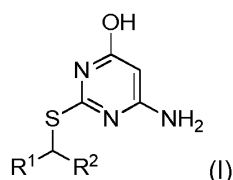


Claims

1. A process for the preparation of a compound of formula I,



or a salt thereof, wherein

R¹ represents aryl or pyridyl optionally substituted with one or more groups selected from halo, -CN, -C(O)NR³R⁴, -S(O)₂R⁵; C₁₋₆ alkyl, C₂₋₆ alkenyl, C₂₋₆ alkynyl, wherein the latter three groups are optionally substituted by one or more F;

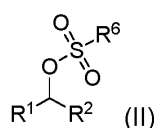
R² represents C₁₋₆ alkyl optionally substituted by one or more F;

R³ and R⁴ each independently represent H or C₁₋₆ alkyl optionally substituted by one or more F;

R⁵ represents C₁₋₆ alkyl optionally substituted by one or more F;

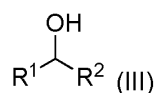
which process comprises the steps of:

(i) forming a compound of formula II,



wherein R¹ and R² are as defined for a compound of formula I and R⁶ represents C₁₋₆ alkyl optionally substituted by one or more F, or phenyl optionally substituted by one or more groups selected from halo, methyl and -NO₂;

by reacting a compound of formula III



wherein R¹ and R² are as defined for a compound of formula I or II;

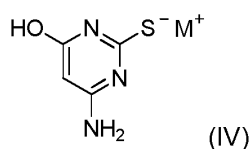
5 with a suitable sulfonating agent in the presence of a suitable base B¹

and a suitable solvent S¹,

and subsequently

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(ii) reacting the compound of formula II, with a compound of formula IV,



wherein M⁺ represents Li⁺, Na⁺, K⁺ or Cs⁺

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wherein the compound of formula III is provided as a single enantiomer.

2. A process as claimed in Claim 1, wherein the compound of formula II is not isolated from the reaction mixture from step (i) before it is used in step (ii).

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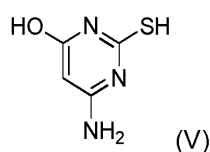
3. A process as claimed in Claim 1 or Claim 2, wherein S¹ is a solvent in which the salt formed between B¹ and the leaving group of the sulfonating agent is insoluble.

4. A process as claimed in any one of Claims 1 to 3, wherein step (ii) comprises bringing a solution of a compound of formula II in a suitable solvent S¹ into association with a solution of a compound of formula IV in a suitable solvent S².

5. A process as claimed in any one of Claims 1 to 4, wherein the process further comprises the step of:

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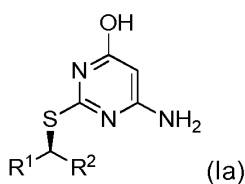
(iii) preparing a compound of formula IV by reacting a compound of formula V



with a suitable base B² in the presence of a suitable solvent S².

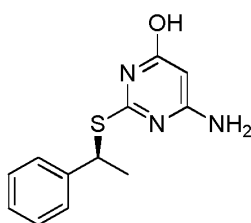
- 5 6. A process as claimed in Claim 4, wherein the solution of a compound of formula IV is obtained from step (iii), optionally after one or more purification steps.
7. A process as claimed in any one of the preceding claims, wherein S¹ is selected from the group consisting of diethyl ether, methyl *tert*-butyl ether, 1,2-dimethoxyethane,
10 1,4-dioxane, tetrahydrofuran and 2-methyltetrahydrofuran.
8. A process as claimed in Claim 7, wherein S¹ is methyl *tert*-butyl ether.
9. A process as claimed in any one of Claims 1 to 8, wherein B¹ is an organic amine
15 base.
10. A process as claimed in Claim 9, wherein B¹ is triethylamine.
11. A process as claimed in any one of Claims 4 to 10, wherein S² is a polar aprotic
20 solvent.
12. A process as claimed in Claim 11, wherein S² is *N,N*-dimethylformamide.
13. A process as claimed in any one of Claims 1 to 12, wherein B² is selected from the
25 group consisting of lithium hydroxide, lithium carbonate, sodium hydroxide, sodium carbonate, potassium hydroxide, potassium carbonate, caesium hydroxide and caesium carbonate.
14. A process as claimed in Claim 13, wherein B² is sodium hydroxide.
30
15. A process as claimed in any one of Claims 1 to 14, wherein R¹ represents aryl or pyridyl optionally substituted with one or more groups selected from halo, -CN, -SO₂Me, or -CONH₂.

16. A process as claimed in Claim 15, wherein R¹ represents phenyl.
17. A process as claimed in any one of Claims 1 to 16, wherein R² represents C₁₋₃ alkyl.
18. A process as claimed in any one of Claims 1 to 17, wherein R² represents methyl.
19. A process as claimed in any one of Claims 1 to 18, wherein the process further comprises the step of:
- (ib) removal of the salt formed between B¹ and the leaving group of the sulfonating agent from the solution of a compound of formula II in S¹ obtained from step (i).
20. A process as claimed in any one of Claims 1 to 19, further comprising the step of:
- (iv) treating the crude material obtained from step (ii) with a suitable solvent S⁴ to cause precipitation of the compound of formula I.
21. A process as claimed in Claim 20, wherein S⁴ is acetonitrile.
22. A process as claimed in any one of Claims 1 to 21, wherein the sulfonating agent is mesyl chloride or tosyl chloride.
23. A process as claimed in any one of the preceding claims, wherein the process is a process for the preparation of a compound of formula Ia, or a salt thereof,



wherein R¹ and R² are as defined in any one of the preceding claims.

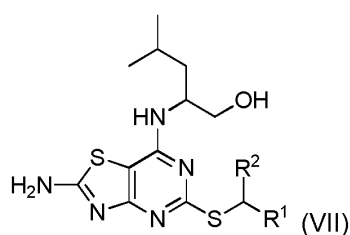
24. A process as claimed in Claim 23, wherein the compound of formula Ia is 6-amino-2-[[[(1S)-1-phenylethyl]sulfanyl]pyrimidin-4-ol, or a salt thereof.



25. A process as claimed in claim 23 or 24, wherein the compound of formula I or Ia has a chiral purity of greater than 96%, preferably greater than 99%, more preferably greater than 99.5%.

26. The compound 6-amino-2-[(1S)-1-phenylethyl]sulfanylpuridin-4-ol, or a salt thereof, wherein the compound has a chiral purity of greater than 99.1%, preferably greater than 99.5%.

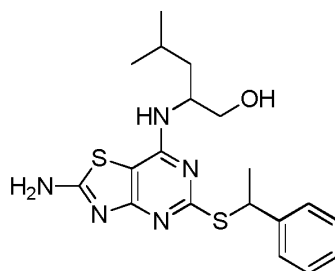
27. A process for the preparation of a compound of formula VII, or a salt thereof,



wherein R¹ and R² are as defined in any one of the preceding claims,

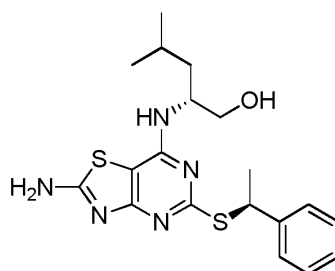
wherein the process comprises a process as defined in any one of Claims 1 to 22

28. A process as claimed in Claim 27, wherein the process is for the preparation of 2-[(2-amino-5-[(1-phenylethyl)thio][1,3]thiazolo[4,5-d]pyrimidin-7-yl)amino]-4-methylpentan-1-ol, or a salt thereof,



wherein the process comprises a process as defined in any one of Claims 1 to 22.

29. A process as claimed in Claim 28, wherein the process is a process for the
5 preparation of (2R)-2-[(2-amino-5-[(1S)-1-phenylethyl]thio][1,3]thiazolo[4,5-*d*]pyrimidin-7-yl)amino]-4-methylpentan-1-ol, or a salt thereof.



- 10 30. A process as claimed in Claim 29, wherein the (2R)-2-[(2-amino-5-[(1S)-1-phenylethyl]thio][1,3]thiazolo[4,5-*d*]pyrimidin-7-yl)amino]-4-methylpentan-1-ol has a chiral purity of greater than 99.2%, preferably greater than 99.5%.

- 15 31. The compound (2R)-2-[(2-amino-5-[(1S)-1-phenylethyl]thio][1,3]thiazolo[4,5-*d*]pyrimidin-7-yl)amino]-4-methylpentan-1-ol, wherein the compound has a chiral purity of greater than 99.8%.

- 20 32. A process for the preparation of a pharmaceutical formulation comprising a compound, or a salt thereof, which process is characterised in that it includes a process as defined in any one of Claims 1 to 22.