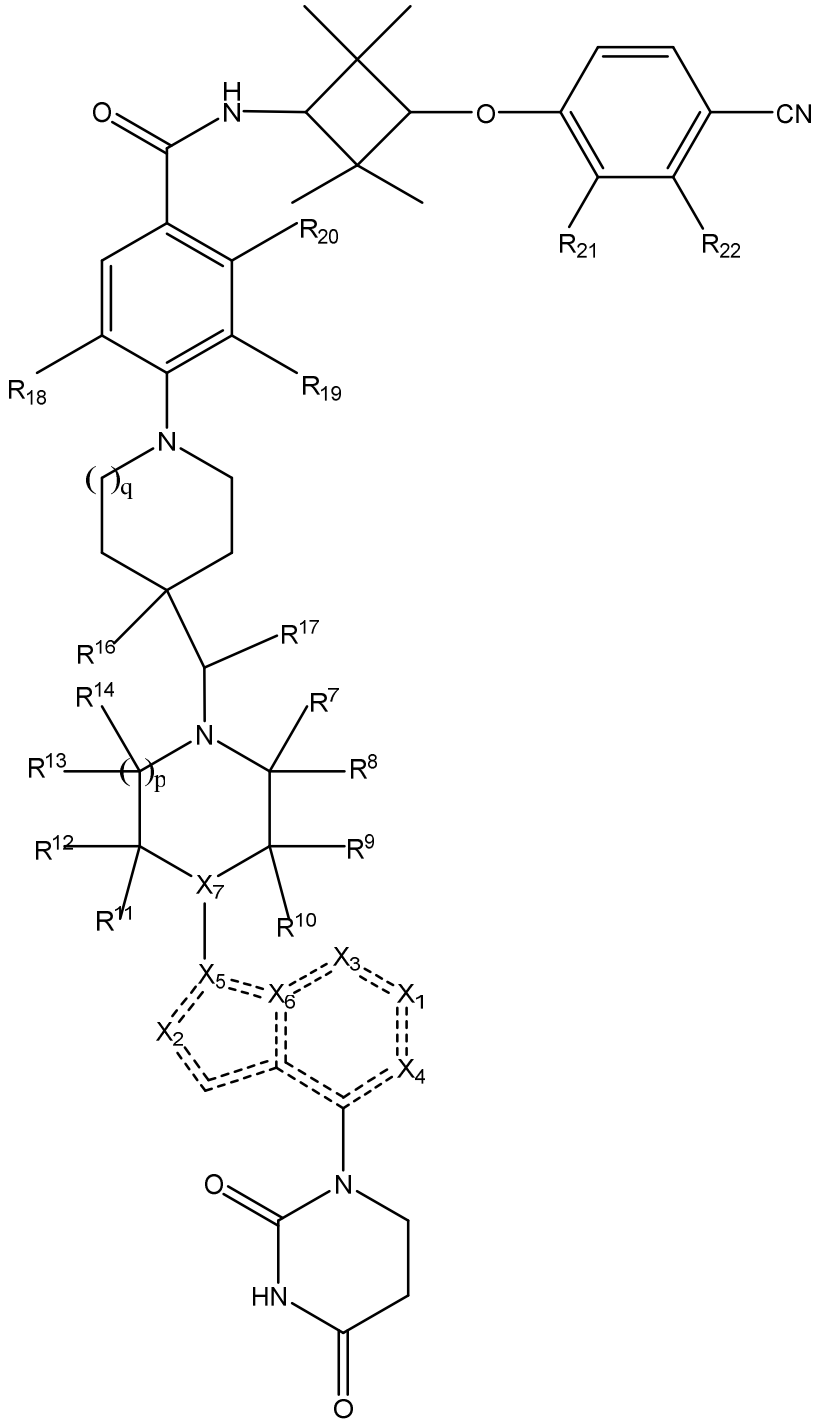
Claims

1. A compound of formula (V), a tautomer of a compound of formula (V), or a salt thereof



(V)

wherein:

$X_1$ is N or C-$R^1$ wherein $R^1$ is selected from the group consisting of H, halo, and $C_{1-4}$haloalkyl;

$X_4$ is C-$R^2$ or N wherein $R^2$ is selected from the group consisting of H, halo and $C_{1-3}$haloalkyl;

$X_2$ and $X_3$ are independently selected from N or CH;

$X_6$ and $X_5$ are independently selected from N or C, wherein when $X_6$ is N , $X_5$ is C;

p and q are independently 0 or 1;

$X_7$ is $CR^6$;

$R^6$, $R^7$, $R^8$, $R^9$, $R^{10}$, $R^{11}$, $R^{12}$, $R^{13}$, $R^{14}$ and $R^{17}$ are independently selected from H or halo;

$R^{16}$ is H, OH or halo;

$R^{18}$, $R^{19}$ and $R^{20}$ are independently H, halo or $C_{1-3}$haloalkyl;

$R^{22}$ is selected from the group consisting of halo and $OR^{23}$

$R^{21}$ is independently H or methyl, and

$R^{23}$ is $C_{1-3}$alkyl.

2. The compound of formula (V), the tautomer of the compound of formula (V), or the salt thereof according to claim 1, wherein:

$X_5$ is N, $X_2$ and $X_3$ are each CH, $X_6$ is C, $X_1$ is C-$R^1$ and $X_4$ is C-$R^2$; or

$X_5$ and $X_2$ are each N, $X_3$ is CH, $X_6$ is C, $X_1$ is C-$R^1$ and $X_4$ is C-$R^2$; or

$X_5$ and $X_4$ are each N, $X_2$ and $X_3$ are each CH, $X_6$ is C and $X_1$ is C-$R^1$; or

$X_5$ and $X_3$ are each N, $X_2$ is CH, $X_6$ is C, $X_1$ is C-$R^1$ and $X_4$ is C-$R^2$; or

$X_5$, $X_2$ and $X_3$ are each N, $X_6$ is C, $X_1$ is C-$R^1$ and $X_4$ is C-$R^2$; or

$X_5$, $X_2$ and $X_4$ are each N, $X_3$ is CH, $X_6$ is C and $X_1$ is C-$R^1$; or

$X_5$, $X_3$ and $X_4$ are each N, $X_2$ is CH, $X_6$ is C and $X_1$ is C-$R^1$.

3. The compound of formula (V), the tautomer of the compound of formula (V), or the salt thereof according to claim 1 or claim 2, wherein $R^1$ is H, halogen or -$CF_3$.

4. The compound of formula (V), the tautomer of the compound of formula (V), or the salt thereof according to any preceding claim, wherein $R^2$ is H or fluoro.

5. The compound of formula (V), the tautomer of the compound of formula (V), or the salt thereof according to any preceding claim , wherein $R^{10}$ is H or halo and $R^7$, $R^8$, $R^9$, $R^{11}$, $R^{12}$, $R^{13}$ and $R^{14}$ are each H.

6. The compound of formula (V), the tautomer of the compound of formula (V), or the salt thereof according to any preceding claim, wherein $R^{18}$, $R^{19}$ and $R^{20}$ are each independently H or halo.

7. The compound of formula (V), the tautomer of the compound of formula (V), or the salt thereof according to claim 6, wherein:

$R^{18}$ is fluoro, and $R^{19}$ and $R^{20}$ are each H; or

$R^{18}$ is chloro, and $R^{19}$ and $R^{20}$ are each H; or

$R^{18}$ and $R^{20}$ are each fluoro, and $R^{19}$ is H; or

$R^{18}$ and $R^{19}$ are each fluoro, and $R^{20}$ is H.

8. The compound of formula (V), the tautomer of the compound of formula (V), or the salt thereof according to any preceding claim, wherein:

$R^{22}$ is selected from the group consisting of halo and -$OR^{23}$;

$R^{21}$ is independently H or methyl; and

$R^{23}$ is $C_{1\text{-}3}$alkyl.

9. The compound of formula (V), the tautomer of the compound of formula (V), or the salt thereof according to claim 8, wherein $R^{22}$ is selected from the group consisting of chloro, methoxy and ethoxy.

10. The compound of formula (V), the tautomer of the compound of formula (V), or the salt thereof according to any preceding claim, wherein $R^{21}$ is H.

11. The compound of formula (V), the tautomer of the compound of formula (V), or the salt thereof according to any preceding claim, wherein $R^{16}$ is H.

12. The compound of formula (V), the tautomer of the compound of formula (V), or the salt thereof according to any preceding claim, wherein $R^{17}$ is H.

13. The compound of formula (V), the tautomer of the compound of formula (V), or the salt thereof according to any preceding claim, wherein q is 1.

14. The compound of formula (V), the tautomer of the compound of formula (V), or the salt thereof according to any one of claims 1 to 13, wherein q is 0.

15. A compound that is *N*-((1r,3r)-3-(4-cyano-3-methoxyphenoxy)-2,2,4,4-tetramethylcyclobutyl)-4-(4-((4-(4-(2,4-dioxotetrahydropyrimidin-1(2H)-yl)-1H-pyrazolo[4,3-c]pyridin-1-yl)piperidin-1-yl)methyl)piperidin-1-yl)-3-fluorobenzamide or a tautomer, or a pharmaceutically acceptable salt thereof.

16. A pharmaceutically acceptable salt, comprising the compound, the tautomer, or the pharmaceutically acceptable salt thereof according to claim 15 in salt form, wherein the pharmaceutically acceptable salt is a benzenesulfonate (besylate), ethanesulfonate (esylate), hydrochloride, methanesulfonate (mesylate), naphthalene-1,5-disulfonate (napadisylate), or p-toluenesulfonate (tosylate) salt.

17. A compound or tautomer, comprising the compound, the tautomer, or the pharmaceutically acceptable salt thereof according to claim 15 in free base or tautomer form.

18. The compound, the tautomer, or the pharmaceutically acceptable salt thereof according to claim 15, in a free base crystalline form having an X-ray powder diffraction pattern

using CuKα radiation comprising characteristic peaks at 2°theta values of 6.4°± 0.2°, 16. 7° ± 0.2° and 17.4° ± 0.2°.

19. A pharmaceutical composition comprising the compound, tautomer or salt thereof according to any preceding claim and a pharmaceutically acceptable excipient.

20. A pharmaceutical composition comprising the compound, tautomer or pharmaceutically acceptable salt thereof according to claim 15 and a pharmaceutically acceptable excipient.

21. A pharmaceutical composition comprising the pharmaceutically acceptable salt according to claim 16 and a pharmaceutically acceptable excipient.

22. A pharmaceutical composition comprising the compound or tautomer according to claim 17 and a pharmaceutically acceptable excipient.

23. A compound, tautomer or pharmaceutically acceptable salt thereof as defined in any one of claims 1 to 18 for use in the treatment of prostate cancer.

24. A compound, tautomer or pharmaceutically acceptable salt thereof for use according to claim 23, wherein the prostate cancer is metastatic castration resistant prostate cancer.

25. Use of the compound, tautomer or pharmaceutically acceptable salt thereof as defined in any one of claims 1 to 18, in the manufacture of a medicament for use in the treatment of prostate cancer.

26. Use according to claim 25, wherein the prostate cancer is metastatic castration resistant prostate cancer.