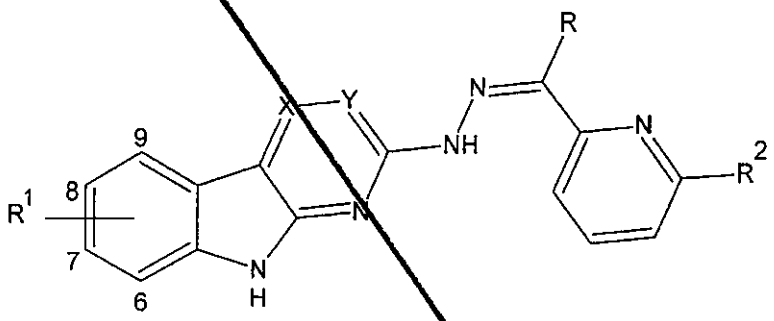
Claims

1. Cytotoxic compound of the general formula I, wherein R is H or methyl or methylene substituted by C_1-C_4 straight or branched alkyl, R^1 is selected from the group consisting of H, C_1-C_4 straight or branched alkyl, methoxy, methoxy substituted by from one to three fluorine, halogen; R^2 is H or C_1-C_4 straight or branched alkyl; X is CH or N; Y is CH or N; R does not comprise H or methyl if R^1 is H or C_1-C_4 alkyl, R^2 is H or C_1-C_4 straight or branched alkyl, X is N and Y is N.



I

2. The compound of claim 1, wherein R^2 is H.

3. The compound of claim 2, selected from the group consisting of R = H, R^1 = 6-CH_3, R_2=H, X and Y = CH; R = $CH_2C(CH_3)_3$, R^1 = 6-CH_3, R_2 = H, X and Y = N; R = CH_2CH_3, R^1 = 6-CH_3, R_2 = H, X and Y = N.

4. The compound of claim 1 or 2, additionally substituted by C_1-C_4 straight or branched alkyl at one of positions 6, 7, 8 or 9 of the mono-, di- or tri-azacarbazolyl moiety not substituted by R^1.

5. A mixture of cis-, trans-isomers of the compound of any of claims 1 to 4.

6. A pharmaceutically acceptable salt, salt/solvent complex, metal complex, except one with any of Fe^{2+}, Fe^{3+}, Co^{2+}, solvent complex or prodrug of the compound of any of claims 1 to 5.

7. The pharmaceutical acceptable salt of claim 6 selected from hydrochloride and di-hydrochloride.

8. Pharmaceutical composition comprising the compound of any of claims 1 to 7 and a pharmaceutically acceptable carrier.

9. Use of the compound of any of claims 1 to 7 or the pharmaceutical composition of claim 8 for treating a solid cancer tumour in a person.

10. Use of the compound of any of claims 1 to 7 or the pharmaceutical composition of claim 8 in combination with an autophagy inhibiting agent for treating a solid cancer tumour in a person.

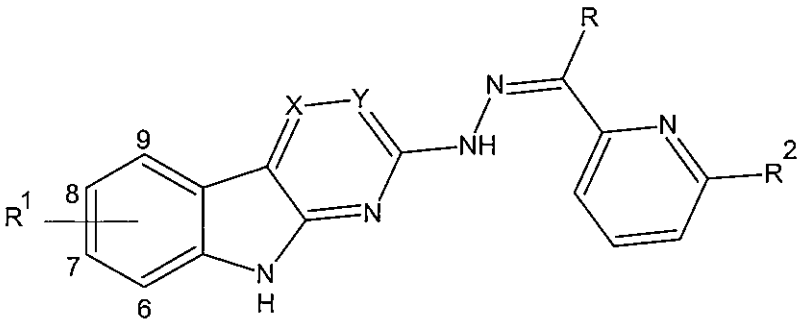
11. A method of treating a solid cancer tumour in a person, comprising administering to the person a pharmacologically effective dose of the compound of any of claims 1 to 7 or the pharmaceutical composition of claim 8.

12. The method of claim 11, comprising administration of an autophagy inhibiting agent in combination with the compound of any of claims 1 to 7 or the pharmaceutical composition of claim 8.

13. The use of claim 10 or the method of claim 12, wherein the autophagy inhibiting agent is selected from the group consisting of chloroquine, hydroxychloroquine, 3-methyladenine, adenosine, bafilomycin A1, 5-amino-4-imidazole carboxamide riboside, wortmannin, viniblastine.

Claims

1. Cytotoxic compound of the general formula I, wherein R is H or methyl or methylene substituted by C_1-C_4 straight or branched alkyl, R^1 is selected from the group consisting of H, C_1-C_4 straight or branched alkyl, methoxy, methoxy substituted by from one to three fluorine, halogen; R^2 is H or C_1-C_4 straight or branched alkyl; X is CH or N; Y is CH or N; R does not comprise H or methyl ifR^1 is H or C_1-C_4 alkyl, R^2 is H or C_1-C_4 straight or branched alkyl, X is N and Y is N.



I

2. The compound of claim 1, wherein R^2 is H.

3. The compound of claim 2, selected from the group consisting of R = H, R^1 = 6-CH_3, R_2=H, X and Y = CH; R = $CH_2C(CH_3)_3$, R^1 = 6-CH_3, R_2 = H, X and Y = N; R = CH_2CH_3, R^1 = 6-CH_3, R_2 = H, X and Y = N.

4. The compound of claim 3, wherein R = $CH_2C(CH_3)_3$, R^1 = 6-CH_3, R_2 = H, X and Y = N.

5. The compound of claim 3, wherein R = CH_2CH_3, R^1 = 6-CH_3, R_2 = H, X and Y = N.

6. The compound of any of claims 1 to 5, additionally substituted by C_1-C_4 straight or branched alkyl at one of positions 6, 7, 8 or 9 of the mono-, di- or tri-azacarbazolyl moiety not substituted by R^1.

7. A mixture of cis-, trans-isomers of the compound of any of claims 1 to 6.

8. A pharmaceutically acceptable salt, salt/solvent complex, metal complex, except one with any of Fe^{2+}, Fe^{3+}, Co^{2+}, solvent complex or prodrug of the compound of any of claims 1 to 7.

9. The pharmaceutical acceptable salt of claim 8 selected from hydrochloride and di-hydrochloride.

10. Pharmaceutical composition comprising the compound of any of claims 1 to 7 or the salt of any of claims 8-9 and a pharmaceutically acceptable carrier.

11. The compound of any of claims 1 to 7, the pharmaceutical salt of any of claims 8-9, or the pharmaceutical composition of claim 10 for use in treating a solid cancer tumour.

12. The compound of any of claims 1-7, the pharmaceutical salt of any of claims 8-9, or the pharmaceutical composition of claim 10 for use according to claim 11 in a pharmacologically effective dose.

13. The compound of any of claims 1-7, the pharmaceutical salt of any of claims 8-9 or the pharmaceutical composition of claim 10 for use according to claim 11 or 12, wherein the tumour is starved on glucose before administration.