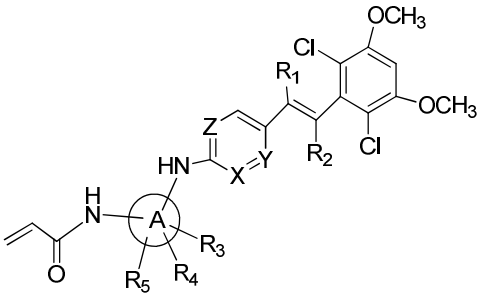
Claims

1. A compound as shown in formula (I), a pharmaceutically acceptable salt or a tautomer thereof,



(I)

wherein,

each of X, Y, Z is independently selected from the group consisting of C(R) and N;

one of R_1 and R_2 is F, and the other is H or CH_3;

A-ring is selected from the group consisting of phenyl, 5-6 membered cycloalkyl, 5-6 membered heterocycloalkyl;

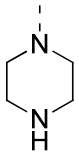
each of R_3, R_4, R_5 is independently selected from the group consisting of H, F and Cl, or selected from the group consisting of C_{1-3} alkyl, C_{1-3} alkoxy, C_{1-3} alkyl-C(=O)-, 5-6 membered heterocycloalkyl which are optionally substituted with 1, 2 or 3 R;

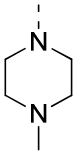
R is H, or selected from the group consisting of C_{1-3} alkyl, C_{1-3} alkyl-C(=O)- and 5-6 membered heterocycloalkyl which are optionally substituted with 1, 2 or 3 R';

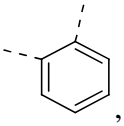
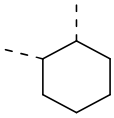
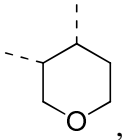
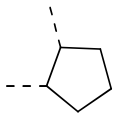
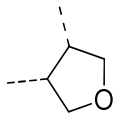
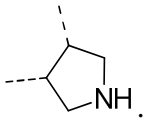
R' is selected from the group consisting of CH_3 and $-CH_2CH_3$;

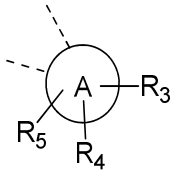
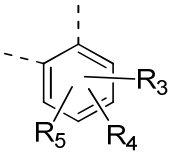
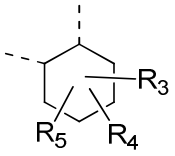
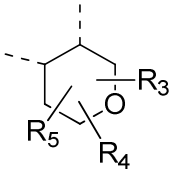
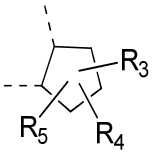
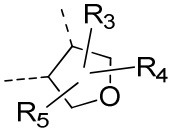
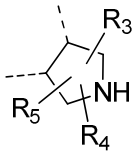
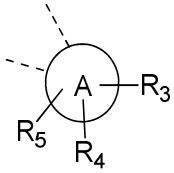
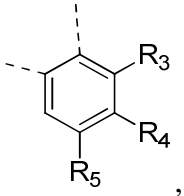
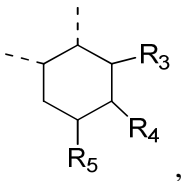
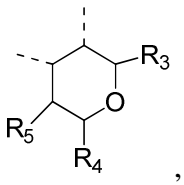
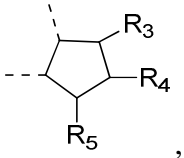
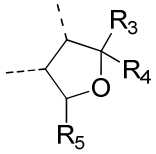
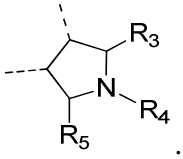
"hetero-" in the 5-6 membered heterocycloalkyl is each selected from the group consisting of -NH-, -O- and N;

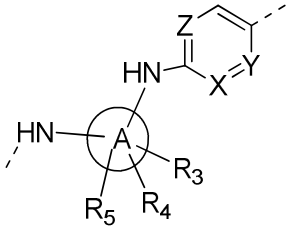
in any one of the above cases, the number of heteroatoms or heteroatomic groups is independently selected from the group consisting of 1, 2 and 3.

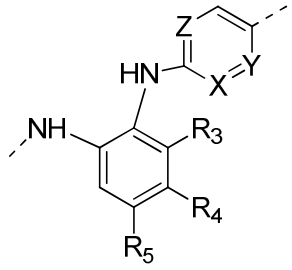
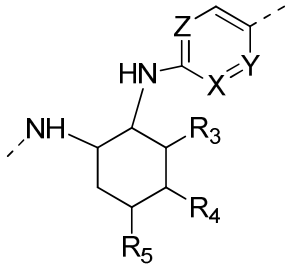
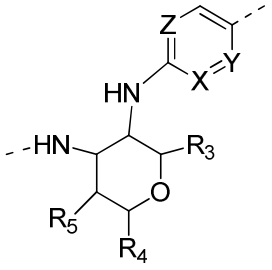
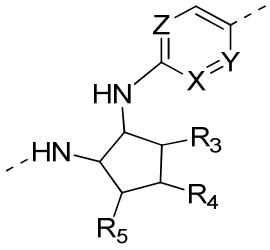
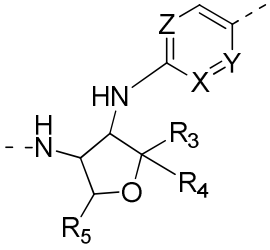
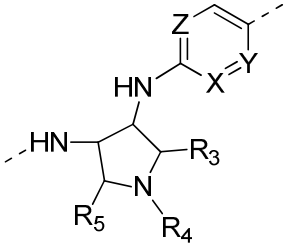
2. The compound, the pharmaceutically acceptable salt or the tautomer thereof according to claim 1, wherein R is H, or selected from the group consisting of CH_3, $-CH_2CH_3$,  and  which are optionally substituted with 1, 2 or 3 R'; optionally, R is selected from the group

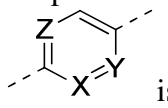
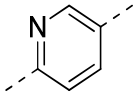
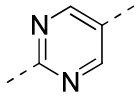
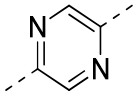
consisting of H, CH_3, $-CH_2CH_3$,  and .

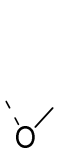
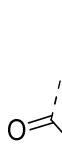
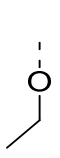
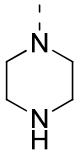
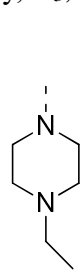
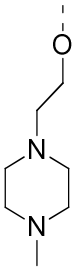
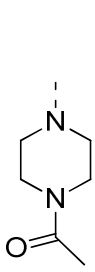
3. The compound, the pharmaceutically acceptable salt or the tautomer thereof according to claim 1 or 2, wherein A-ring is selected from the group consisting of phenyl, cyclohexyl, cyclopentyl, tetrahydropyranyl, tetrahydrofuryl and pyrrolidinyl; optionally, the A-ring is selected from the group consisting of , , , ,  and .

4. The compound, the pharmaceutically acceptable salt or the tautomer thereof according to any one of claims 1 to 3, wherein the structural unit  is selected from the group consisting of , , , ,  and ; optionally, the structural unit  is selected from the group consisting of , , , ,  and .

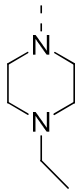
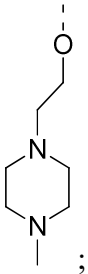
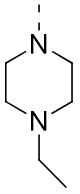
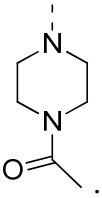
5. The compound, the pharmaceutically acceptable salt or the tautomer thereof according to claim 4, wherein the structural unit  is selected from the group consisting

of , , , ,  and .

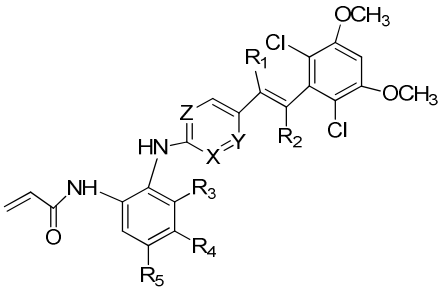
6. The compound, the pharmaceutically acceptable salt or the tautomer thereof according to claim 1 or 2, wherein the structural unit  is selected from the group consisting of ,  and .

7. The compound, the pharmaceutically acceptable salt or the tautomer thereof according to claim 1 or 2, wherein each of R_3, R_4, R_5 is independently selected from the group consisting of H, F and Cl, or selected from the group consisting of methyl, ethyl, C_{1-3} alkoxy, C_{1-3} alkyl-C(=O)- and piperazinyl which are optionally substituted with 1, 2 or 3 R; optionally, each of R_3, R_4, R_5 is independently selected from the group consisting of H, F and Cl, or selected from the group consisting of CH_3, , ,  and  which are optionally substituted with 1, 2 or 3 R; optionally, R_3, R_4, R_5 is independently selected from the group consisting of H, F, Cl, CH_3, , , ,  and .

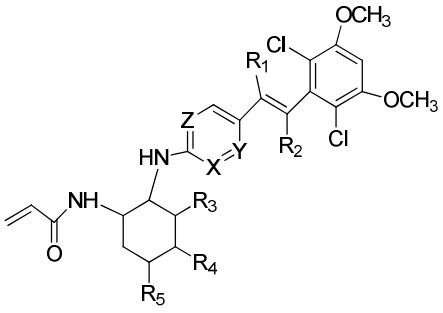
8. The compound, the pharmaceutically acceptable salt or the tautomer thereof according to claim 7, wherein R_3 is selected from the group consisting of H, F, Cl and CH_3; or, R_4 is selected

from the group consisting of H, F, Cl, , ,  and ; or, R_5 is selected from the group consisting of H, F, Cl,  and .

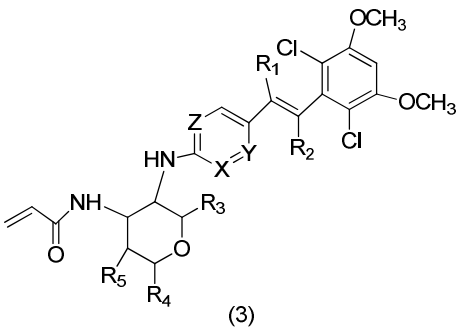
9. The compound, the pharmaceutically acceptable salt or the tautomer thereof according to any one of claims 1 to 5, which is selected from the group consisting of



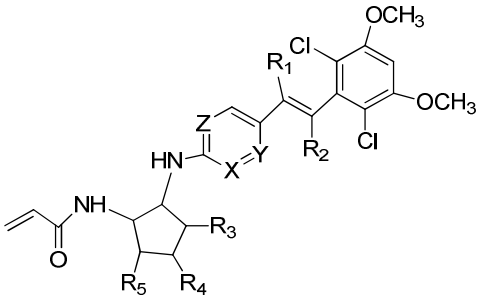
(2)



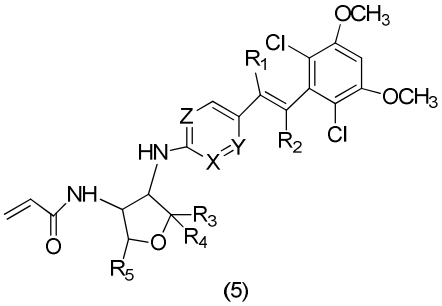
(3)



(3)

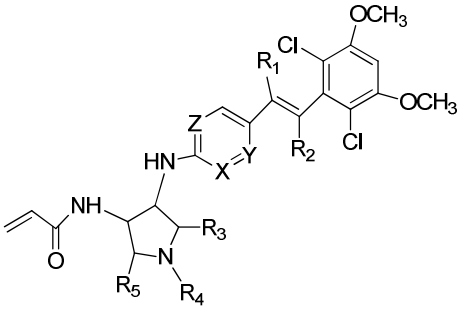


(4)



(5)

and

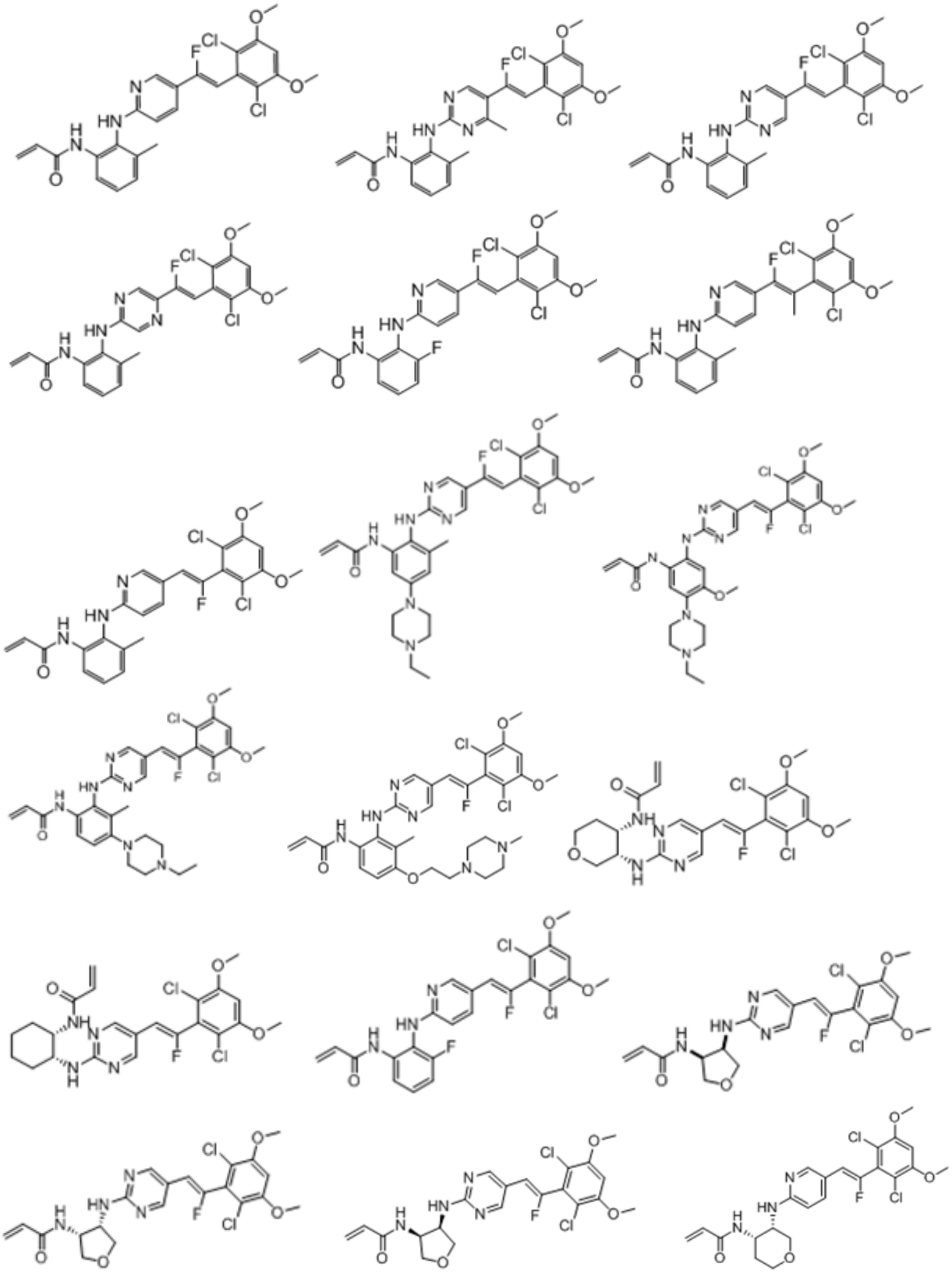


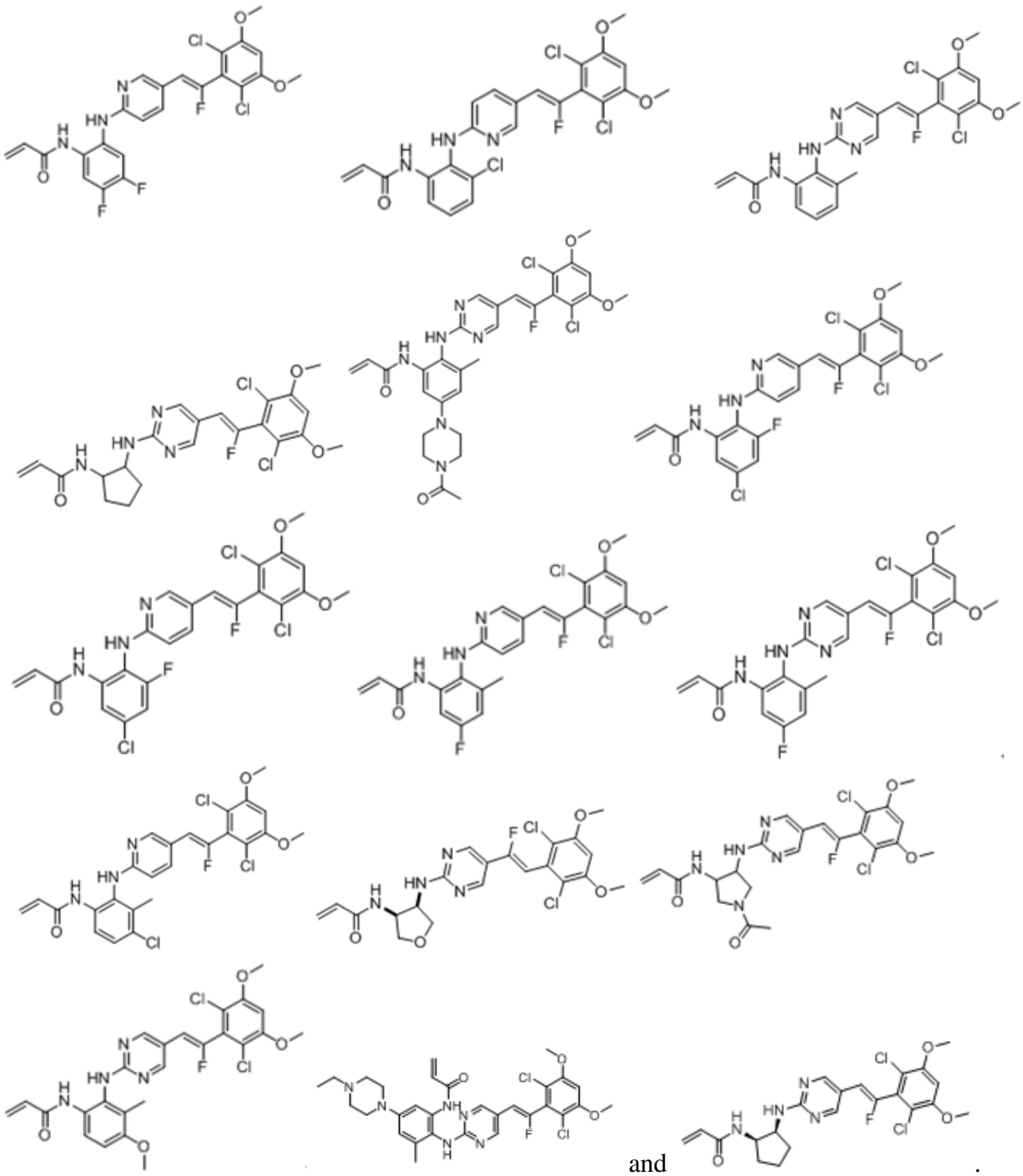
(6)

wherein, the definitions of R_1, R_2, R_3, R_4, R_5, Z, X, Y are as defined in claims 1 to 5.

10. A compound according to claim 1, a pharmaceutically acceptable salt or a tautomer thereof,

which is selected from the group consisting of





and .

11. A pharmaceutical composition, comprising a therapeutically effective amount of the compound or the pharmaceutically acceptable salt thereof according to any one of claims 1 to 10 as an active ingredient, as well as a pharmaceutically acceptable carrier.

12. The compound or the pharmaceutically acceptable salt thereof according to any one of claims 1 to 10 for use in the treatment of FGFR4-related diseases.

13. The pharmaceutical composition according to claim 11 for use in the treatment of FGFR4-

related diseases.

14. The compound or the pharmaceutically acceptable salt thereof for use according to claim 12, wherein the FGFR4-related disease is liver cancer or gastric cancer.

15. The pharmaceutical composition for use according to claim 13, wherein the FGFR4-related disease is liver cancer or gastric cancer.