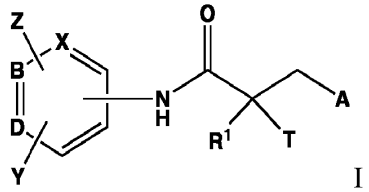
WHAT IS CLAIMED IS:

1. A method of treating prostate cancer in a subject in need thereof, comprising administering to the subject a therapeutically effective amount of a compound represented by the structure of formula I



I

wherein

T is OH;

R^1 is CH_3;

Y is H, CF_3, F, I, Br, Cl, or CN;

Z is H, NO_2, CN, halogen, COOR, COR, NHCOR, or CONHR;

or Y and Z form a 5 to 8 membered fused ring;

X and D are each CH or N;

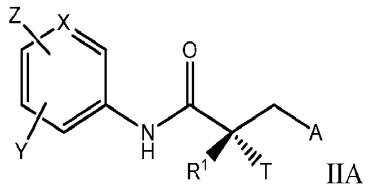
B is a bond or CH, and when B is a bond, D=B-X is represented by D-X;

R is H, alkyl, haloalkyl, alkyl-OH, aryl, F, Cl, Br, I, or OH;

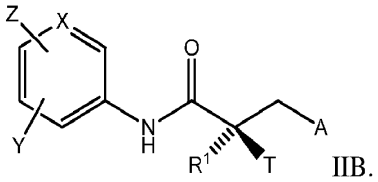
A is a five-membered unsaturated heteroaryl having at least one nitrogen atom, optionally substituted with at least one of Q^1, Q^2, Q^3 and Q^4, each independently selected from linear or branched alkyl, haloalkyl, CF_3, aryl, F, Cl, Br, I, CN, NO_2, OR, benzyl, alkynyl, $SO_2N(R)_2$, NHCOOR, $N(R)_2$, NHCOR, CONHR, COOR, or COR; wherein said alkyl, alkynyl, and aryl are each optionally substituted with halogen, CN, or OH,

or its optical isomer, pharmaceutically acceptable salt, hydrate or any combination thereof.

2. The method according to claim 1, wherein said compound is represented by a compound of formula IIA or formula IIB:

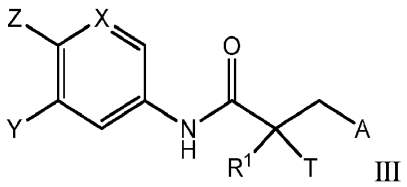


IIA



IIB.

3. The method according to claim 1, wherein said compound is represented by a compound of formula III:



III

wherein

T is OH;

R^1 is CH_3;

Y is H, CF_3, F, I, Br, Cl, or CN;

Z is H, NO_2, CN, halogen, COOR, COR, NHCOR, or CONHR;

or Y and Z form a 5 to 8 membered fused ring;

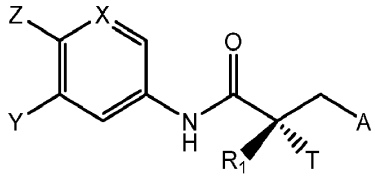
X is CH or N;

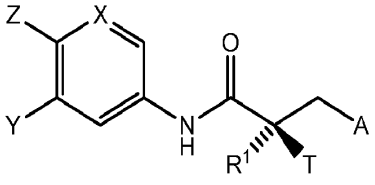
R is H, alkyl, haloalkyl, alkyl-OH, CF_3, CH_2Cl, CH_2CH_2Cl, aryl, F, Cl, Br, I, or OH;

A is a pyrrole, pyrazole, triazole, or imidazole, each optionally substituted with at least one of Q^1, Q^2, Q^3 and Q^4, each independently selected from linear or branched alkyl, haloalkyl, CF_3, aryl, F, Cl, Br, I, CN, NO_2, OR, benzyl, alkynyl, $SO_2N(R)_2$, NHCOOR, $N(R)_2$, NHCOR, CONHR, COOR, or COR; wherein said alkyl, alkynyl, and aryl are each optionally substituted with halogen, CN, or OH,

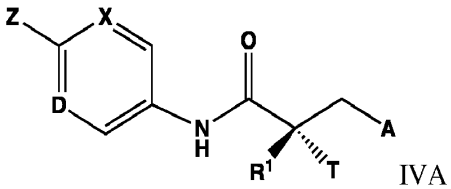
or its optical isomer, pharmaceutically acceptable salt, hydrate or any combination thereof.

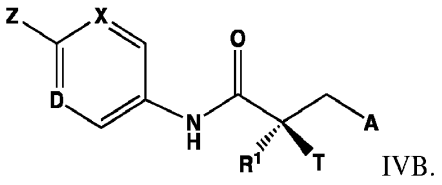
4. The method according to claim 3, wherein said compound is represented by the structure of formula IIIA or formula IIIB:


IIIA

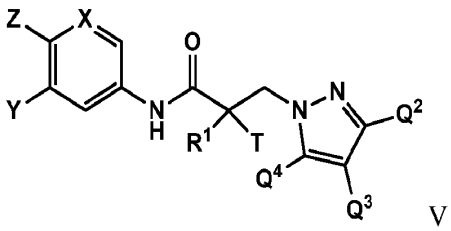

IIIB.

5. The method according to claim 1, wherein said compound is represented by the structure of formula IVA or formula IVB:


IVA


IVB.

6. The method according to claim 1, wherein said compound is represented by the structure of formula V:

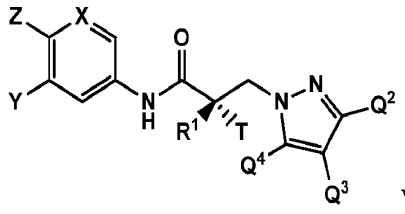

V

wherein

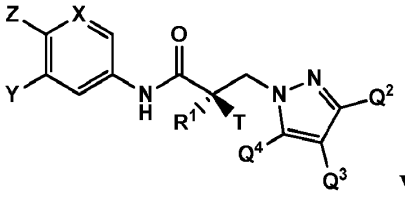
Q^2, Q^3 and Q^4 are each independently selected from linear or branched alkyl, haloalkyl, CF_3, aryl, F, Cl, Br, I, CN, NO_2, OR, benzyl, alkynyl, $SO_2N(R)_2$, NHCOOR, $N(R)_2$, NHCOR, CONHR, COOR, or COR; wherein said alkyl, alkynyl, and aryl are each optionally substituted with halogen, CN, or OH,

or its optical isomer, pharmaceutically acceptable salt, hydrate or any combination thereof.

7. The method according to claim 6, wherein said compound is represented by the structure of formula VA or formula VB:



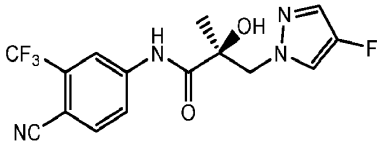
VA



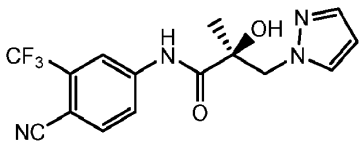
VB.

8. The method according to claim 1, wherein Q^1, Q^2, Q^3 and Q^4 is CN, NO_2, CF_3, F, Cl, Br, I, alkynyl, $SO_2N(R)_2$, NHCOOR, $N(R)_2$, NHCOR, COR, or phenyl, wherein said phenyl is optionally substituted with halogen, CN, or OH.

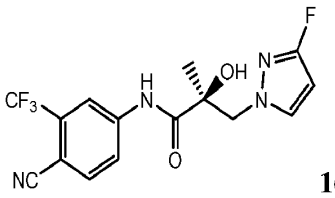
9. The method according to claim 1, wherein said compound is represented by any one of the following compounds:



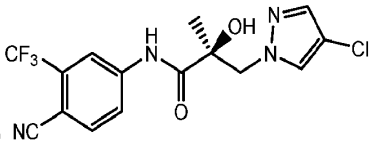
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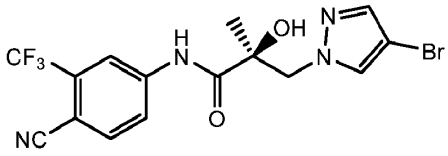
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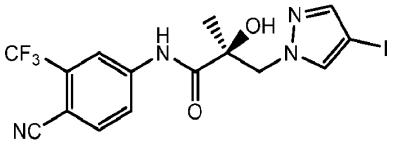
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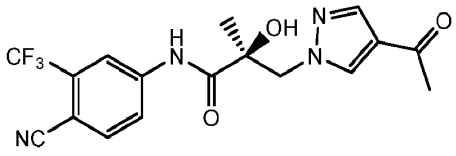
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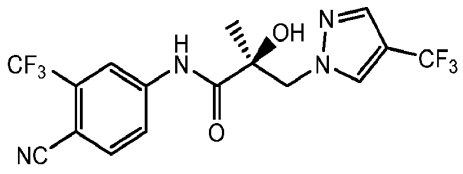
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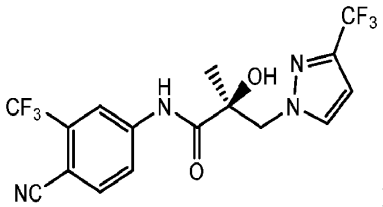
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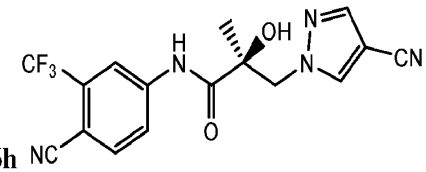
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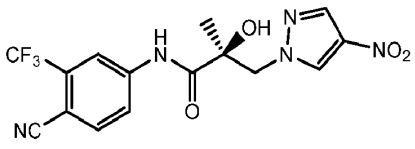
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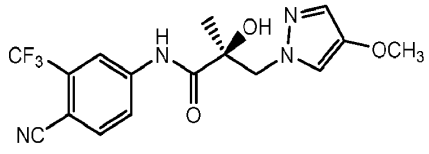
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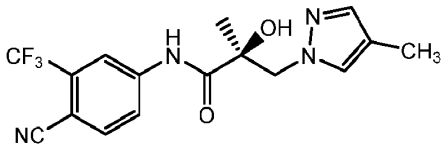
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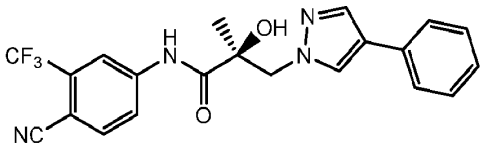
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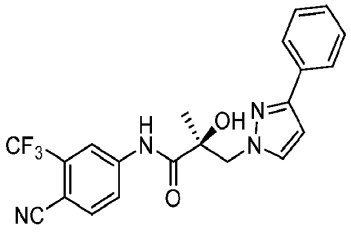
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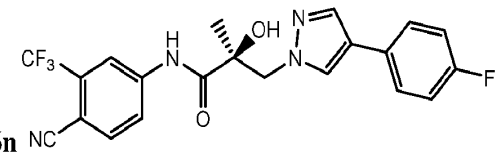
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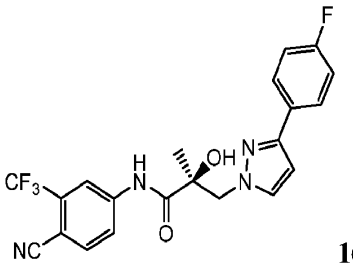
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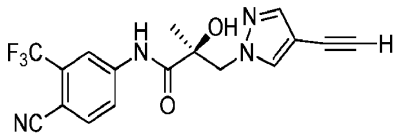
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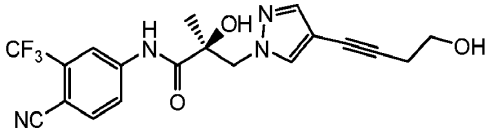
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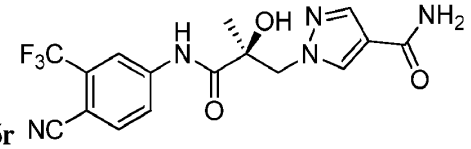


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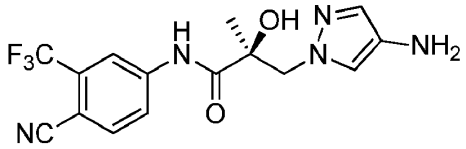
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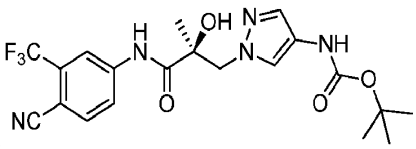


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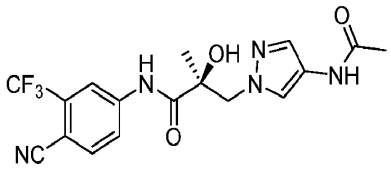
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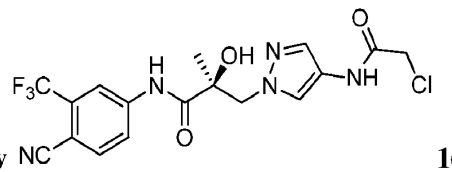
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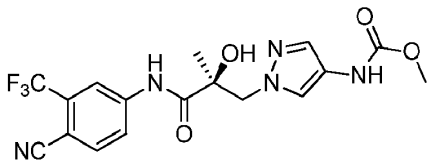
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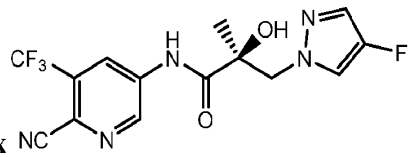
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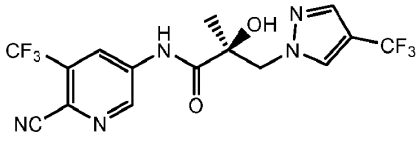
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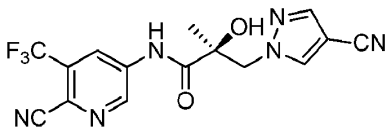
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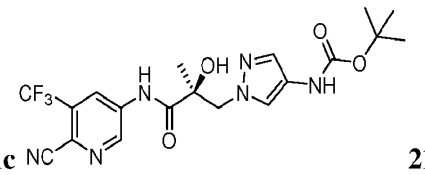
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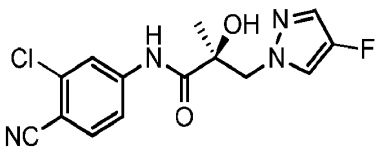
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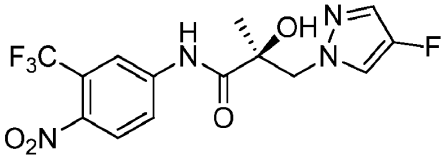
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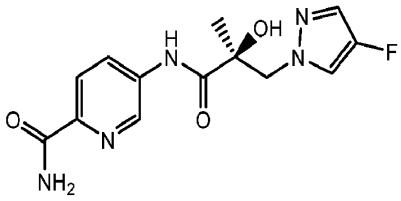
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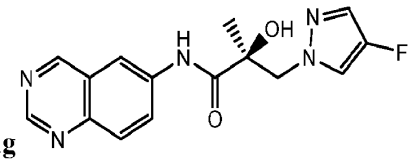
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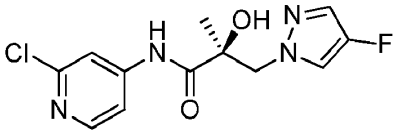
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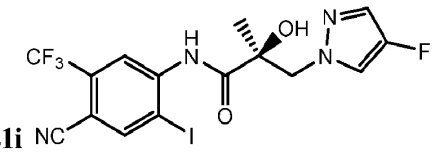
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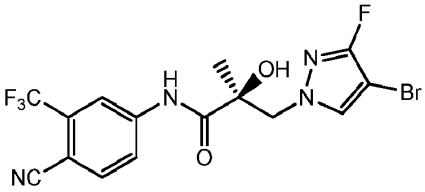
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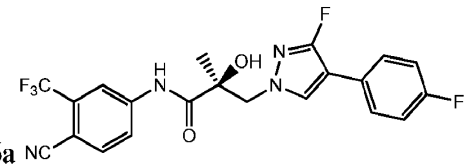
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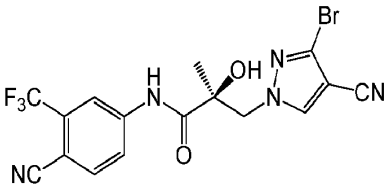
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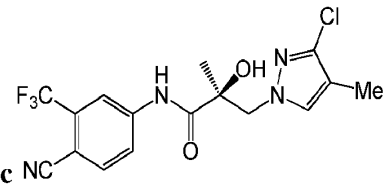
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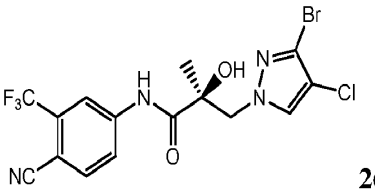
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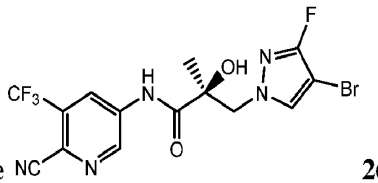
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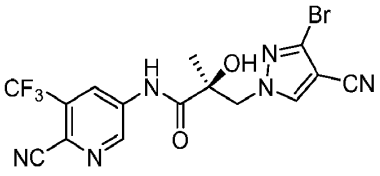
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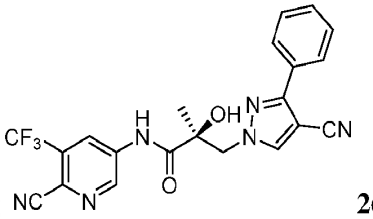
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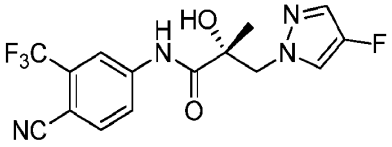
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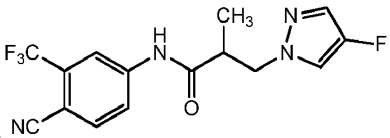
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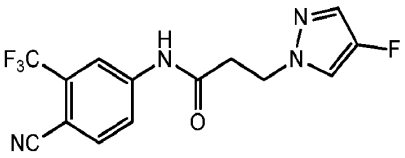
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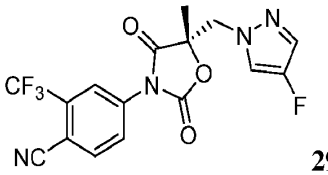
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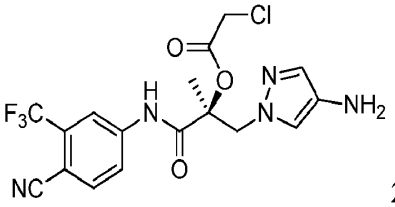
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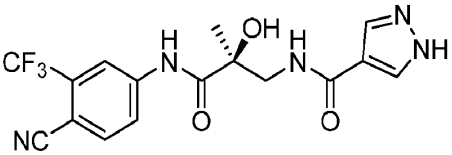
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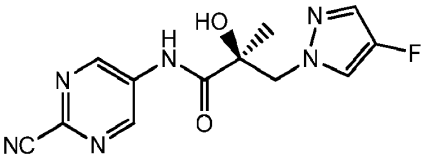
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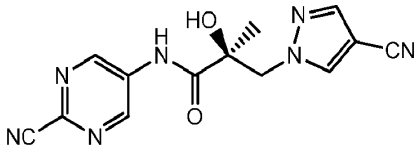
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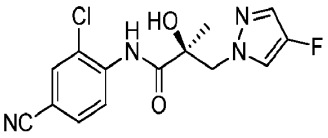
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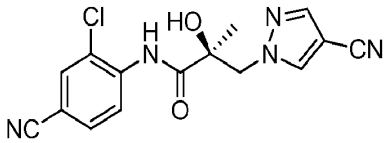
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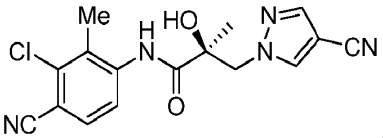
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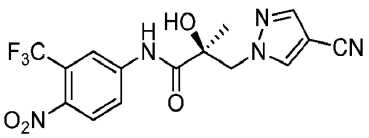
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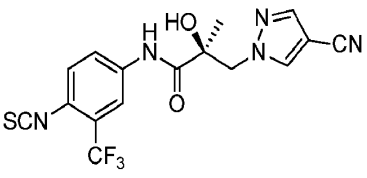
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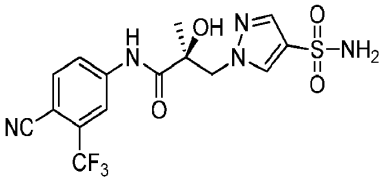
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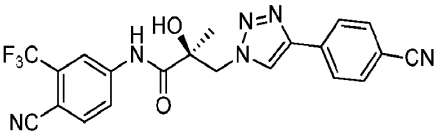
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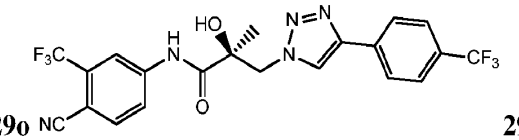
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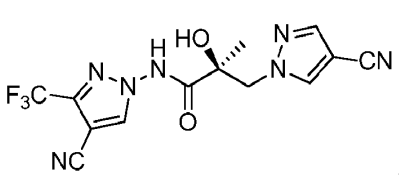
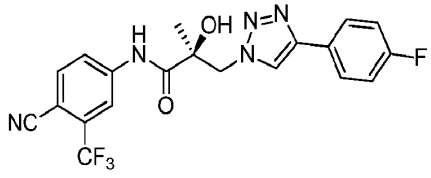
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29o

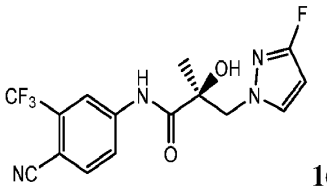
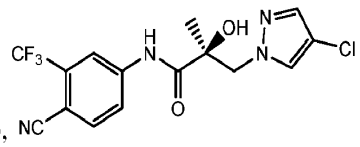


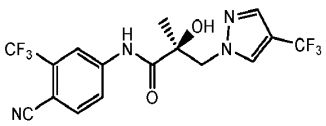
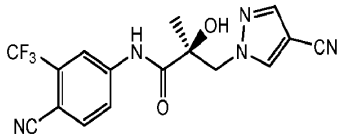
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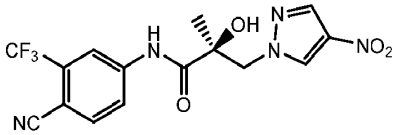



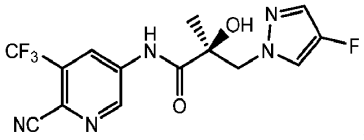
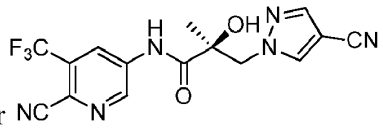
29q **29r.**

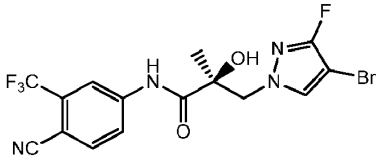
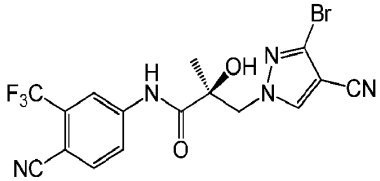
10. The method according to claim 1, wherein said compound is represented by any one of the following compounds

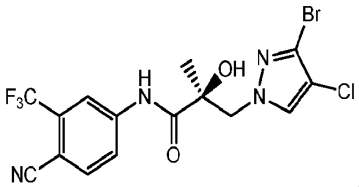
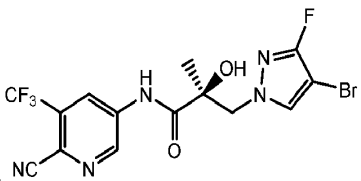

16b,

16c,

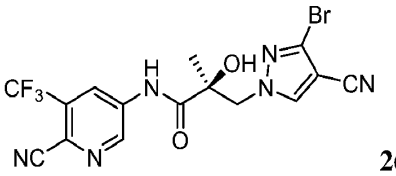

16g,

16i, and


16j.


21a or

21c.

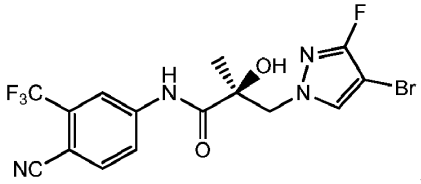

26a,

26c,


26e,

26f, and



26g.

11. The method according to claim 1, wherein said compound is represented by compound 26a



26a.

12. The method according to claim 1, wherein said prostate cancer is advanced prostate cancer, refractory prostate cancer, AR overexpressing prostate cancer, castration-resistant prostate cancer, castration-sensitive prostate cancer, AR-V7 expressing prostate cancer, or d567ES expressing prostate cancer.

13. The method according to claim 12, wherein said castration-resistant prostate cancer is AR overexpressing castration-resistant prostate cancer, F876L mutation expressing castration-resistant prostate cancer, F876L_T877A double mutation expressing castration-resistant prostate cancer, AR-V7 expressing castration-resistant prostate cancer, d567ES expressing castration-resistant prostate cancer, and/or castration-resistant prostate cancer characterized by intratumoral androgen synthesis.

14. The method according to claim 12, wherein said castration-sensitive prostate cancer is F876L mutation expressing castration-sensitive prostate cancer, F876L_T877A double mutation castration-sensitive prostate cancer, and/or castration-sensitive prostate cancer characterized by intratumoral androgen synthesis.

15. The method according to claim 12, wherein said treating of castration-sensitive prostate cancer is conducted in a non-castrate setting, or as monotherapy, or when castration-sensitive prostate cancer tumor is resistance to enzalutamide, apalutamide, and/or abiraterone.

16. The method according to claim 12, wherein the castration resistant prostate cancer (CRPC) is metastatic CRPC (mCRPC), non-metastatic CRPC (nmCRPC), or high-risk nmCRPC.

17. The method according to claim 1, further comprising administering androgen deprivation therapy (ADT).

18. The method according to claim 1, wherein the prostate cancer is resistant to treatment with an androgen receptor antagonist.

19. The method according to claim 18, wherein the androgen receptor antagonist is at least one of darolutamide, enzalutamide, apalutamide, bicalutamide, abiraterone, EPI-001, EPI-506, AZD-3514, galeterone, ASC-J9, flutamide, hydroxyflutamide, nilutamide, cyproterone acetate, ketoconazole, or spironolactone.

20. The method according to claim 1, wherein said prostate cancer is darolutamide resistant prostate cancer, enzalutamide resistant prostate cancer, apalutamide resistant prostate cancer, or abiraterone resistant prostate cancer.

21. The method according to claim 1, wherein said prostate cancer is darolutamide resistant prostate cancer.

22. The method according to claim 1, wherein said prostate cancer is enzalutamide resistant prostate cancer.

23. The method according to claim 1, wherein said prostate cancer is apalutamide resistant prostate cancer.

24. The method according to claim 1, wherein said prostate cancer is abiraterone resistant prostate cancer.