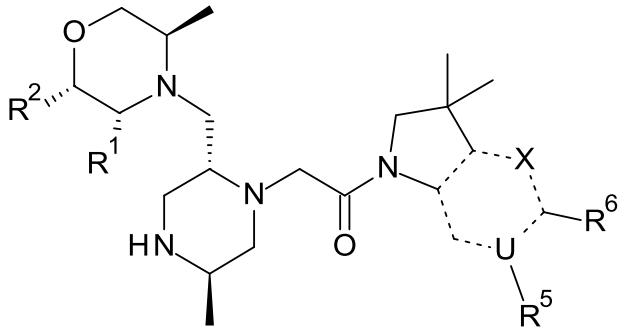
CLAIMS

1. A compound of formula (I):



(I)

or a tautomeric or a stereochemically isomeric form, a pharmaceutically acceptable salt or a solvate thereof;

wherein

X is CR^4, N or NR^3;

wherein

- when X is CR^4, then U represents nitrogen and R^6 represents oxo; or
- when X is N, then U represents carbon and R^6 represents hydroxymethyl or -$CH(OR^x)CH_2OR^z$; or
- when X is NR^3, then U represents carbon and R^6 represents oxo;

dashed bond (-------) represents a single or double bond wherein at least two of said dashed bonds represent a double bond;

R^1 and R^2 independently represent hydrogen or methyl;

R^3 represents hydrogen, methyl or $–NH_2$;

R^4 represents hydrogen, methyl, hydroxymethyl, $–NH_2$ or fluorine;

R^5 represents unsubstituted n-butyl or benzyl substituted on the phenyl group by one or two fluorines; and

R^x and R^z independently represent hydrogen or methyl;

for use in therapy.

2. A compound for use as defined in claim 1, wherein one of R^1 and R^2 represents hydrogen and the other represents methyl or R^1 and R^2 both represent hydrogen.

3. A compound for use as defined in claim 1 or claim 2, wherein R^1 and R^2 both represent hydrogen.

4. A compound for use as defined in any one of claims 1 to 3, wherein R^4 represents hydrogen or methyl.

5. A compound for use as defined in any one of claims 1 to 4, wherein R^5 represents unsubstituted n-butyl or benzyl substituted by one or two fluorines on the 2, 3 and/or 4 positions of the phenyl group.

6. A compound for use as defined in claim 5, wherein R^5 represents unsubstituted n-butyl.

7. A compound for use as defined in claim 5, wherein R^5 represents benzyl substituted by one fluorine on the 2, 3 or 4 position of the phenyl group, such as 2-fluorobenzyl, 3-fluorobenzyl or 4-fluorobenzyl, in particular R^5 represents benzyl substituted by one fluorine on the 4 position of the phenyl group, such as 4-fluorobenzyl.

8. A compound for use as defined in claim 5, wherein R^5 represents benzyl substituted by two fluorines on the 2,3, 3,4 or 2,4 positions of the phenyl group, such as 2,3-difluorobenzyl, 3,4-difluorobenzyl or 2,4-difluorobenzyl, in particular R^5 represents benzyl substituted by two fluorines on the 2,4 positions of the phenyl group, such as 2,4-difluorobenzyl.

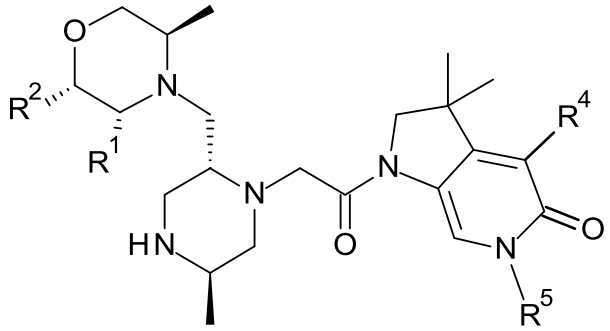
9. A compound for use as defined in claim 5, wherein R^5 represents 4-fluorobenzyl or 2,4-difluorobenzyl.

10. A compound for use as defined in claim 9, wherein R^5 represents 4-fluorobenzyl.

11. A compound for use as defined in any one of claims 1 to 10, wherein one of R^x and R^z represents hydrogen and the other represents methyl or R^x and R^z both represent hydrogen.

12. A compound for use as defined in claim 11, wherein R^x represents hydrogen or methyl and
R^z represents hydrogen.

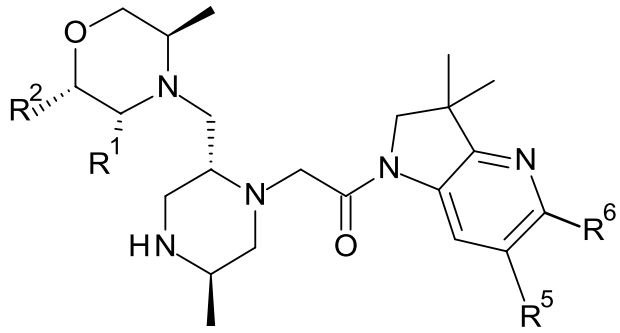
13. A compound for use as defined in claim 1, which is a compound of formula (Ia):



(Ia)

or a tautomeric or a stereochemically isomeric form, a pharmaceutically acceptable salt or a solvate thereof; wherein R^1, R^2, R^4 and R^5 are as defined in any one of claims 1 to 10.

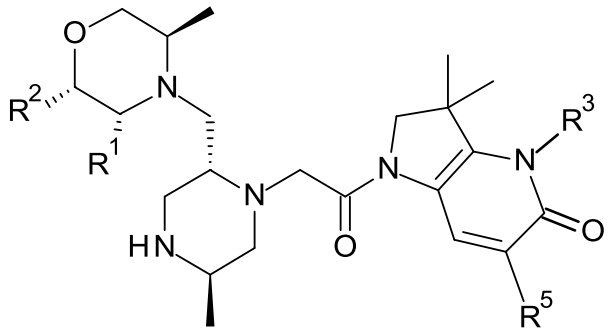
14. A compound for use as defined in claim 1, which is a compound of formula (Ib):



(Ib)

or a tautomeric or a stereochemically isomeric form, a pharmaceutically acceptable salt or a solvate thereof; wherein R^6 represents hydroxymethyl or $-CH(OR^x)CH_2OR^z$ and wherein R^1, R^2, R^5, R^x and R^z are as defined in any one of claims 1 to 3 and 5 to 12.

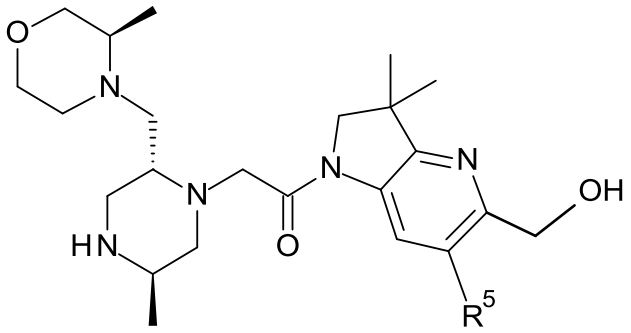
15. A compound for use as defined in claim 1, which is a compound of formula (Ic):



(Ic)

or a tautomeric or a stereochemically isomeric form, a pharmaceutically acceptable salt or a solvate thereof; wherein R^1, R^2, R^3 and R^5 are as defined in any one of claims 1 to 3 and 5 to 10.

16. A compound for use as defined in claim 1, which is a compound of formula (Id):



(Id)

or a tautomeric or a stereochemically isomeric form, a pharmaceutically acceptable salt or a solvate thereof; and wherein R^5 is as defined in any one of claims 1 and 5 to 10.

17. A compound for use as defined in claim 1, wherein the compound is selected from Examples 1 to 37 or a tautomeric or a stereochemically isomeric form, a pharmaceutically acceptable salt or a solvate thereof.

18. A compound for use as defined in claim 1, wherein the compound is the free base of Example 2 or a tautomeric or a stereochemically isomeric form, a pharmaceutically acceptable salt or a solvate thereof.

19. A compound for use as defined in claim 1, wherein the compound is a lactate, mesylate or sulfate salt of 1-{6-[(4-fluorophenyl)methyl]-5-(hydroxymethyl)-3,3-dimethyl-1H,2H,3H-pyrrolo[3,2-b]pyridin-1-yl}-2-[(2R,5R)-5-methyl-2-{[(3R)-3-methylmorpholin-4-yl]methyl}piperazin-1-yl]ethan-1-one.

20. A compound for use as defined in claim 1, wherein the compound is the L-(+)-lactate salt of 1-{6-[(4-Fluorophenyl)methyl]-5-(hydroxymethyl)-3,3-dimethyl-1H,2H,3H-pyrrolo[3,2-b]pyridin-1-yl}-2-[(2R,5R)-5-methyl-2-{[(3R)-3-methylmorpholin-4-yl]methyl}piperazin-1-yl]ethan-1-one, such as 1-{6-[(4-Fluorophenyl)methyl]-5-(hydroxymethyl)-3,3-dimethyl-1H,2H,3H-pyrrolo[3,2-b]pyridin-1-yl}-2-[(2R,5R)-5-methyl-2-{[(3R)-3-methylmorpholin-4-yl]methyl}piperazin-1-yl]ethan-1-one L-(+)-lactate (Form C).

21. A pharmaceutical composition comprising a compound of formula (I) as defined in any one of claims 1 to 20 and a pharmaceutically acceptable excipient, for use in therapy.

22. A pharmaceutical composition comprising a compound of formula (I) as defined in any one of claims 1 to 20, in combination with one or more therapeutic agents, for use in therapy.

23. A compound as defined in any one of claims 1 to 20 for use in the prophylaxis or treatment of a disease state or condition mediated by IAP, such as an XIAP and/or cIAP.

24. A compound as defined in any one of claims 1 to 20 for use in the prophylaxis or treatment of a disease state or condition which overexpresses IAP, such as XIAP and/or cIAP.

25. A compound as defined in any one of claims 1 to 20 for use in the prophylaxis or treatment of cancer.

26. A compound as defined in any one of claims 1 to 20 in combination with one or more (e.g. 1 or 2) other therapeutic agents (e.g. anticancer agents), for use in therapy.

27. A compound as defined in any one of claims 1 to 20 in combination with one or more (e.g. 1 or 2) other anticancer agents, for use in the prophylaxis or treatment of cancer.

28. Use of a compound of formula (I) as defined in any one of claims 1 to 20 in the manufacture of a medicament for the prophylaxis or treatment of a disease state or condition mediated by IAP, such as an XIAP and/or cIAP.

29. Use of a compound as defined in any one of claims 1 to 20 in the manufacture of a medicament for the prophylaxis or treatment of a disease state or condition which overexpresses IAP, such as XIAP and/or cIAP.

30. Use of a compound as defined in any one of claims 1 to 20 in the manufacture of a medicament for the prophylaxis or treatment of cancer.

31. Use of a compound as defined in any one of claims 1 to 20 in combination with one or more (e.g. 1 or 2) other therapeutic agents (e.g. anticancer agents) in the manufacture of a medicament for the prophylaxis or treatment of cancer.

32. Use of a compound as defined in any one of claims 1 to 20 in the manufacture of a medicament for the prophylaxis or treatment of cancer in combination therapy with one or more (e.g. 1 or 2) other therapeutic agents (e.g. anticancer agents).

33. The compound for use of claim 25 or claim 27 or the use of any one of claims 30 to 32, wherein the cancer is tumours of epithelial origin; haematological malignancies and premalignant haematological disorders and disorders of borderline malignancy; tumours of mesenchymal origin; tumours of the central or peripheral nervous system; endocrine tumours; ocular and adnexal tumours; germ cell and trophoblastic tumours; and paediatric and embryonal tumours.

34. The compound for use of claim 25 or claim 27 or the use of any one of claims 30 to 32, wherein the cancer is carcinomas of the bladder and urinary tract, breast, gastrointestinal tract, liver, gall bladder and biliary system, exocrine pancreas, kidney, lung, head and neck, ovary, fallopian tubes, peritoneum, vagina, vulva, penis, cervix, myometrium, endometrium, thyroid, adrenal, prostate, skin or adnexae.

35. The compound for use or the use of claim 34, wherein the carcinomas of the lung are adenocarcinomas, small cell lung carcinomas, non-small cell lung carcinomas, bronchioalveolar carcinomas or mesotheliomas.

36. The compound for use of claim 25 or claim 27 or the use of any one of claims 30 to 32, wherein the cancer is mesothelioma.

37. The compound for use of claim 25 or claim 27 or the use of any one of claims 30 to 32, wherein the cancer is hepatocellular carcinoma, melanoma, oesophageal, renal, colon, colorectal, lung, breast, bladder, gastrointestinal, ovarian or prostate cancers.

38. The compound for use of claim 25 or claim 27 or the use of any one of claims 30 to 32, wherein the cancer is renal, melanoma, colon, lung, breast, ovarian or prostate cancers.

39. The compound for use of claim 25 or claim 27 or the use of any one of claims 30 to 32, wherein the cancer is melanoma, colon, breast or ovarian cancer.

40. The compound for use of claim 25 or claim 27 or the use of any one of claims 30 to 32, wherein the cancer is melanoma.

41. The compound for use of claim 25 or claim 27 or the use of any one of claims 30 to 32, wherein the cancer is breast cancer.

42. The compound for use of claim 25 or claim 27 or the use of any one of claims 30 to 32, wherein the cancer is inflammatory breast cancer.

43. The compound for use of claim 25 or claim 27 or the use of any one of claims 30 to 32, wherein the cancer is an inflammatory tumour.

44. The compound for use or the use of claim 43, wherein the inflammatory tumour is melanoma, colon, breast or ovarian.

45. The compound for use or the use of claim 43, wherein the inflammatory tumour is melanoma.

46. The compound for use of claim 25 or claim 27 or the use of any one of claims 30 to 32, wherein the cancer is haematological malignancies of lymphoid lineage or haematological malignancies of myeloid lineage.

47. The compound for use of claim 25 or claim 27 or the use of any one of claims 30 to 32, wherein the cancer is leukemias or lymphomas.

48. The compound for use or the use of claim 47, wherein the lymphoma is MALT lymphoma.

49. The compound for use of claim 25 or claim 27 or the use of any one of claims 30 to 32, wherein the cancer is acute lymphocytic leukemia [ALL], chronic lymphocytic leukemia [CLL], B-cell lymphomas, follicular lymphoma, Burkitt's lymphoma, mantle cell lymphoma, T-cell lymphoma and leukaemia, natural killer [NK] cell lymphomas, Hodgkin's lymphomas, hairy cell leukaemia, monoclonal gammopathy of uncertain significance, plasmacytoma, multiple myeloma or post-transplant lymphoproliferative disorders.

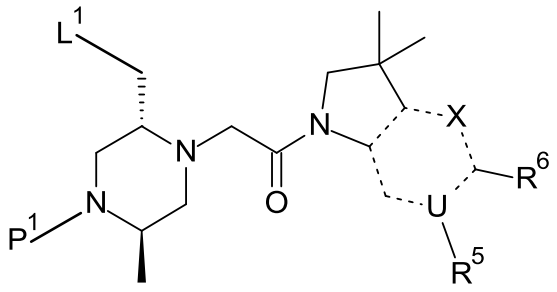
50. The compound for use or the use of claim 49, wherein the B-cell lymphoma is diffuse large B-cell lymphoma [DLBCL].

51. The compound for use or the use of claim 50, wherein the B-cell lymphoma is refractory DLBCL.

52. The compound for use of claim 25 or claim 27 or the use of any one of claims 30 to 32, wherein the cancer is selected from acute myelogenous leukemia [AML], chronic myelogenous leukemia [CML], chronic myelomonocytic leukemia [CMML], hypereosinophilic syndrome, myeloproliferative disorders, myeloproliferative syndrome, myelodysplastic syndrome, and promyelocytic leukemia.

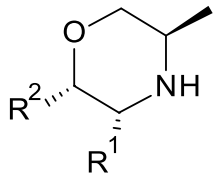
53. A process for preparing a compound of formula (I) as defined in any one of claims 1 to 20 which comprises:

(a) (i) reacting a compound of formula (II):



(II)

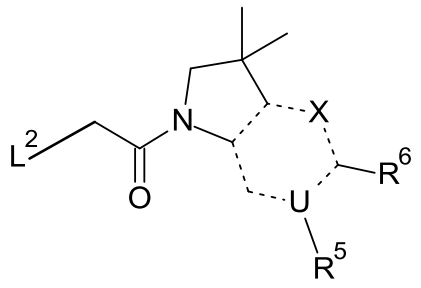
wherein R^5, R^6, U and X are as defined in any one of claims 1 to 20 for compounds of formula (I), L^1 represents a suitable leaving group and P^1 represents hydrogen or a suitable protecting group, with a compound of formula (III):



(III)

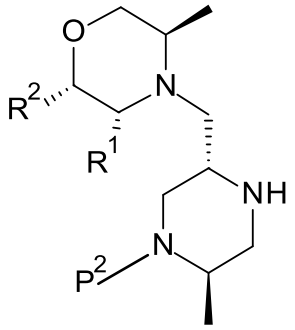
or an optionally protected derivative thereof; wherein R^1 and R^2 are as defined in any one of claims 1 to 20 for compounds of formula (I), followed by a deprotection reaction suitable to remove the P^1 protecting group and any other protecting groups as necessary; or

(ii) reacting a compound of formula (IV):



(IV)

wherein R^5, R^6, X and U are as defined in any one of claims 1 to 20 for compounds of formula (I), and L^2 represents a suitable leaving group, with a compound of formula (V):



(V)

or an optionally protected derivative thereof; wherein R^1 and R^2 are as defined in claim 1 for compounds of formula (I) and P^2 represents hydrogen or a suitable protecting group, followed by a deprotection reaction suitable to remove the P^2 protecting group and any other protecting groups as necessary; and/or

(b) deprotection of a protected derivative of a compound of formula (I); and/or

(c) interconversion of a compound of formula (I) or protected derivative thereof to a further compound of formula (I) or protected derivative thereof; and

(d) optional formation of a pharmaceutically acceptable salt of a compound of formula (I).

54. The process as defined in claim 53 wherein L^1 represents a halogen atom as the leaving group.

55. The process as defined in claim 53 wherein L^1 represents chlorine as the leaving group.

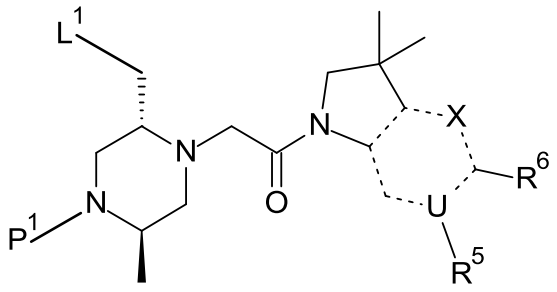
56. The process as defined in claim 53 wherein P^1 represents a tert-butyloxycarbonyl group as the suitable protecting group.

57. The process as defined in claim 53 wherein L^2 represents a halogen atom as the leaving group.

58. The process as defined in claim 53 wherein L^2 represents chlorine as the leaving group.

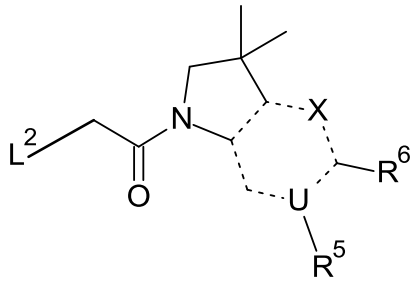
59. The process as defined in claim 53 wherein P^2 represents a tert-butyloxycarbonyl group as the suitable protecting group.

60. A compound of Formula (II) as defined in claim 53:



(II)

or a compound of formula (IV) as defined in claim 53:



(IV)

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61. A compound which is 1-{6-[(4-Fluorophenyl)methyl]-5-(hydroxymethyl)-3,3-dimethyl-1H,2H,3H-pyrrolo[3,2-b]pyridin-1-yl}-2-[(2R,5R)-5-methyl-2-{[(3R)-3-methylmorpholin-4-yl]methyl}piperazin-1-yl]ethan-1-one L-(+)-lactate (Form C).