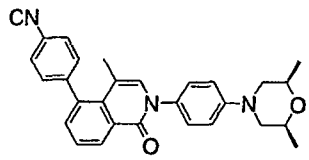
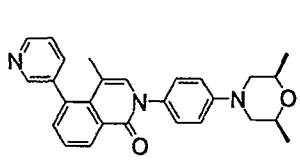
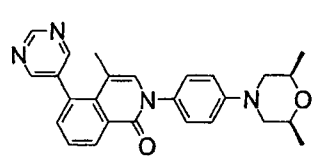
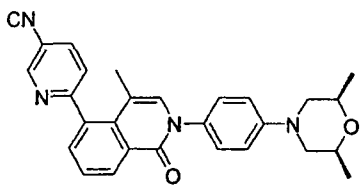
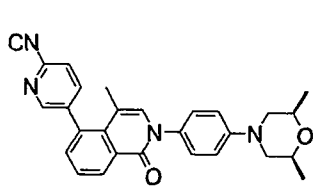
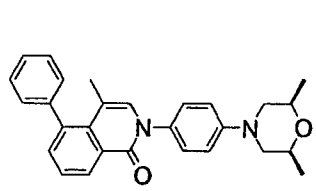
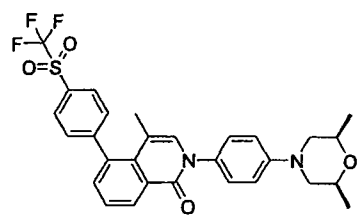
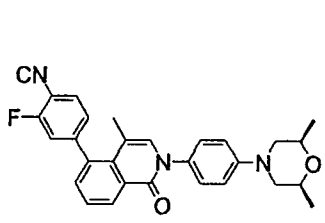
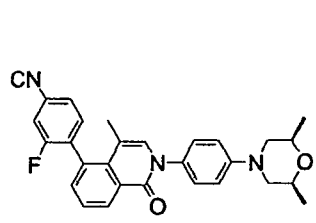
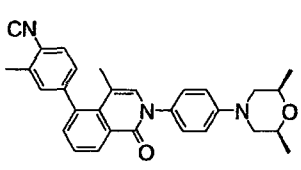
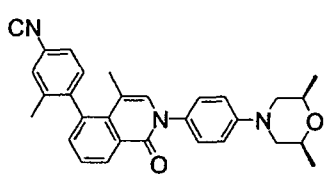
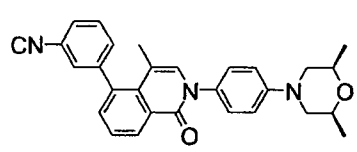
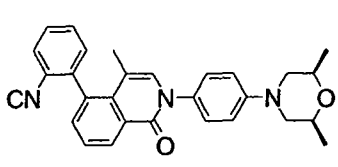
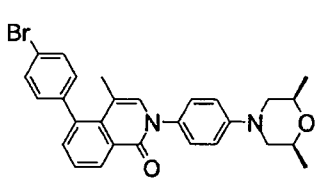
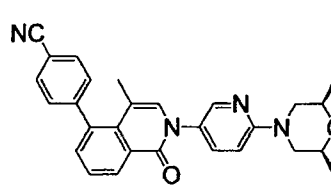
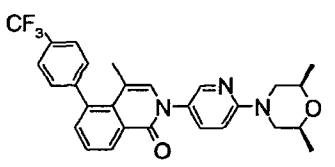
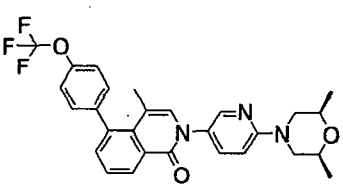
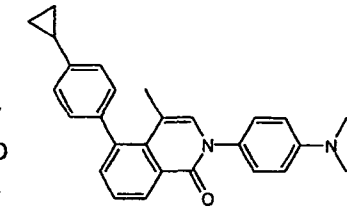
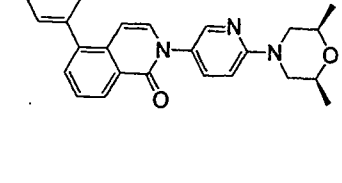
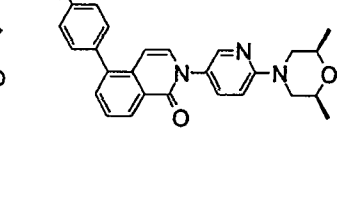
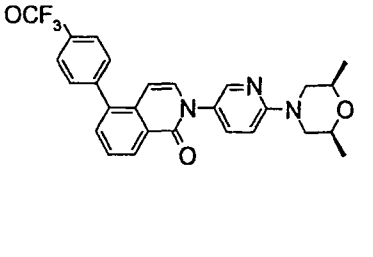
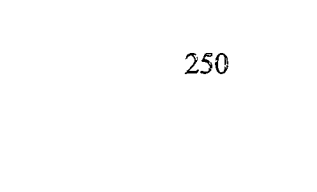
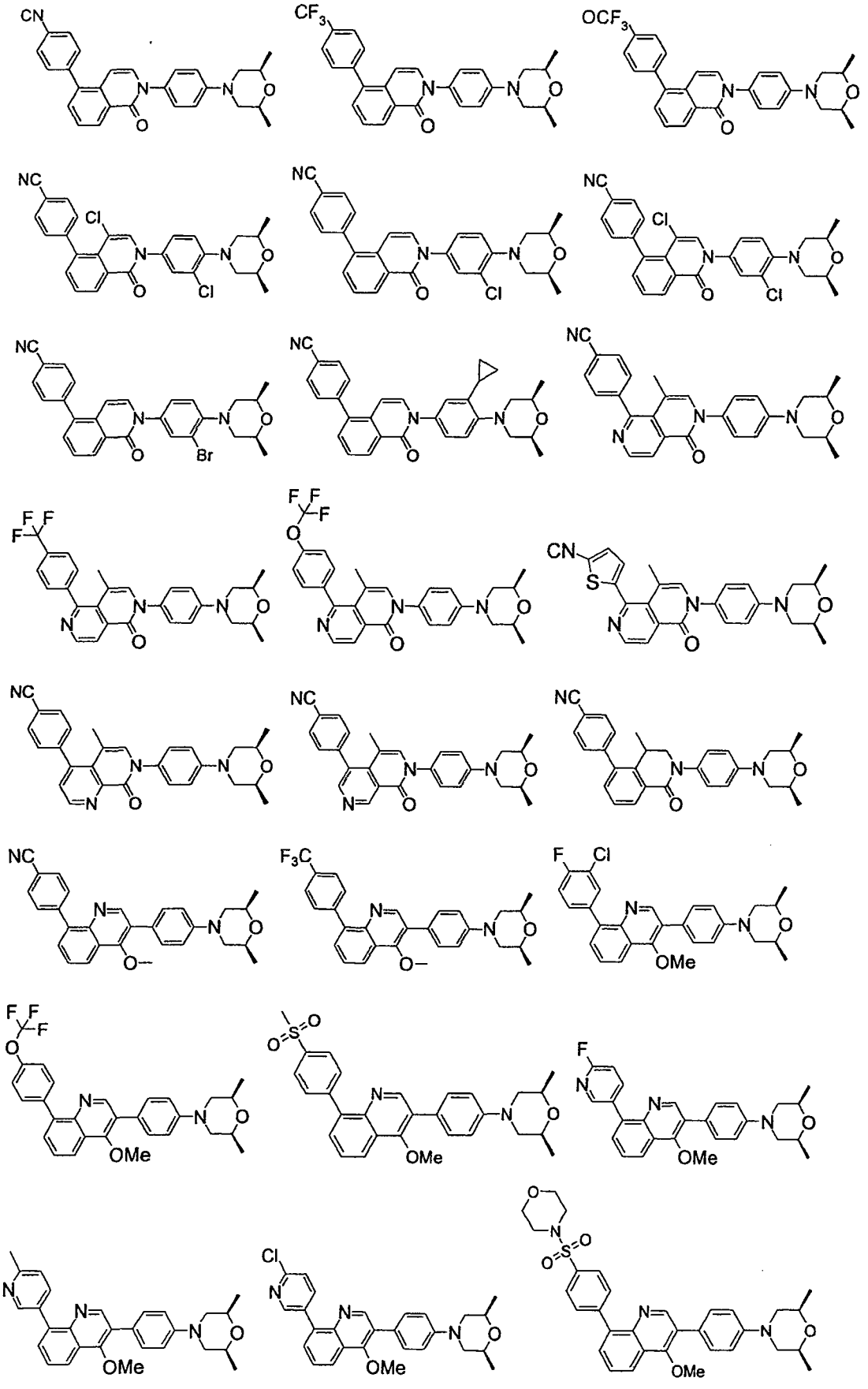
17. The compound represented by formula (I), or the pharmaceutically acceptable salt thereof according to claim 1, which is selected from the group consisting of

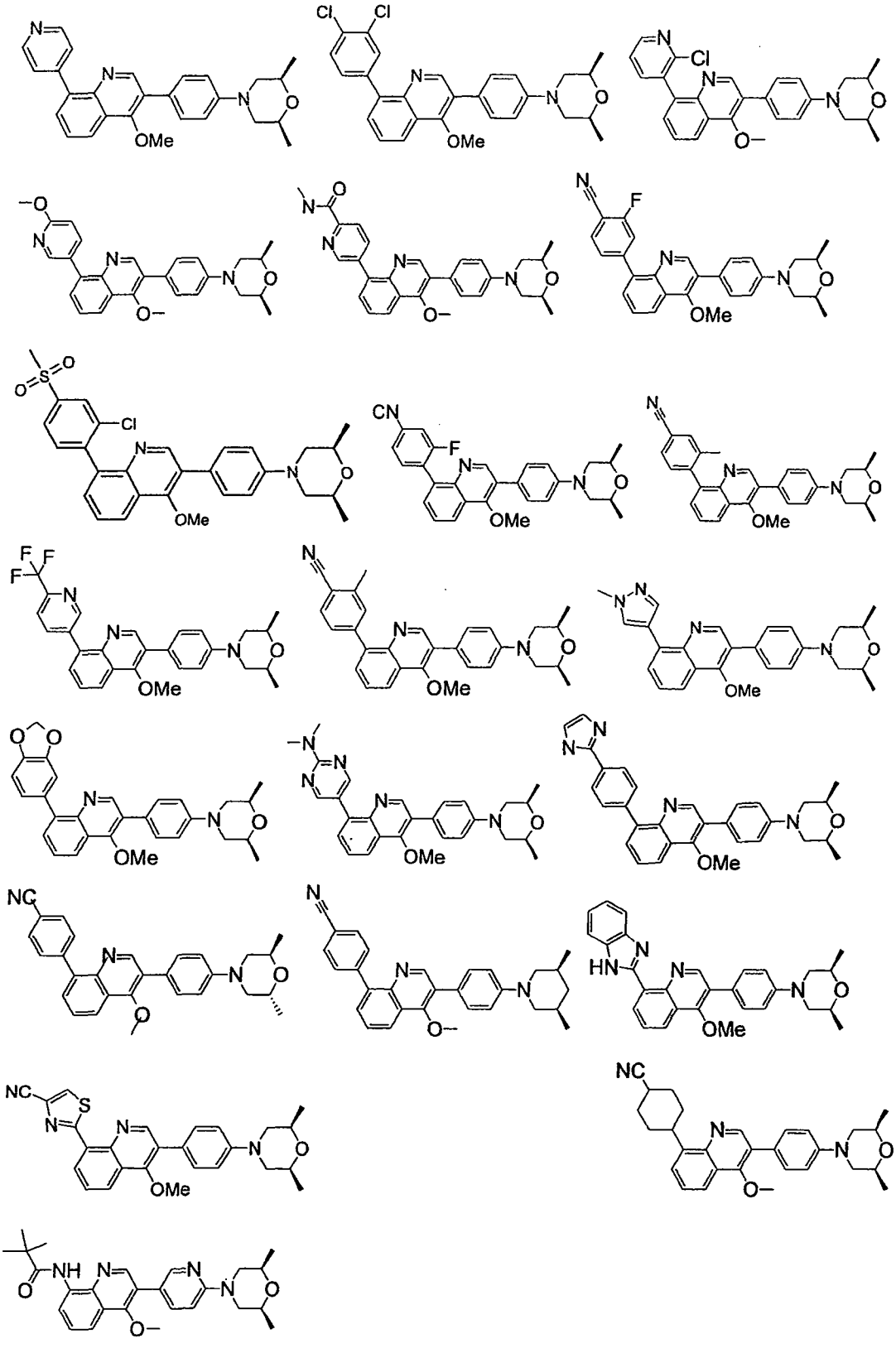


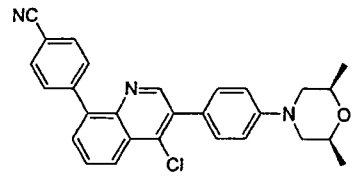


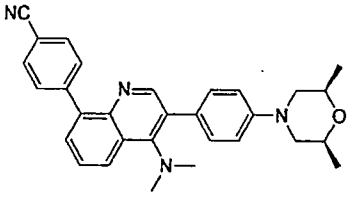

























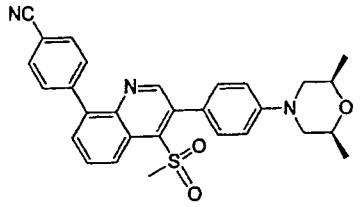


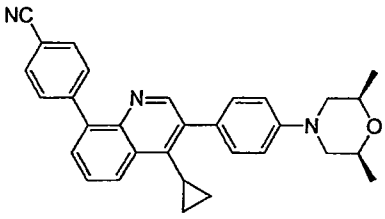


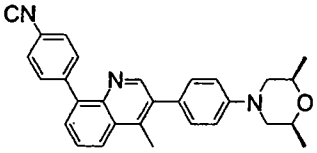


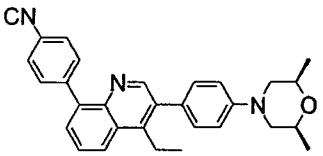


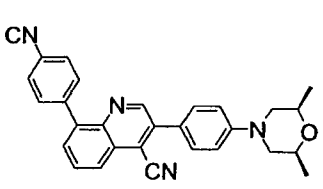


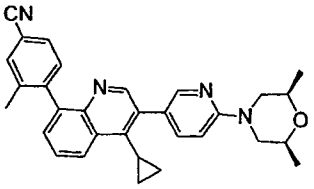


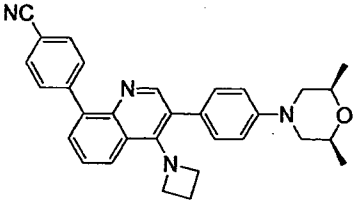


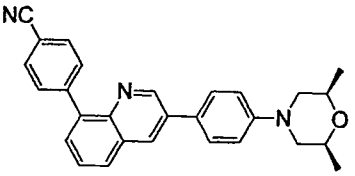


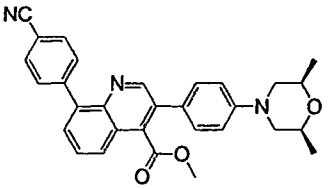


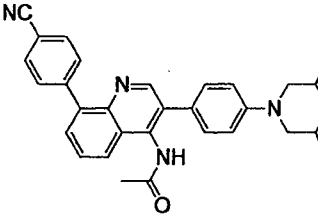


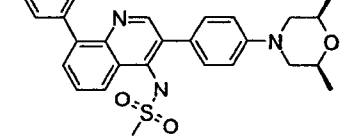


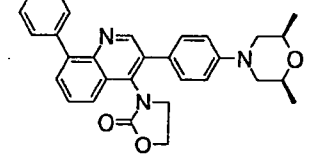


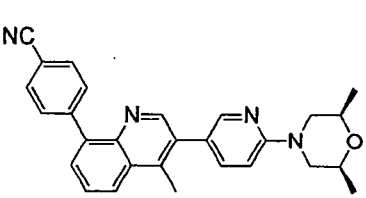


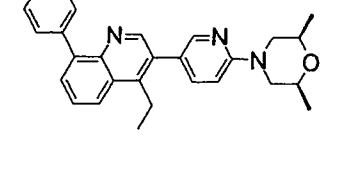


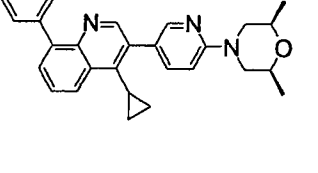


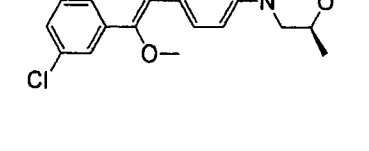


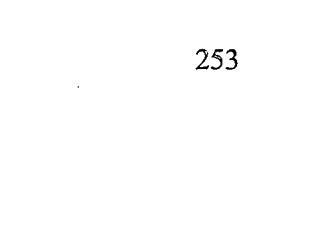


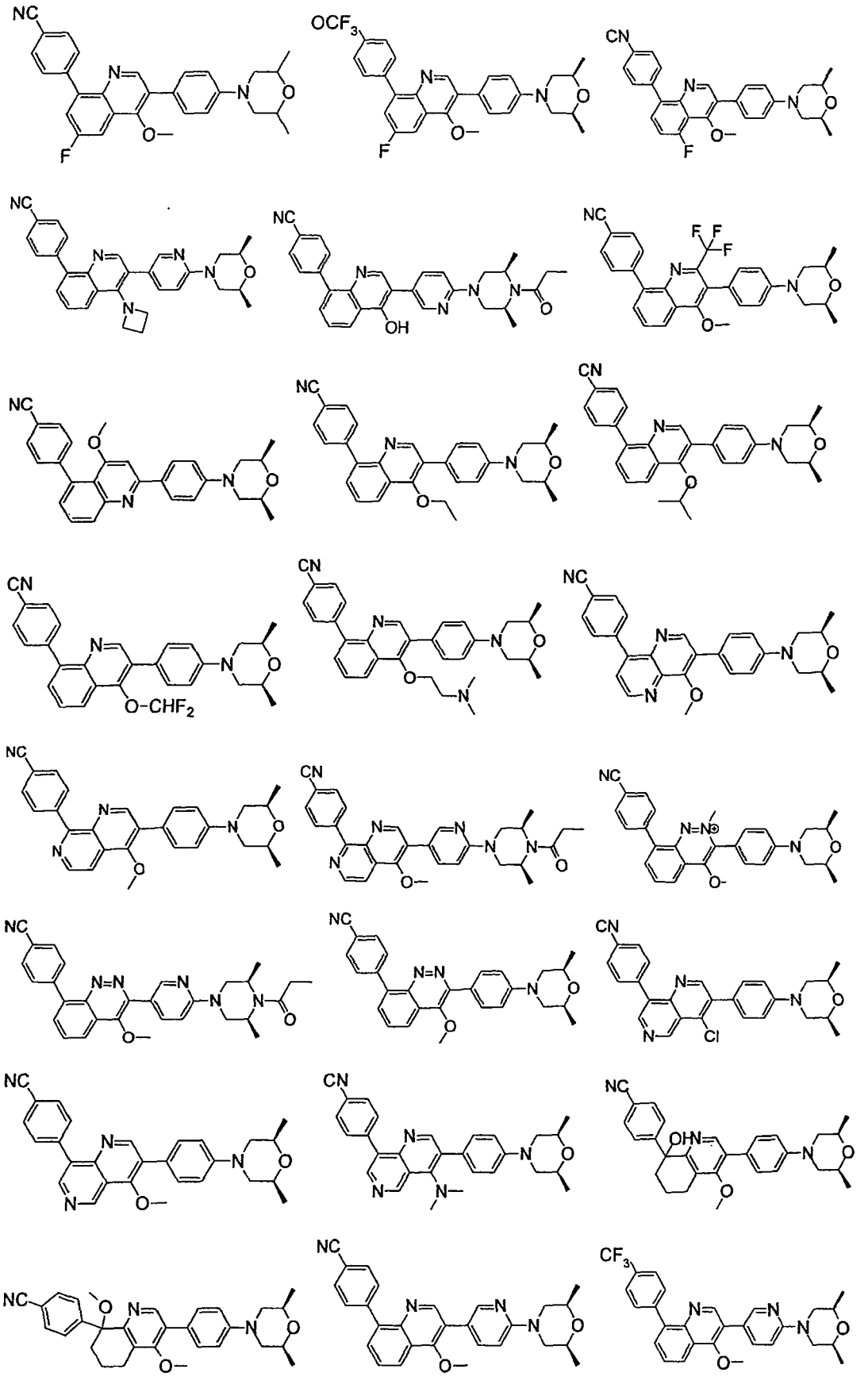


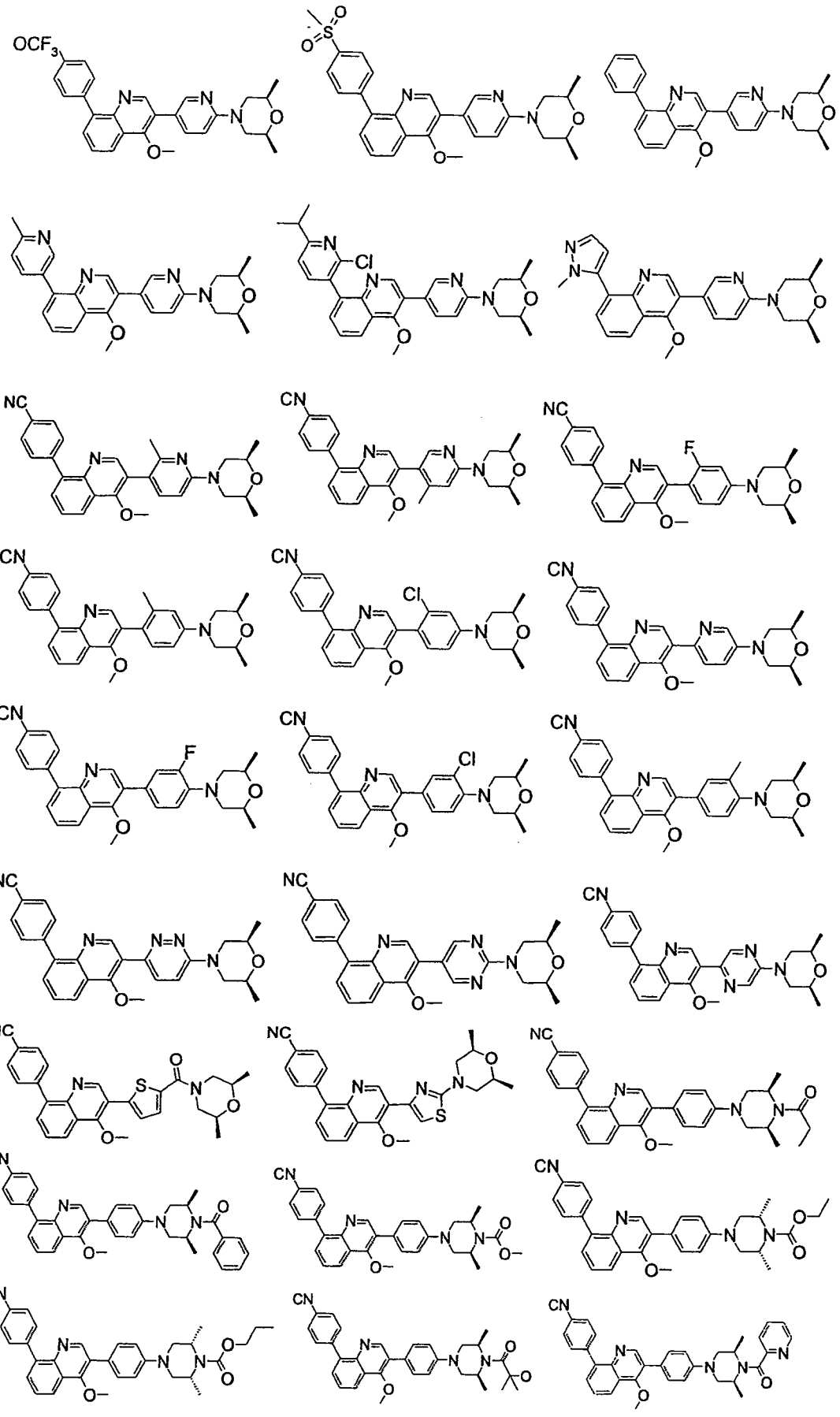


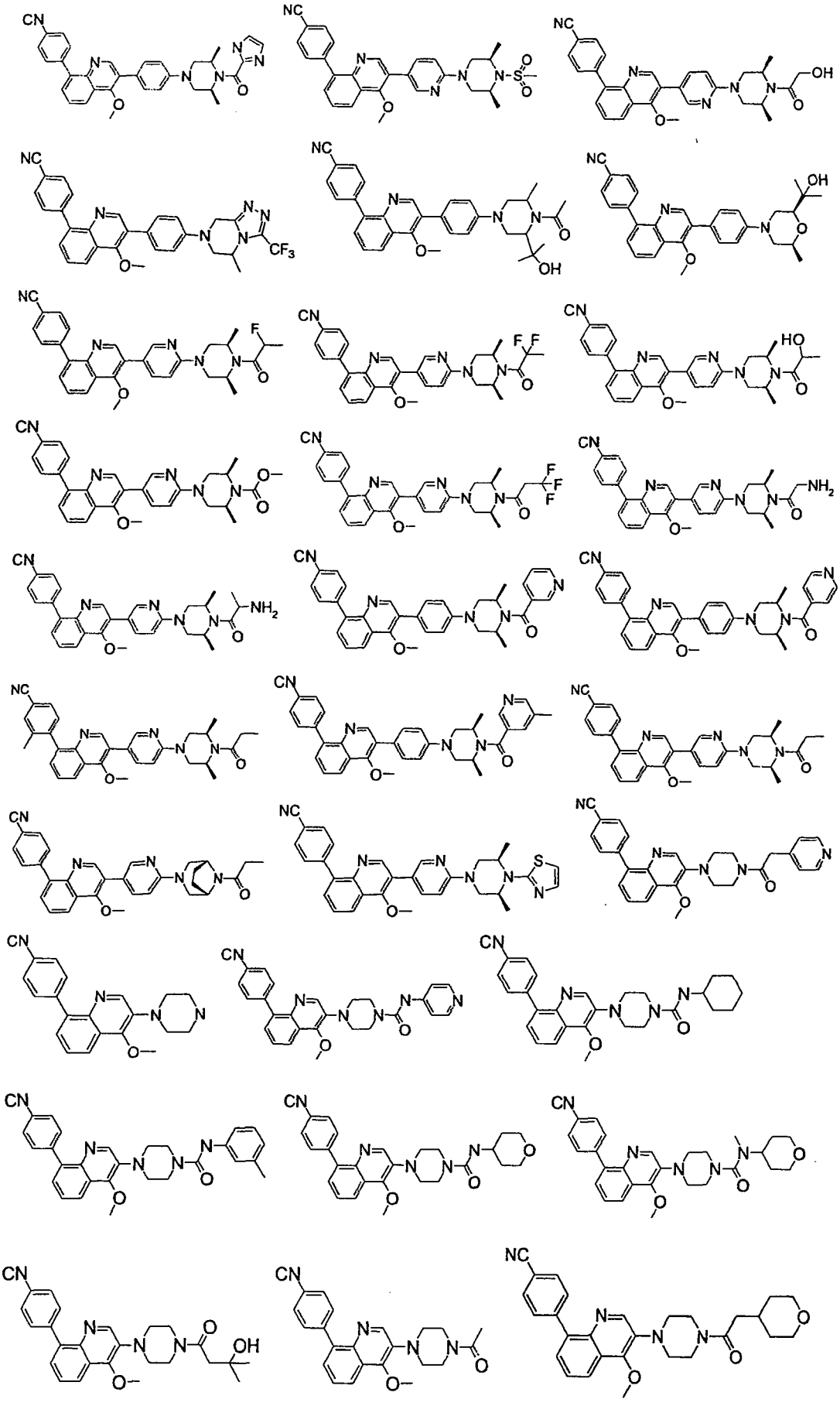


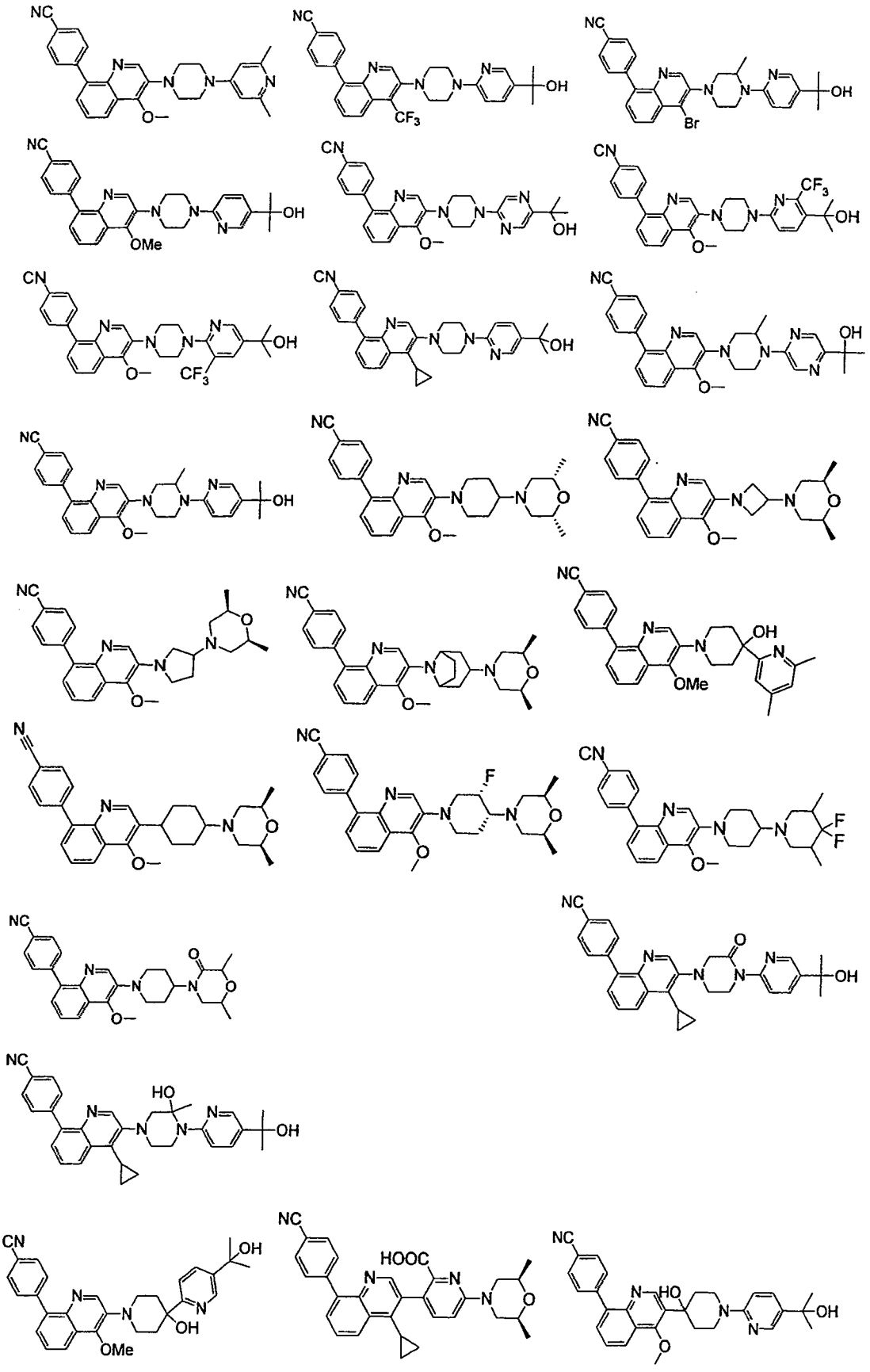


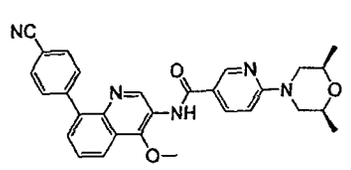
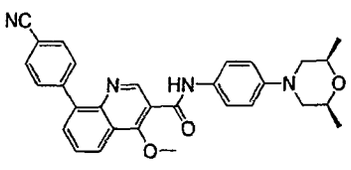
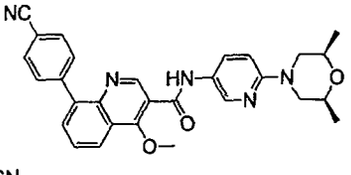
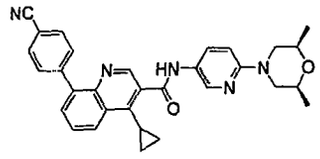
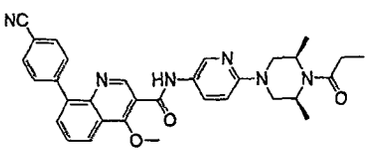
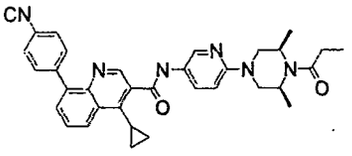
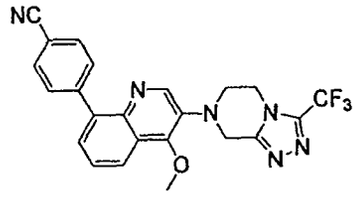
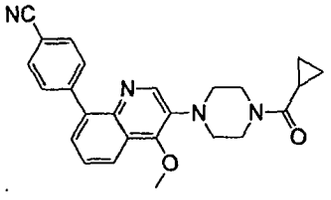
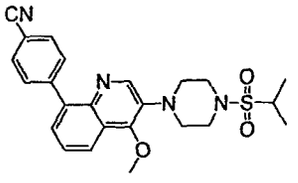
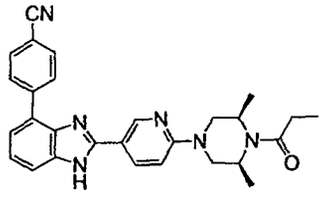
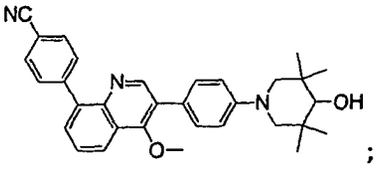
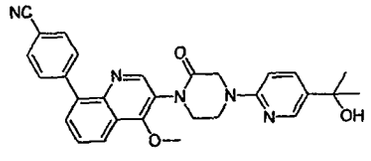
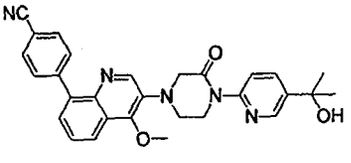
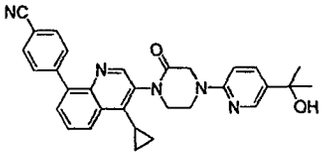
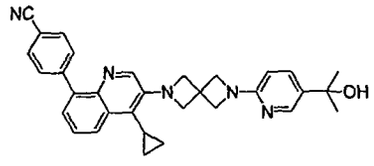
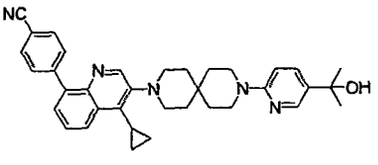
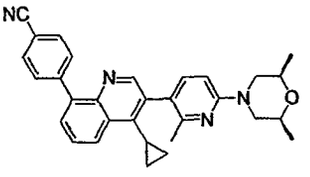
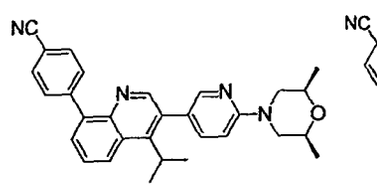
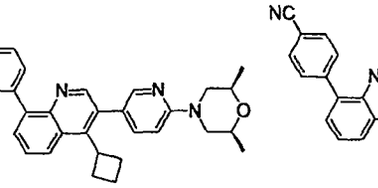
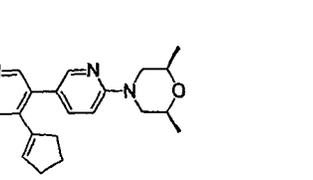
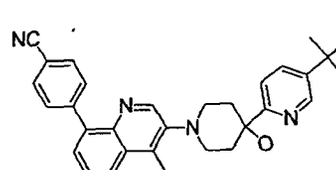
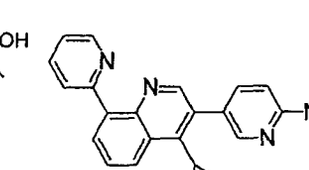
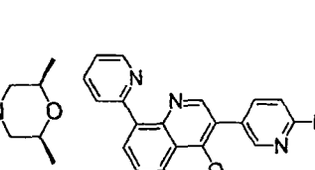
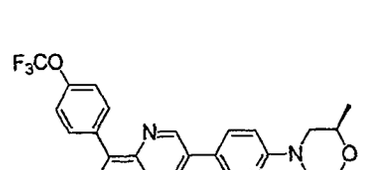
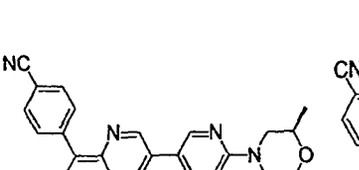
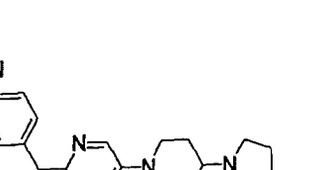
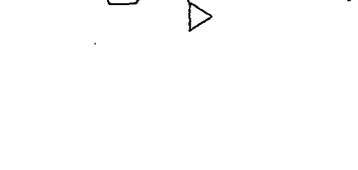
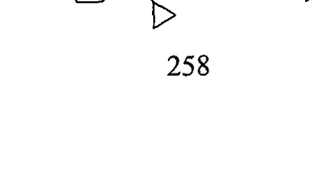
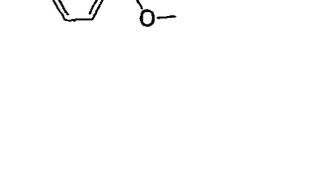










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