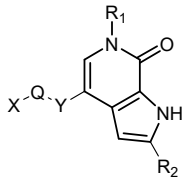
CLAIMS

1. A compound of Formula (I), or a pharmaceutically acceptable salt thereof,



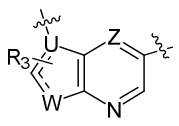
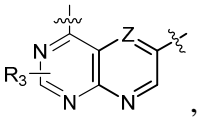
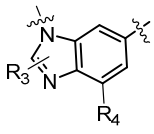
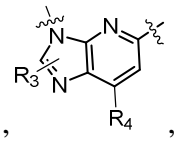
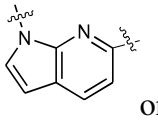
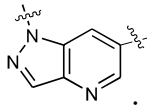
Formula (I)

wherein,

R_1 and R_2 are each independently selected from H, C_{1-6} alkyl, C_{1-6} alkoxy, C_{6-10} aryl or C_{5-10} heteroaryl, wherein the C_{1-6} alkyl, C_{1-6} alkoxy, C_{6-10} aryl or C_{5-10} heteroaryl is optionally substituted by C_{1-6} alkyl, $-NH_2$, -OH, C_{6-10} aryl or C_{5-10} heteroaryl; and the C_{5-10} heteroaryl has 1, 2, or 3 heteroatoms independently selected from nitrogen, oxygen or sulfur;

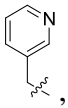
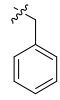
Q is absent or selected from C_{1-6} alkylene, $-SO_2-$ or -NH-, wherein the C_{1-6} alkylene or -NH- is optionally substituted by halogen, C_{1-6} alkyl or C_{1-6} alkoxy;

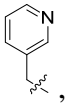
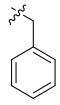
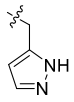
X is selected from H, C_{1-6} alkyl, C_{6-10} aryl or C_{5-10} heteroaryl, wherein the C_{1-6} alkyl, C_{6-10} aryl or C_{5-10} heteroaryl is optionally substituted by halogen, halo C_{1-6} alkyl, C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} alkylthio, C_{1-6} alkoxycarbonyl or C_{1-6} alkyl-SO_2-;

Y is selected from  ,  ,  ,  ,  or  ; wherein, ⎓ represents a single bond or a double bond, the U, W or Z is independently selected from C or N; R_3 is selected from H, halogen, hydroxyl, amino, C_{1-6} alkyl, C_{1-6} alkoxy, cyano or oxo; R_4 is H or $-N(R_5)-SO_2-R_6$; wherein R_5 and R_6 are each independently selected from H, C_{1-6} alkyl or C_{1-6} halogenoalkyl.

2. The compound according to claim 1, wherein R_1 is selected from H, C_{1-4} alkyl, phenyl or C_{5-6} heteroaryl, wherein the C_{1-4} alkyl, phenyl or C_{5-6} heteroaryl is optionally substituted by C_{1-6} alkyl, $-NH_2$, phenyl, or C_{5-6} heteroaryl.

3. The compound according to claim 1, wherein the heteroaryl has 1, 2 or 3 heteroatoms each independently selected from nitrogen or sulfur.

4. The compound according to claim 1, wherein R_1 is H, -CH_3,  ,  ,  ,  ,  ,  ,  ,  or  .

5. The compound according to claim 1, wherein R_1 is H, -CH_3,  ,  ,  ,  ,  or  .

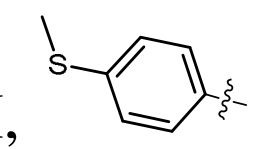
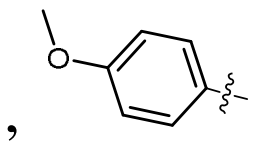
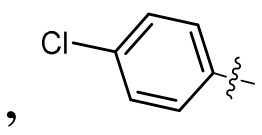
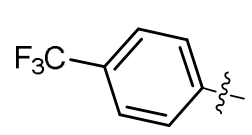
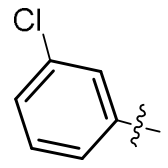
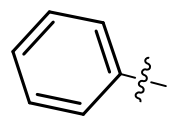
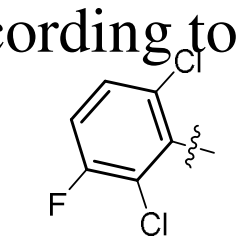
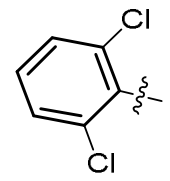
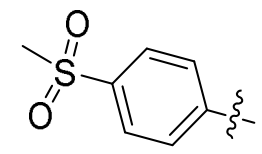
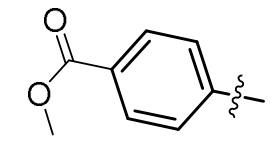
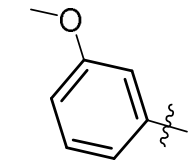
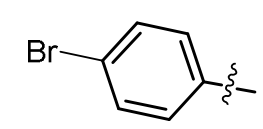
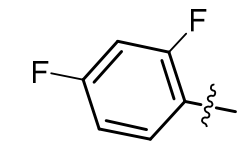
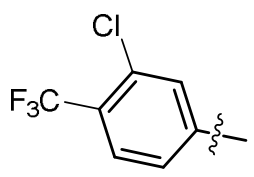
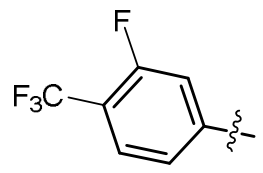
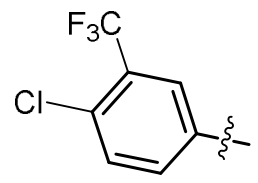
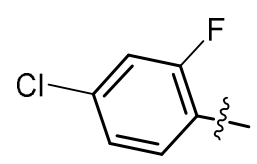
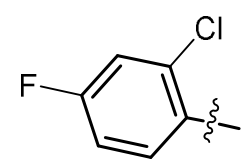
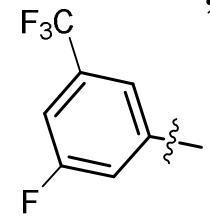
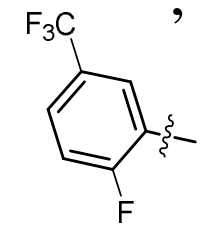
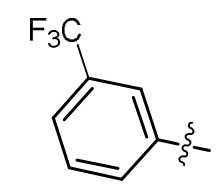
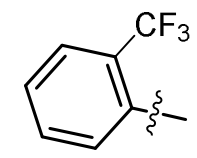
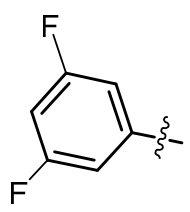
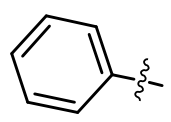
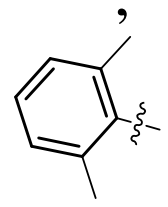
6. The compound according to claim 1, wherein R_2 is H or $C_{1\text{-}3}$ alkyl.

7. The compound according to claim 1, wherein R_2 is H or -CH_3.

8. The compound according to claim 1, wherein Q is absent or is selected from -CH_2-,  , -NH- or -SO_2-.

9. The compound according to claim 1, wherein X is selected from H, $C_{1\text{-}3}$ alkyl or phenyl, wherein the phenyl is unsubstituted or optionally substituted by halogen, halo $C_{1\text{-}3}$ alkyl, $C_{1\text{-}3}$ alkyl, $C_{1\text{-}3}$ alkoxy, $C_{1\text{-}3}$ alkylthio, $C_{1\text{-}3}$ alkoxycarbonyl, or $C_{1\text{-}3}$ alkyl-SO_2-.

10. The compound according to claim 1, wherein X is selected from H, $C_{1\text{-}3}$ alkyl or phenyl, wherein the phenyl is unsubstituted or optionally substituted by F, Cl, methyl, trifluoromethyl, methoxy, methylthio, methoxycarbonyl or methyl-SO_2-.

11. The compound according to claim 1, wherein X is $-CH_3$, H,  ,  ,  ,  ,  ,  ,  ,  ,  ,  ,  ,  ,  ,  ,  ,  ,  ,  ,  ,  ,  ,  ,  ,  or  .

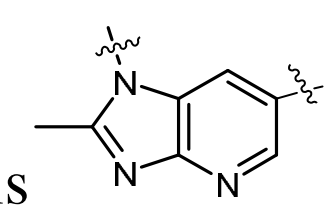
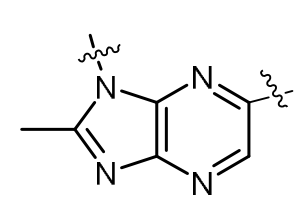
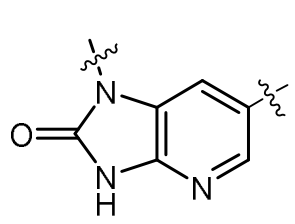
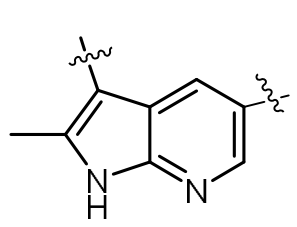
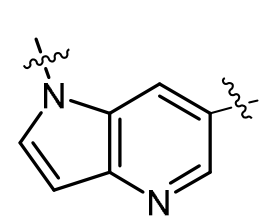
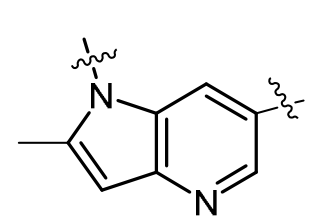
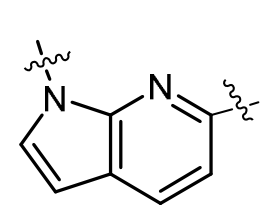
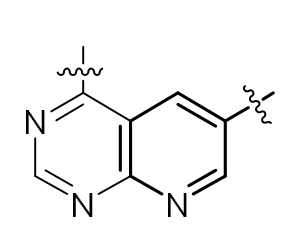
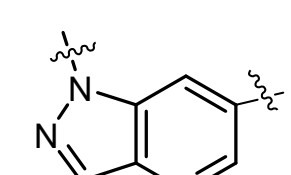
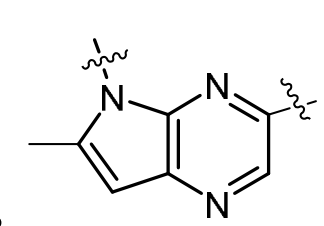
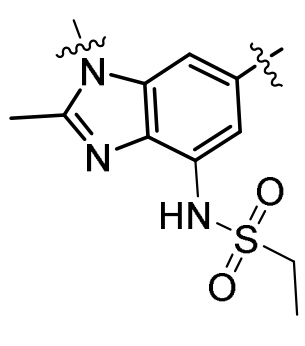
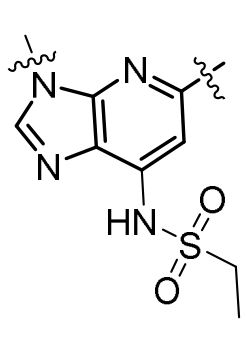
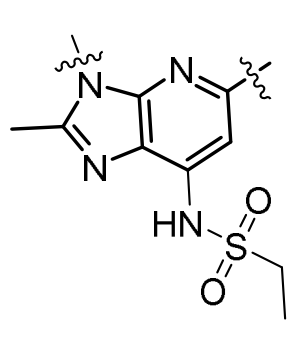
12. The compound according to claim 1, wherein R_3 is H, C_{1-6} alkyl, C_{1-6} alkoxy, cyano or oxo.

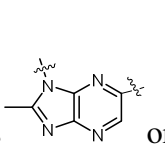
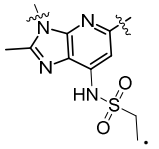
13. The compound of claim 1, wherein R_3 is H, methyl or oxo.

14. The compound of claim 1, wherein R_4 is $-N(R_5)-SO_2-R_6$.

15. The compound of claim 1, wherein R_5 and R_6 are independently selected from H or C_{1-6} alkyl.

16. The compound of claim 1, wherein R_5 and R_6 are independently selected from H, methyl or ethyl.

17. The compound of claim 1, wherein Y is  ,  ,  ,  ,  ,  ,  ,  ,  ,  ,  ,  or  .

18. The compound of claim 1, wherein Y is  or  .

19. A compound or a pharmaceutically acceptable salt thereof, wherein the compound is:

1) 4-(1-(4-chlorobenzyl)-2-methyl-1H-imidazo[4,5-b]pyridin-6-yl)-6-methyl-1H-pyrrolo[2,3-c]pyridin-7(6H)-one;

2) 4-(1-(4-methoxybenzyl)-2-methyl-1H-imidazo[4,5-b]pyridin-6-yl)-6-methyl-1H-pyrrolo[2,3-c]pyridin-7(6H)-one;

3) 6-methyl-4-(2-methyl-1-(4-(methylthio)benzyl)-1H-imidazo[4,5-b]pyridin-6-yl)-1H-pyrrolo[2,3-c]pyridin-7(6H)-one;

4) 6-methyl-4-(2-methyl-1-(4-(trifluoromethyl)benzyl)-1H-imidazo[4,5-b]pyridin-6-yl)-1H-pyrrolo[2,3-c]pyridin-7(6H)-one;

5) 4-(1-(3-chlorobenzyl)-2-methyl-1H-imidazo[4,5-b]pyridin-6-yl)-6-methyl-1H-pyrrolo[2,3-c]pyridin-7(6H)-one;

6) 4-(1-benzyl-2-methyl-1H-imidazo[4,5-b]pyridin-6-yl)-6-methyl-1H-pyrrolo[2,3-c]pyridin-7(6H)one;

7) 4-(1,2-dimethyl-1H-imidazo[4,5-b]pyridin-6-yl)-6-methyl-1,6-dihydro-7H-pyrrolo[2,3-c]pyridin-7-one;

8) 6-methyl-4-(2-methyl-1H-imidazo[4,5-b]pyridin-6-yl)-1,6-dihydro-7H-pyrrolo[2,3-c]pyridin-7-one;

9) Methyl 4-((2-methyl-6-(6-methyl-7-oxo-6,7-dihydro-1H-pyrrolo[2,3-c]pyridin-4-yl)-1H-imidazo[4,5-b]pyridin-1-yl)methyl)benzoate;

10) 6-benzyl-4-(1-(4-methoxybenzyl)-2-methyl-1H-imidazo[4,5-b]pyridin-6-yl)-1,6-dihydro-7H-pyrrolo[2,3-c]pyridin-7-one;

11) 6-isobutyl-4-(1-(4-methoxybenzyl)-2-methyl-1H-imidazo[4,5-b]pyridin-6-yl)-1,6-dihydro-7H-pyrrolo[2,3-c]pyridin-7-one;

12) 6-ethyl-4-(1-(4-methoxybenzyl)-2-methyl-1H-imidazo[4,5-b]pyridin-6-yl)-1,6-dihydro-7H-pyrrolo[2,3-c]pyridin-7-one;

13) 4-(1-(4-methoxybenzyl)-2-methyl-1H-imidazo[4,5-b]pyridin-6-yl)-2-methyl-1,6-dihydro-7H-pyrrolo[2,3-c]pyridin-7-one;

14) 4-(1-(4-methoxybenzyl)-2-methyl-1H-imidazo[4,5-b]pyridin-6-yl)-6-(thiazol-2-methyl)-1,6-dihydro-7H-pyrrolo[2,3-c]pyridin-7-one;

15) 4-(1-(4-methoxybenzyl)-2-methyl-1H-imidazo[4,5-b]pyridin-6-yl)-6-(pyrazol-2-methyl)-1,6-dihydro-7H-pyrrolo[2,3-c]pyridin-7-one;

16) 4-(1-(3-methoxybenzyl)-2-methyl-1H-imidazo[4,5-b]pyridin-6-yl)-2-methyl-1,6-dihydro-7H-pyrrolo[2,3-c]pyridin-7-one;

17) 4-(1-(4-chlorobenzyl)-2-methyl-1H-imidazo[4,5-b]pyridin-6-yl)-6-(pyridin-3-methyl)-1,6-dihydro-7H-pyrrolo[2,3-c]pyridin-7-one;

18) 4-(1-(4-chlorobenzyl)-2-methyl-1H-imidazo[4,5-b]pyrazin-6-yl)-6-methyl-1H-pyrrolo[2,3-c]pyridin-7(6H)-one;

19) 6-methyl-4-(2-methyl-1-(4-(trifluoromethyl)benzyl)-1H-imidazo[4,5-b]pyrazin-6-yl)-1H-pyrrolo[2,3-c]pyridin-7(6H)-one;

20) 4-(1-(4-methoxybenzyl)-2-methyl-1H-imidazo[4,5-b]pyrazin-6-yl)-6-methyl-1H-pyrrolo[2,3-c]pyridin-7(6H)-one;

21) 4-(1-(1-(4-chlorophenyl)ethyl)-2-methyl-1H-imidazo[4,5-b]pyrazin-6-yl)-6-methyl-1,6-dihydro-7H-pyrrolo[2,3-c]pyridin-7-one;

22) 4-(1-benzyl-2-methyl-1H-imidazo[4,5-b]pyrazin-6-yl)-6-methyl-1H-pyrrolo[2,3-c]pyridin-7(6H)-one;

23) 4-(1-(3-trifluoromethylbenzyl)-2-methyl-1H-imidazo[4,5-b]pyrazin-6-yl)-6-methyl-1H-pyrrolo[2,3-c]pyridin-7(6H)-one;

24) 4-(1-(2-fluoro-5-trifluoromethylbenzyl)-2-methyl-1H-imidazo[4,5-b]pyrazin-6-yl)-6-methyl-1H-pyrrolo[2,3-c]pyridin-7(6H)-one;

25) 4-(1-(3-fluoro-5-trifluoromethylbenzyl)-2-methyl-1H-imidazo[4,5-b]pyrazin-6-yl)-6-methyl-1H-pyrrolo[2,3-c]pyridin-7(6H)-one;

26) 4-(1-(2-fluoro-4-chlorobenzyl)-2-methyl-1H-imidazo[4,5-b]pyrazin-6-yl)-6-methyl-1H-pyrrolo[2,3-c]pyridin-7(6H)-one;

27) 4-(1-(3-trifluoromethyl-4-chlorobenzyl)-2-methyl-1H-imidazo[4,5-b]pyrazin-6-yl)-6-methyl-1H-pyrrolo[2,3-c]pyridin-7(6H)-one;

28) 4-(1-(3-fluoro-4-trifluoromethylbenzyl)-2-methyl-1H-imidazo[4,5-b]pyrazin-6-yl)-6-methyl-1H-pyrrolo[2,3-c]pyridin-7(6H)-one;

29) 4-(1-(3-chloro-4-trifluoromethylbenzyl)-2-methyl-1H-imidazo[4,5-b]pyrazin-6-yl)-6-

methyl-1H-pyrrolo[2,3-c]pyridin-7(6H)-one;

30) 4-(1-(3-chlorobenzyl)-2-methyl-1H-imidazo[4,5-b]pyrazin-6-yl)-6-methyl-1H-pyrrolo[2,3-c]pyridin-7(6H)-one;

31) 4-(1-(2,4-difluorobenzyl)-2-methyl-1H-imidazo[4,5-b]pyrazin-6-yl)-6-methyl-1H-pyrrolo[2,3-c]pyridin-7(6H)-one;

32) 4-(1-(4-bromobenzyl)-2-methyl-1H-imidazo[4,5-b]pyrazin-6-yl)-6-methyl-1H-pyrrolo[2,3-c]pyridin-7(6H)-one;

33) 6-methyl-4-(2-methyl-1-(4-(methylsulfonyl)benzyl)-1H-imidazo[4,5-b]pyrazin-6-yl)-1H-pyrrolo[2,3-c]pyridin-7(6H)-one;

34) 1-(4-chlorobenzyl)-6-(6-methyl-7-oxo-6,7-dihydro-1H-pyrrolo[2,3-c]pyridin-4-yl)-1,3-dihydro-2H-imidazo[4,5-b]pyridin-2-one;

35) 4-(3-(1-(2,6-dichloro-3-fluorophenyl)ethyl)-2-methyl-1H-pyrrolo[2,3-b]pyridin-5-yl)-6-methyl-1,6-dihydro-7H-pyrrolo[2,3-c]pyridin-7-one;

36) 4-(1-(2,6-dichlorobenzyl)-1H-pyrrolo[3,2-b]pyridin-6-yl)-6-methyl-1,6-dihydro-7H-pyrrolo[2,3-c]pyridin-7-one;

37) 4-(4-((4-chlorophenyl)amino)pyrido[2,3-d]pyrimidin-6-yl)-6-methyl-1,6-dihydro-7H-pyrrolo[2,3-c]pyridin-7-one;

38) 4-(1-(2,6-dichlorobenzyl)-2-methyl-1H-pyrrolo[3,2-b]pyridin-6-yl)-6-methyl-1,6-dihydro-7H-pyrrolo[2,3-c]pyridin-7-one;

39) 4-(1-(4-chlorobenzyl)-1H-pyrazolo[4,3-b]pyridin-6-yl)-6-methyl-1,6-dihydro-7H-pyrrolo[2,3-c]pyridin-7-one;

40) 4-(1-((4-chlorophenyl)sulfonyl)-1H-pyrrolo[2,3-b]pyridin-6-yl)-6-methyl-1,6-dihydro-7H-pyrrolo[2,3-c]pyridin-7-one;

41) N-(1-(4-chlorobenzyl)-2-methyl-6-(6-methyl-7-oxo-6,7-dihydro-1H-pyrrolo[2,3-c]pyridin-4-yl)-1H-benzo[d]imidazol-4-yl)ethanesulfonamide;

42) N-(2-methyl-6-(6-methyl-7-oxo-6,7-dihydro-1H-pyrrolo[2,3-c]pyridin-4-yl)-1-(4-(trifluoromethyl)benzyl)-1H-benzo[d]imidazol-4-yl)ethanesulfonamide;

43) N-(1-(4-methoxybenzyl)-2-methyl-6-(6-methyl-7-oxo-6,7-dihydro-1H-pyrrolo[2,3-c]pyridin-4-yl)-1H-benzo[d]imidazol-4-yl)ethanesulfonamide;

44) N-(1-(1-(4-chlorophenyl)ethyl)-2-methyl-6-(6-methyl-7-oxo-6,7-dihydro-1H-pyrrolo[2,3-c]pyridin-4-yl)-1H-benzo[d]imidazol-4-yl)ethanesulfonamide;

45) N-(1-benzyl-2-methyl-6-(6-methyl-7-oxo-6,7-dihydro-1H-pyrrolo[2,3-c]pyridin-4-yl)-1H-benzo[d]imidazol-4-yl)ethanesulfonamide;

46) N-(2-methyl-6-(6-methyl-7-oxo-6,7-dihydro-1H-pyrrolo[2,3-c]pyridin-4-yl)-1-(3-(trifluoromethyl)benzyl)-1H-benzo[d]imidazol-4-yl)ethanesulfonamide;

47) N-(2-methyl-6-(6-methyl-7-oxo-6,7-dihydro-1H-pyrrolo[2,3-c]pyridin-4-yl)-1-(2-fluoro-5-(trifluoromethyl)benzyl)-1H-benzo[d]imidazol-4-yl)ethanesulfonamide;

48) N-(2-methyl-6-(6-methyl-7-oxo-6,7-dihydro-1H-pyrrolo[2,3-c]pyridin-4-yl)-1-(3-fluoro-5-(trifluoromethyl)benzyl)-1H-benzo[d]imidazol-4-yl)ethanesulfonamide;

49) N-(2-methyl-6-(6-methyl-7-oxo-6,7-dihydro-1H-pyrrolo[2,3-c]pyridin-4-yl)-1-(2-fluoro-4-chlorobenzyl)-1H-benzo[d]imidazol-4-yl)ethanesulfonamide;

50) N-(2-methyl-6-(6-methyl-7-oxo-6,7-dihydro-1H-pyrrolo[2,3-c]pyridin-4-yl)-1-(3-(trifluoromethyl)-4chlorobenzyl)-1H-benzo[d]imidazol-4-yl)ethanesulfonamide;

51) N-(2-methyl-6-(6-methyl-7-oxo-6,7-dihydro-1H-pyrrolo[2,3-c]pyridin-4-yl)-1-(3-fluoro-4-(trifluoromethyl)benzyl)-1H-benzo[d]imidazol-4-yl)ethanesulfonamide;

52) N-(2-methyl-6-(6-methyl-7-oxo-6,7-dihydro-1H-pyrrolo[2,3-c]pyridin-4-yl)-1-(3-chloro-4-(trifluoromethyl)benzyl)-1H-benzo[d]imidazol-4-yl)ethanesulfonamide;

53) N-(2-methyl-6-(6-methyl-7-oxo-6,7-dihydro-1H-pyrrolo[2,3-c]pyridin-4-yl)-1-(3-chlorobenzyl)-1H-benzo[d]imidazol-4-yl)ethanesulfonamide;

54) N-(2-methyl-6-(6-methyl-7-oxo-6,7-dihydro-1H-pyrrolo[2,3-c]pyridin-4-yl)-1-(2,4-difluorobenzyl)-1H-benzo[d]imidazol-4-yl)ethanesulfonamide;

55) N-(2-methyl-6-(6-methyl-7-oxo-6,7-dihydro-1H-pyrrolo[2,3-c]pyridin-4-yl)-1-(4-bromobenzyl)-1H-benzo[d]imidazol-4-yl)ethanesulfonamide;

56) N-(2-methyl-6-(6-methyl-7-oxo-6,7-dihydro-1H-pyrrolo[2,3-c]pyridin-4-yl)-1-(4-(methylsulfonyl)benzyl)-1H-benzo[d]imidazol-4-yl)ethanesulfonamide;

57) N-(1-(2-chloro-4-fluorobenzyl)-2-methyl-6-(6-methyl-7-oxo-6,7-dihydro-1H-pyrrolo[2,3-c]pyridin-4-yl) -1H-benzo[d]imidazol-4-yl)ethanesulfonamide;

58) N-(5-(6-methyl-7-oxo-6,7-dihydro-1H-pyrrolo[2,3-c]pyridin-4-yl)-3-(4-(trifluoromethyl)benzyl)-3H-imidazo[4,5-b]pyridin-7-yl)ethanesulfonamide;

59) N-(3-(2,4-difluorobenzyl)-5-(6-methyl-7-oxo-6,7-dihydro-1H-pyrrolo[2,3-c]pyridin-4-yl)-3H-imidazo[4,5-b]pyridin-7-yl)ethanesulfonamide;

60) N-(3-(1-(4-chlorophenyl)ethyl)-5-(6-methyl-7-oxo-6,7-dihydro-1H-pyrrolo[2,3-

c]pyridin-4-yl)-3H-imidazo[4,5-b]pyridin-7-yl)ethanesulfonamide;

61) N-(3-(2-fluoro-5-(trifluoromethyl)benzyl)-5-(6-methyl-7-oxo-6,7-dihydro-1H-pyrrolo[2,3-c]pyridin-4-yl)-3H-imidazo[4,5-b]pyridin-7-yl)ethanesulfonamide;

62) N-(3-(3,5-difluorobenzyl)-5-(6-methyl-7-oxo-6,7-dihydro-1H-pyrrolo[2,3-c]pyridin-4-yl)-3H-imidazo[4,5-b]pyridin-7-yl)ethanesulfonamide;

63) N-(5-(6-methyl-7-oxo-6,7-dihydro-1H-pyrrolo[2,3-c]pyridin-4-yl)-3-(2-(trifluoromethyl)benzyl)-3H-imidazo[4,5-b]pyridin-7-yl)ethanesulfonamide;

64) N-(3-(2,4-difluorobenzyl)-2-methyl-5-(6-methyl-7-oxo-6,7-dihydro-1H-pyrrolo[2,3-c]pyridin-4-yl)-3H-imidazo[4,5-b]pyridin-7-yl)ethanesulfonamide;

65) N-(2-methyl-5-(6-methyl-7-oxo-6,7-dihydro-1H-pyrrolo[2,3-c]pyridin-4-yl)-3-(4-(trifluoromethyl)benzyl)-3H-imidazo[4,5-b]pyridin-7-yl)ethanesulfonamide;

66) N-(2-methyl-5-(6-methyl-7-oxo-6,7-dihydro-1H-pyrrolo[2,3-c]pyridin-4-yl)-3-(2-(trifluoromethyl)benzyl)-3H-imidazo[4,5-b]pyridin-7-yl)ethanesulfonamide;

67) N-(3-(3,5-difluorobenzyl)-2-methyl-5-(6-methyl-7-oxo-6,7-dihydro-1H-pyrrolo[2,3-c]pyridin-4-yl)-3H-imidazo[4,5-b]pyridin-7-yl)ethanesulfonamide; or

68) N-(3-(2,6-dimethylbenzyl)-2-methyl-5-(6-methyl-7-oxo-6,7-dihydro-1H-pyrrolo[2,3-c]pyridin-4-yl)-3H-imidazo[4,5-b]pyridin-7-yl)ethanesulfonamide.

20. Use of the compound of claim 1 in the manufacture of a medicament for treating a BET-mediated disease in a subject, wherein the BET-mediated disease is selected from the group consisting of B acute lymphoblastic leukemia, Burkitt's lymphoma, diffuse large B-cell lymphoma, chronic lymphocytic leukemia, Hodgkin's lymphoma, follicular lymphoma, primary plasma cell leukemia, large cell neuroendocrine carcinoma, colon cancer, rectal cancer, mantle cell lymphoma, multiple myeloma, breast cancer, prostate cancer, glioblastoma tumor, squamous cell esophageal cancer, liposarcoma, melanoma, pancreatic cancer, brain cancer, and lung cancer.

21. The use according to claim 20, wherein the BET includes BRD4.

22. The use according to claim 20, wherein the subject is human.