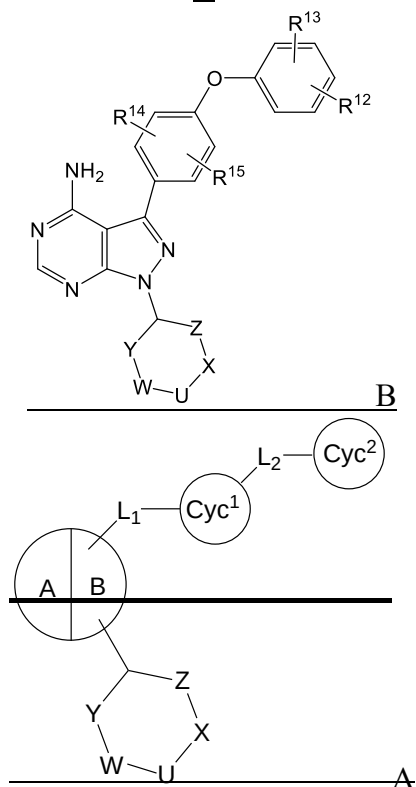


**What we claim is:**

1. A compound according to the Formula **AB**:



or pharmaceutically acceptable salts thereof,

wherein,

R<sup>12</sup>, R<sup>13</sup>, R<sup>14</sup> and R<sup>15</sup> are independently selected from the group consisting of H, halogen, substituted or unsubstituted C<sub>1</sub>-C<sub>6</sub> alkyl, substituted or unsubstituted C<sub>1</sub>-C<sub>6</sub> alkoxy, substituted or unsubstituted C<sub>3</sub>-C<sub>10</sub> cycloalkyl, and substituted or unsubstituted 5-15 membered heterocyclic group;

~~Ring A and ring B are fused to each other, and are independently selected from substituted or unsubstituted 5-15 membered heterocyclic ring or heteroaromatic ring;~~

~~Cyc<sup>1</sup> is selected from the group consisting of substituted or unsubstituted C<sub>1</sub>-C<sub>6</sub> alkyl, substituted or unsubstituted C<sub>3</sub>-C<sub>10</sub> cycloalkyl, substituted or unsubstituted C<sub>2</sub>-C<sub>6</sub> alkenyl, substituted or unsubstituted C<sub>3</sub>-C<sub>10</sub> cycloalkenyl, substituted or unsubstituted 5-15 membered heterocyclic group, substituted or unsubstituted 5-15 membered heteroaryl, substituted or unsubstituted C<sub>6</sub>-C<sub>10</sub> aryl;~~

~~Cyc<sup>2</sup> is selected from the group consisting of substituted or unsubstituted C<sub>1</sub>-C<sub>6</sub> alkyl, substituted or unsubstituted C<sub>3</sub>-C<sub>10</sub> cycloalkyl, substituted or unsubstituted C<sub>2</sub>-C<sub>6</sub> alkenyl, substituted or unsubstituted C<sub>3</sub>-C<sub>10</sub> cycloalkenyl, substituted or unsubstituted 5-15 membered heterocyclic group, substituted or unsubstituted 5-15 membered heteroaryl, substituted or unsubstituted C<sub>6</sub>-C<sub>10</sub> aryl;~~

~~L<sub>1</sub> and L<sub>2</sub> are selected independently from the group consisting of bond, N, O, S, S(=O), S(=O)<sub>2</sub>, C(=O), or C(O)NH;~~

Z is (CR<sup>2</sup>R<sup>3</sup>)<sub>n</sub>, n is 0, 1, or 2, 3, 4, 5, or 6;

Y is (CR<sup>4</sup>R<sup>5</sup>)<sub>m</sub>, m is 0, 1, or 2, 3, 4, 5, or 6;

U is (CR<sup>6</sup>R<sup>7</sup>)<sub>r</sub>, r is 0, 1, or 2, or 3;

~~wherein, n, m, r are not 0 simultaneously;~~

R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, R<sup>6</sup> and R<sup>7</sup> are selected independently from the group consisting of H, NH<sub>2</sub>, OH, halogen, and substituted or unsubstituted C<sub>1</sub>-C<sub>6</sub> alkyl; ~~or any two of R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, R<sup>6</sup>, R<sup>7</sup> and R<sup>8</sup> together with the adjacent carbon atom and the ring member atom between them form C<sub>3</sub>-C<sub>8</sub> carbocyclic ring, or 4-8 membered heterocyclic ring; wherein, the heteroatom of the heterocyclic ring is selected from the group consisting of S, O, or NR<sup>f</sup>; R<sup>f</sup> is H, C<sub>1</sub>-C<sub>10</sub> alkyl, C<sub>3</sub>-C<sub>10</sub> cycloalkyl, C<sub>6</sub>-C<sub>20</sub> aryl, or C<sub>3</sub>-C<sub>14</sub> heteroaryl; and at least one of R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, R<sup>6</sup>, R<sup>7</sup>, R<sup>8</sup> and R<sup>9</sup> is OH or [C(R<sup>10</sup>)(R<sup>11</sup>)]<sub>k</sub>-OH;~~

in the above groups, "substituted" refers to being substituted by one or more substituents selected from the group consisting of halogen, C<sub>1</sub>-C<sub>6</sub> alkyl, halogenated C<sub>1</sub>-C<sub>6</sub> alkyl, C<sub>1</sub>-C<sub>6</sub> alkoxy, halogenated C<sub>1</sub>-C<sub>6</sub> alkoxy, C<sub>3</sub>-C<sub>8</sub> cycloalkyl, halogenated C<sub>3</sub>-C<sub>8</sub> cycloalkyl, oxo, -CN, hydroxy, hydroxyl-C<sub>1</sub>-C<sub>6</sub> alkyl, -NH<sub>2</sub>, carboxy, C<sub>6</sub>-C<sub>10</sub> aryl, halogenated C<sub>6</sub>-C<sub>10</sub> aryl, and 5-10 membered heteroaryl with 1-3 heteroatoms selected from N, S, or O unsubstituted or substituted by substituent selected from the group consisting of: halogen, and phenyl;

W is selected independently from the group consisting of ~~N, O, S, or~~ and bond;

X is -C(R<sup>8</sup>R<sup>9</sup>)-;

R<sup>8</sup> is selected independently from the group consisting of H, substituted or unsubstituted C<sub>1</sub>-C<sub>6</sub> alkyl, substituted or unsubstituted C<sub>3</sub>-C<sub>10</sub> cycloalkyl, substituted or unsubstituted C<sub>6</sub>-C<sub>20</sub> aryl, substituted or unsubstituted C<sub>3</sub>-C<sub>14</sub> heteroaryl, CO<sub>2</sub>H, and C(O)NR<sup>f</sup>; ~~wherein the "substituted" refers to being substituted by one or more substituents selected from the group consisting of halogen, C<sub>1</sub>-C<sub>6</sub> alkyl, C<sub>3</sub>-C<sub>8</sub> cycloalkyl, and hydroxyl;~~

R<sup>9</sup> is selected independently from the group consisting of ~~H, OH or~~ and -[C(R<sup>10</sup>)(R<sup>11</sup>)]<sub>k</sub>-OH;

~~or R<sup>8</sup> and R<sup>9</sup> jointly form =O;~~

~~and when R<sup>8</sup> is H, R<sup>9</sup> is OH or [C(R<sup>10</sup>)(R<sup>11</sup>)]<sub>k</sub>-OH;~~

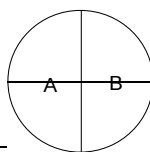
R<sup>10</sup> and R<sup>11</sup> are selected independently from the group consisting of H, substituted or unsubstituted C<sub>1</sub>-C<sub>6</sub> alkyl, substituted or unsubstituted C<sub>3</sub>-C<sub>10</sub> cycloalkyl, substituted or unsubstituted C<sub>6</sub>-C<sub>10</sub> aryl, and substituted or unsubstituted C<sub>3</sub>-C<sub>14</sub> heteroaryl; ~~or R<sup>10</sup> and R<sup>11</sup> together with the connected adjacent carbon atom to form C<sub>3</sub>-C<sub>8</sub> carbocyclic ring, or 4-8 membered heterocyclic ring, wherein, the heteroatom is selected from the group consisting of sulfur, oxygen or NR<sup>f</sup>; R<sup>f</sup> is H, C<sub>1</sub>-C<sub>10</sub> alkyl, C<sub>3</sub>-C<sub>10</sub> cycloalkyl, C<sub>6</sub>-C<sub>20</sub> aryl, or C<sub>3</sub>-C<sub>14</sub> heteroaryl;~~

k is 1, 2, 3, 4, 5, or 6;

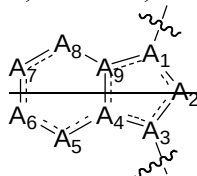
unless otherwise specified, the abovementioned heteroaromatic ring, heteroaryl, heterocyclic ring and heterocyclic group each independently containing 1-4 heteroatoms selected from the group consisting of N, O and S;

~~unless otherwise specified, "substituted" refers to being substituted by one or more (for example, 2, 3, 4, etc.) substituents selected from the group consisting of halogen, C<sub>1</sub>-C<sub>6</sub> alkyl, halogenated C<sub>1</sub>-C<sub>6</sub> alkyl, C<sub>1</sub>-C<sub>6</sub> alkoxy, halogenated C<sub>1</sub>-C<sub>6</sub> alkoxy, C<sub>3</sub>-C<sub>8</sub> cycloalkyl, halogenated C<sub>3</sub>-C<sub>8</sub> cycloalkyl, oxo, CN, hydroxy, hydroxyl C<sub>1</sub>-C<sub>6</sub> alkyl, NH<sub>2</sub>, carboxy, C<sub>6</sub>-C<sub>10</sub> aryl, halogenated C<sub>6</sub>-C<sub>10</sub> aryl, 5-10 membered heteroaryl with 1-3 heteroatoms selected from N, S, or O unsubstituted or substituted by substituent selected from the group consisting of: halogen, phenyl.~~

2. The compound according to claim 1, wherein,



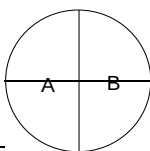
~~has a structure as followed:~~



~~wherein, the dotted line is bond or none; each A<sub>1</sub>, A<sub>2</sub>, A<sub>3</sub>, A<sub>4</sub>, A<sub>5</sub>, A<sub>6</sub>, A<sub>7</sub>, A<sub>8</sub> and A<sub>9</sub> is independently selected from the group consisting of O, S, N, NH, CH or CH<sub>2</sub>;~~

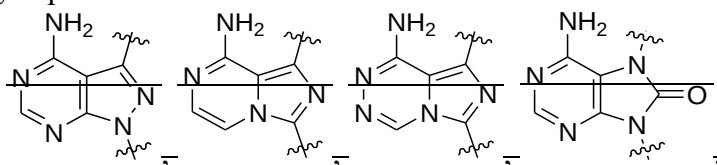
~~the wavy line represents linking point;~~

~~and the substitution sites of the abovementioned groups comprise substituents, wherein, the substituents are defined as above.~~

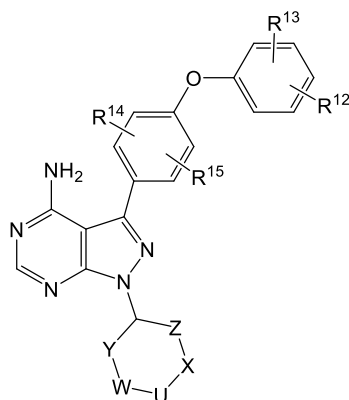


3. The compound according to claim 1, wherein,  
the group as followed:

~~has a structure selected from~~



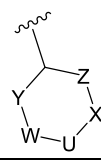
42. The compound according to claim 1, wherein, the compound has a structure according to following formula B:

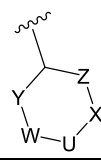


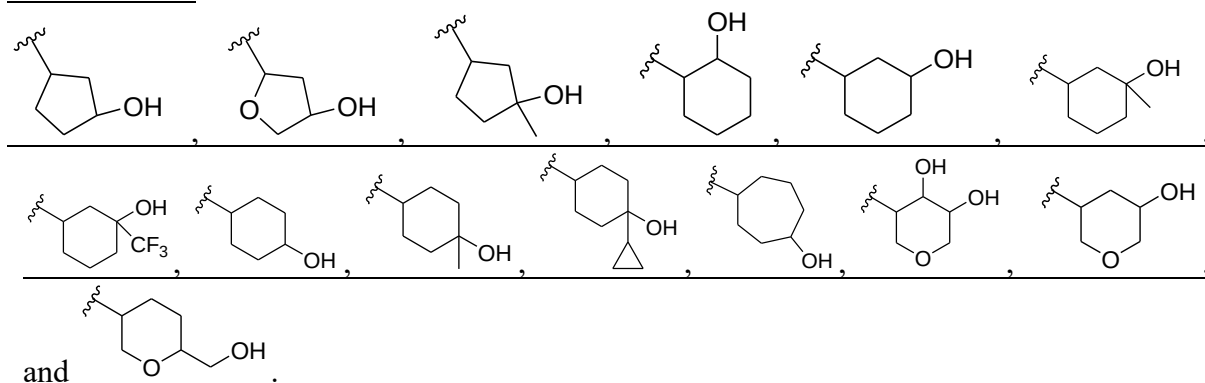
B

wherein,

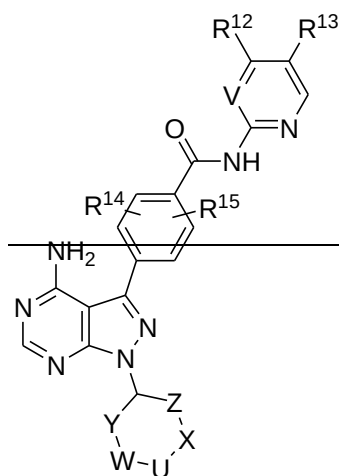
$R^{12}$ ,  $R^{13}$ ,  $R^{14}$  and  $R^{15}$  are independently selected from the group consisting of H, halogen, substituted or unsubstituted  $C_1$ - $C_6$  alkyl, and substituted or unsubstituted  $C_1$ - $C_6$  alkoxy, ~~substituted or unsubstituted  $C_3$ - $C_{10}$  cycloalkyl, substituted or unsubstituted 5-15 membered heterocyclic group.~~



3. The compound according to claim 1, wherein, the  is selected from the group shown below:



5. ~~The compound according to claim 1, wherein, the compound has a structure according to following formula C:~~



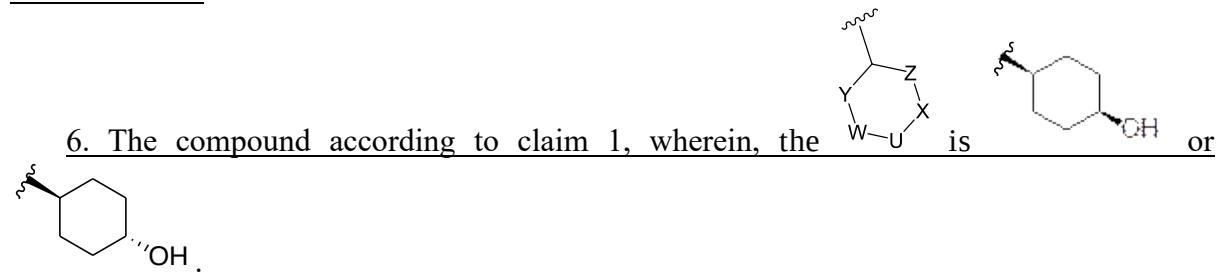
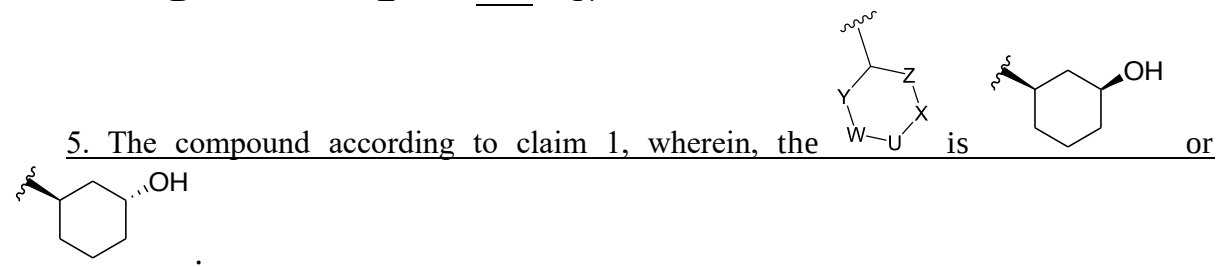
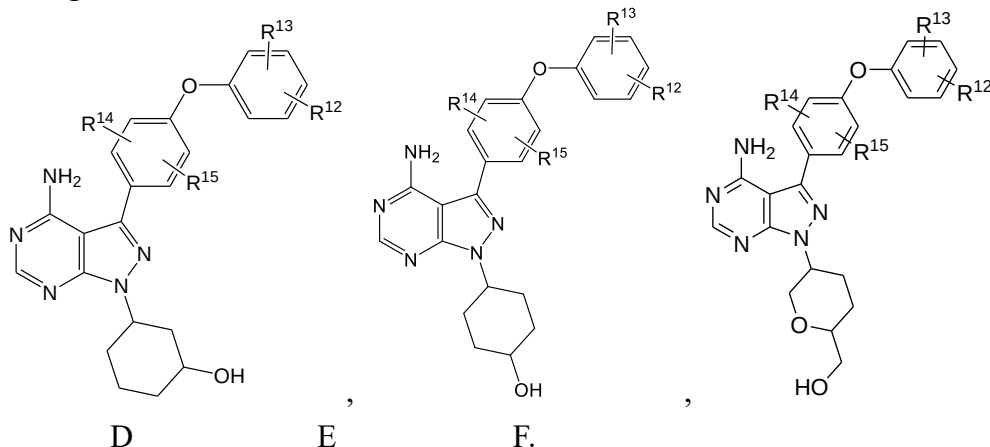
C

wherein, V is N and  $\text{CR}^{16}$ ;

$\text{R}^{12}$ ,  $\text{R}^{13}$ ,  $\text{R}^{14}$  and  $\text{R}^{15}$  are independently selected from the group consisting of H, halogen, substituted or unsubstituted  $\text{C}_1\text{-C}_6$  alkyl, substituted or unsubstituted  $\text{C}_1\text{-C}_6$  alkoxy, substituted or unsubstituted  $\text{C}_3\text{-C}_{10}$  cycloalkyl, substituted or unsubstituted 5-15 membered heterocyclic group;

$\text{R}^{16}$  is selected from the group consisting of H, unsubstituted or halogenated  $\text{C}_1\text{-C}_6$  alkyl, substituted or unsubstituted  $\text{C}_3\text{-C}_{10}$  cycloalkyl.

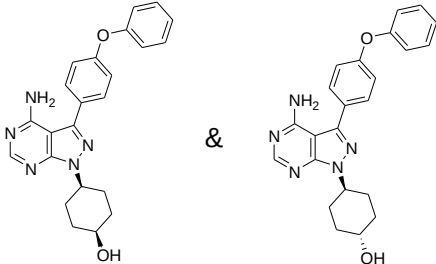
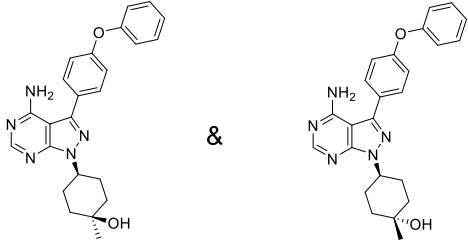
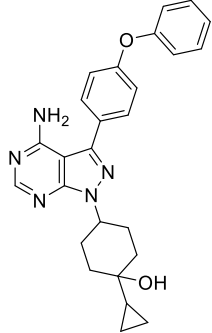
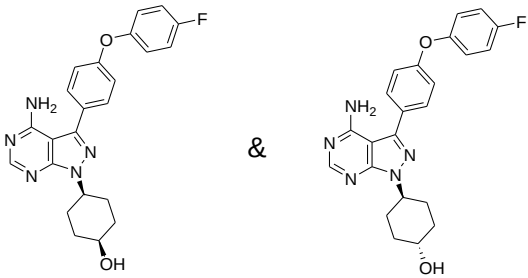
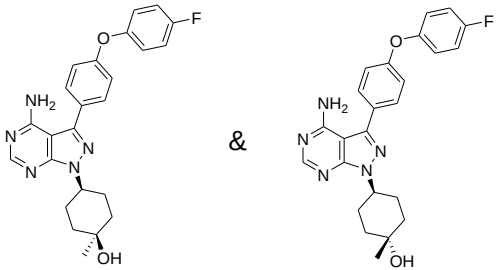
64. The compound according to claim 1, wherein, the compound has a structures according to formula D, E or F:

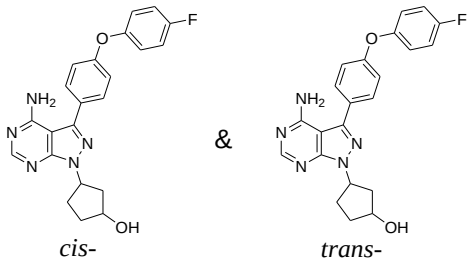
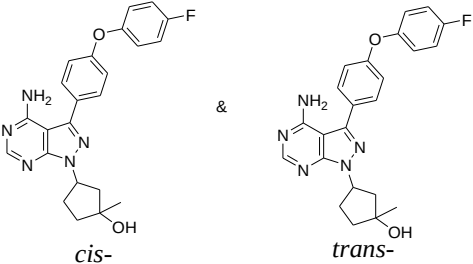
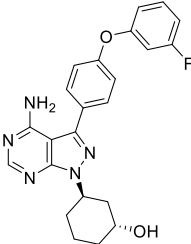
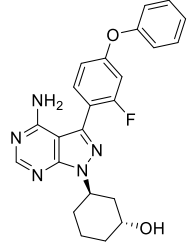
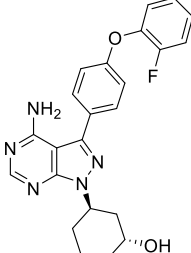
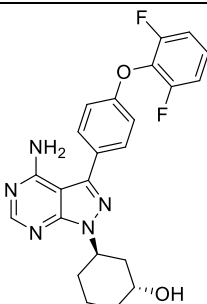


7. The compound according to claim 1, wherein, the compound is selected from the group consisting of:

|   |                                                                                        |  |
|---|----------------------------------------------------------------------------------------|--|
| 1 | (1R, 3R)-3-(4-amino-3-(4-phenoxyphenyl)-1h-pyrazole[3,4-d]pyrimidin-1-yl)cyclohex-1-ol |  |
|---|----------------------------------------------------------------------------------------|--|

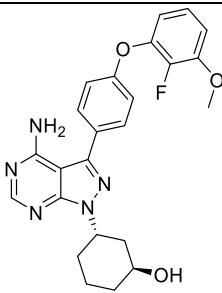
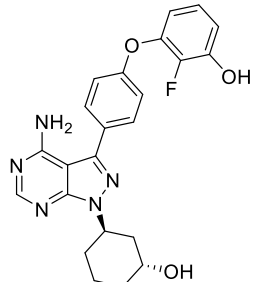
|   |                                                                                                                                                                                                         |  |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 2 | (1S, 3R)-3-(4-amino-3-(4-phenoxyphenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl) cyclohex-1-ol                                                                                                                 |  |
| 3 | (1S, 3R)-3-(4-amino-3-(4-phenoxyphenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl)-1-methylcyclohexane-1-ol / (1R, 3R)-3-(4-amino-3-(4-phenoxyphenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl)-1-methylcyclohexane-1-ol |  |
| 4 | 3-(4-amino-3-(4-phenoxyphenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl)-1-(trifluoromethyl)cyclohex-1-ol                                                                                                       |  |
| 5 | 3-(4-amino-3-(4-phenoxyphenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl)-1-methylcyclopentanol                                                                                                                  |  |
| 6 | 3-(4-amino-3-(4-phenoxyphenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl)-1-methylcyclopentanol                                                                                                                  |  |
| 7 | 3-(4-amino-3-(4-phenoxyphenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl)-1-(trifluoromethyl)cyclopentanol                                                                                                       |  |

|    |                                                                                                                                                                                                                          |                                                                                                                   |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| 8  | (1s, 4s)-4-(4-amino-3-(4-phenoxyphenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl)cyclohexane-1-ol / (1R, 4R)-4-(4-amino-3-(4-phenoxyphenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl)cyclohexane-1-ol                                    |                                 |
| 9  | (1s, 4s)-4-(4-amino-3-(4-phenoxyphenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl)-1-methylcyclohexane-1-ol / (1R, 4R)-4-(4-amino-3-(4-phenoxyphenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl)-1-methylcyclohexane-1-ol                  |                                 |
| 10 | 4-(4-amino-3-(4-phenoxyphenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl)-1-cyclopropylcyclohexane-1-ol                                                                                                                           |  <p>cis and trans mixture</p> |
| 11 | (1s, 4s)-4-(4-amino-3-(4-(4-fluorophenoxy) phenyl)-1H pyrazolo[3,4-d]pyrimidin-1-yl)cyclohex-1-ol / (1R, 4R)-4-(4-amino-3-(4-(4-fluorophenoxy)phenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl)cyclohex-1-ol                     |                               |
| 12 | (1s, 4s)-4-(4-amino-3-(4-(4-fluorophenoxy) phenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl)-1-methylcyclohex-1-ol and (1R, 4R)-4-(4-amino-3-(4-(4-fluorophenoxy)phenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl)-1-methylcyclohex-1-ol |                               |

|    |                                                                                                                                                                                                                               |                                                                                                                        |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| 13 | Cis-3-(4-amino-3-(4-(4-fluorophenoxy) phenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl)cyclopentane-1-ol and trans-3-(4-amino-3-(4-(4-fluorophenoxy)phenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl)cyclopentane-1-ol                        | <br>cis-                      trans- |
| 14 | (±) cis-3-(4-amino-3-(4-(4-fluorophenoxy) phenyl)-1H pyrazolo[3,4-d]pyrimidin-1-yl)-1-methylcyclopentan-1-ol / (±) trans-3-(4-amino-3-(4-(4-fluorophenoxy) phenyl)-1H pyrazolo[3,4-d]pyrimidin-1-yl)-1-methylcyclopentan-1-ol | <br>cis-                      trans- |
| 15 | (1R, 3R)-3-(4-amino-3-(4-(3-fluorophenoxy) phenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl) cyclohex-1-ol                                                                                                                            |                                    |
| 16 | (1R, 3R)-3-(4-amino-3-(2-fluoro-4-phenoxyphenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl) cyclohex-1-ol                                                                                                                              |                                   |
| 17 | (1R, 3R)-3-(4-amino-3-(4-(3-fluorophenoxy) phenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl) cyclohex-1-ol                                                                                                                            |                                   |
| 18 | (1R, 3R)-3-(4-amino-3-(4-(2,6-difluorophenoxy) phenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl) cyclohex-1-ol                                                                                                                        |                                   |

|    |                                                                                                              |  |
|----|--------------------------------------------------------------------------------------------------------------|--|
| 19 | (1R, 3R)-3-(4-amino-3-(4-(2-fluoro-3-methoxyphenoxy) phenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl) cyclohex-1-ol |  |
| 20 | (1s, 4s)-4-(4-amino-3-(4-(2-fluoro-3-methoxyphenoxy)phenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl)cyclohex-1-ol   |  |
| 21 | (1r, 4r)-4-(4-amino-3-(4-(2-fluoro-3-methoxyphenoxy)phenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl)cyclohex-1-ol   |  |
| 22 | Cis-3-(4-amino-3-(4-(2-fluoro-3-methoxyphenoxy) phenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl)cyclopentane-1-ol   |  |
| 23 | Trans-3-(4-amino-3-(4-(2-fluoro-3-methoxyphenoxy)phenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl)cyclopentane-1-ol  |  |
| 24 | 5-(4-amino-3-(4-phenoxyphenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl)tetrahydro-2H-pyran-3,4-diol                 |  |

|    |                                                                                                                        |  |
|----|------------------------------------------------------------------------------------------------------------------------|--|
| 25 | 3-(4-amino-3-(4-(3-fluorophenoxy) phenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl)cyclopentane-1-ol                           |  |
| 26 | Cis-3-(4-amino-3-(4-(2-fluoro-3-methoxyphenoxy) phenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl)cyclohex-1-ol                 |  |
| 27 | 3-(4-amino-3-(4-(2-fluoro-3-methoxyphenoxy)phenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl)cyclohexane-1,2-diol               |  |
| 28 | 4-(4-amino-3-(4-(2-fluoro-3-methoxyphenoxy)phenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl) cyclohexane-1,2-diol              |  |
| 30 | (5-(4-amino-3-(4-(2-fluoro-3-methoxyphenoxy)phenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl)tetrahydro-2h-pyran-2-yl)methanol |  |
| 31 | (1R,3R)-3-(4-amino-3-(4-(2-fluoro-3-(methoxy-d3)phenoxy)phenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl)cyclohexanol          |  |

|    |                                                                                                          |                                                                                     |
|----|----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 32 | (1S,3S)-3-(4-amino-3-(4-(2-fluoro-3-methoxyphenoxy)phenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl)cyclohexanol |   |
| 33 | 3-(4-(4-amino-1-((1R,3R)-3-hydroxycyclohexyl)-1H-pyrazolo[3,4-d]pyrimidin-3-yl)phenoxy)-2-fluorophenol   |  |

8. A pharmaceutical composition is provided, which comprising (1) the compound of any of claims 1-7, or stereoisomers or tautomers thereof, or pharmaceutically acceptable salts, hydrates or solvates thereof; and (2) pharmaceutically acceptable carriers.

9. ~~The use~~ Use of the compound according to claim 1-7, or stereoisomers or tautomers thereof, or pharmaceutically acceptable salts, hydrates or solvates thereof, or the pharmaceutical composition according to claim 8, ~~wherein~~ in the preparation of drugs for preventing and/or treating diseases which relates to BTK abnormal activity and BTK mutants (e.g. C481S) abnormal activity.

10. ~~The use according to claim 9;~~ wherein, the diseases or disorders are selected from the group consisting of bladder cancer, brain tumor, breast cancer, uterine cancer, colorectal cancer, esophageal cancer, liver cancer, follicular lymphoma, melanoma, malignant hematologic disease, myeloma, ovarian cancer, non-small cell lung cancer, prostate cancer, small cell lung cancer, and B- cell derived lymphoid malignancy, B cell proliferative disorder: diffuse B cell lymphoma, follicular lymphoma, chronic lymphocytic lymphoma, chronic lymphocytic leukemia, B-cell prolymphocyte leukemia, lymphoplasmacytic lymphoma/Waldenstrom's macroglobulinemia, splenic marginal zone lymphoma, plasmacytic myeloma, plasmacytoma, extranodal marginal zone B-cell lymphoma, intranodal marginal zone B-cell lymphoma, mantle cell lymphoma Mediastinal (thymic) large B-cell lymphoma, intravascular large B-cell lymphoma, primary exudative lymphoma, Burkitt's lymphoma/leukemia, and ~~or~~ lymphomatoid granulomatosis.

10. The use according to claim 9, wherein the BTK mutant is C481S.