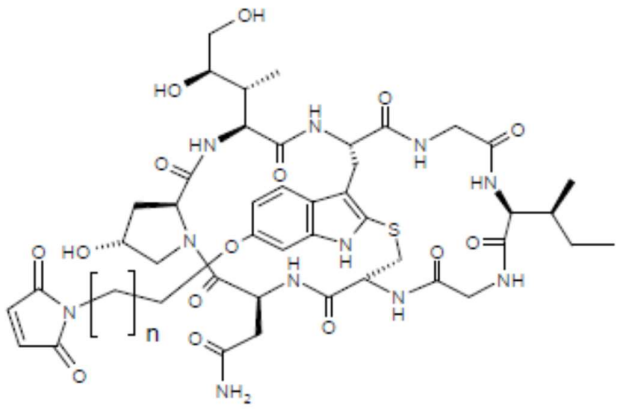
Claims

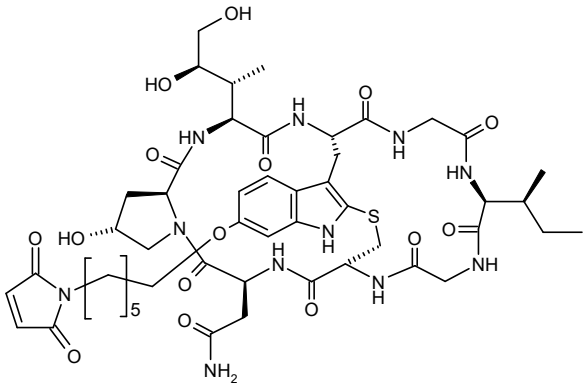
1. An amatoxin, or derivative or analogue thereof, comprising the structure of formula (An)



Formula (An)

wherein n is 2, 3, 4, 5, 6, 7, 8 or 9.

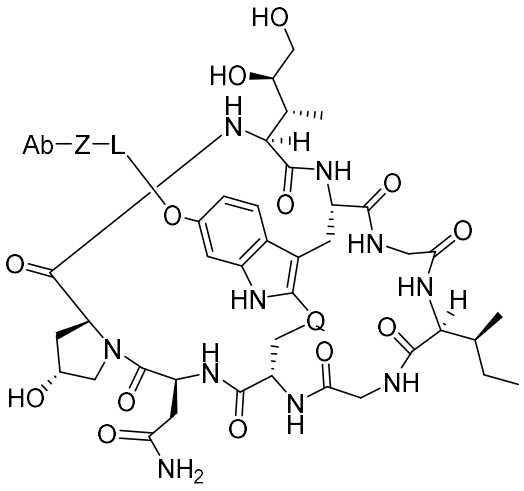
2. An amatoxin, or derivative or analogue thereof, according to claim 1 comprising the structure of formula (A)



Formula (A) (HDP 30.2867)

3. The amatoxin, or derivative or analogue thereof, of claim 1 or claim 2 for use in the preparation of an antibody-drug conjugate (ADC).

4. An antibody-drug conjugate (ADC) comprising an antibody, or an antigen-binding fragment thereof, conjugated to an amatoxin via a linker, the ADC having the structure of formula (**Ia**):



(**Ia**),

or a stereoisomer thereof;

wherein:

Q is S;

L is a non-cleavable linker; or a cleavable linker;

Z is a chemical moiety formed by a coupling reaction between a reactive substituent present on L and a reactive substituent present within the antibody, or antigen-binding fragment thereof; and

Ab is the antibody, or the antigen binding fragment thereof.

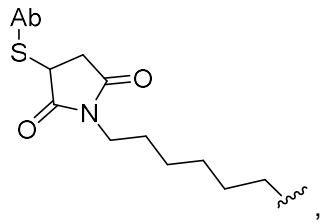
5. The ADC according to claim 4, wherein L is a non-cleavable linker.

6. The ADC of claim 5, wherein L comprises one or more of a bond, -(C=O)-, a -C(O)NH- group, an -OC(O)NH- group, C_1-C_6 alkylene, C_1-C_6 heteroalkylene, C_2-C_6 alkenylene, C_2-C_6 heteroalkenylene, C_2-C_6 alkynylene, C_2-C_6 heteroalkynylene, C_3-C_6 cycloalkylene, heterocycloalkylene, arylene, heteroarylene, a $-(CH_2CH_2O)_p-$ group where p is an integer from 1-6.

7. The ADC of any of claims 4-6, wherein L comprises a $-(CH_2)_n-$ unit, where n is an integer from 2-6.

8. The ADC of claim 7, wherein L is $-(CH_2)_n-$, where n is 6.

9. The ADC of claim 8, wherein Ab, Z, and L, taken together as Ab-Z-L, is represented by the formula:



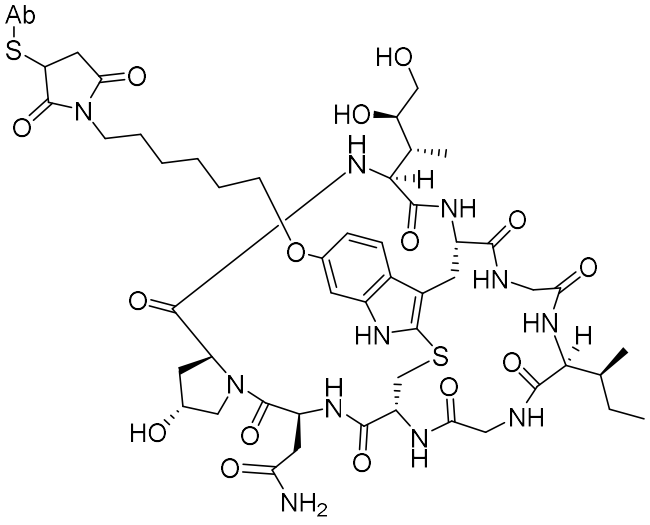
wherein S is the sulfur atom of a cysteine residue present in the antibody, or the antigen-binding fragment thereof.

10. The ADC of claim 4, wherein L is a cleavable linker.

11. The ADC of claim 4, wherein said ADC comprises a cleavable linker, and wherein L comprises one or more of a hydrazine, a disulfide, a thioether, an amino acid, a peptide consisting of up to 10 amino acids, a *p*-aminobenzyl (PAB) group, a heterocyclic self-immolative group, C_1-C_6 alkyl, C_1-C_6 heteroalkyl, C_2-C_6 alkenyl, C_2-C_6 heteroalkenyl, C_2-C_6 alkynyl, C_2-C_6 heteroalkynyl, C_3-C_6 cycloalkyl, heterocycloalkyl, aryl, heteroaryl, a -(C=O)- group, a -C(O)NH- group, an -OC(O)NH- group, a $-(CH_2CH_2O)_p-$ group where p is an integer from 1-6.

12. The ADC of claim 11, wherein L comprises a peptide selected from the group consisting of Phe-Lys, Val-Lys, Phe-Ala, Phe-Cit, Val-Ala, Val-Cit, and Val-Arg.

13. The ADC of claim 9, having the structure of formula (**IIa**):



(**IIa**).

14. The ADC of any one of claims 4 to 13, wherein the antibody, or the antigen binding fragment thereof, specifically binds to human Her2, PSMA, CD37, or CD123.

15. The ADC of any one of claims 4 to 13, wherein the antibody, or the antigen binding fragment thereof, comprises an Fc region comprising at least one mutation selected from the group consisting of D265C, D265A, A118C, L234A, or L235A (according to EU index).

16. The ADC of any one of claims 4 to 13, wherein said antibody, or antigen binding fragment thereof, specifically binds to PSMA and comprises a CDRH1 according to SEQ ID NO. 378, a CDRH2 according to SEQ ID NO. 379, a CDRH3 according to SEQ ID NO. 380, a CDRL1 according to SEQ ID NO. 381, a CDRL2 according to SEQ ID NO. 382, and a CDRL3 according to SEQ ID NO. 383.

17. The ADC according to claim 16, wherein said antibody, or antigen binding fragment thereof, comprises a heavy chain variable region according to SEQ ID NO. 375 and a light chain variable region according to SEQ ID NO. 377.

18. The ADC according to claim 17, wherein said antibody comprises a heavy chain according to SEQ ID NO. 371, SEQ ID NO. 372, SEQ ID NO. 373, or SEQ ID NO. 374, and a light chain according to SEQ ID NO. 376, or an antigen binding fragment thereof.

19. An antibody-drug conjugate (ADC), wherein said antibody-drug conjugate comprises an antibody, or an antigen-binding fragment thereof, which specifically binds to human PSMA,

and comprises a heavy chain having an amino acid sequence according to SEQ ID NO. 374 and a light chain having an amino acid sequence according to SEQ ID NO. 376, and which is conjugated to compound HDP30.2115, HDP30.2060, HDP30.0880, HDP30.2347, HDP30.1699, HDP30.2371, or HDP30.2867.

20. An antibody-drug conjugate (ADC) according to claim 19, wherein the drug antibody ratio (DAR) is about 1, 2, 3, or 4, preferably wherein the DAR is 2.

21. The ADC of any one of claims 4 to 20 for use in the treatment of cancer in a patient, particularly wherein the cancer is selected from the group consisting of breast cancer, pancreatic cancer, cholangiocarcinoma, colorectal cancer, lung cancer, prostate cancer, ovarian cancer, prostate cancer, stomach cancer, kidney cancer, malignant melanoma, hematological cancer, leukemia, and malignant lymphoma.

22. A pharmaceutical composition comprising the ADC of any one of claims 4 to 20, and at least a pharmaceutically acceptable carrier.

23. Use of an ADC according to any one of claims 4 to 20 or of the pharmaceutical composition according to claim 22 for treatment of cancer in a patient, particularly wherein the cancer is selected from the group consisting of breast cancer, pancreatic cancer, cholangiocarcinoma, colorectal cancer, lung cancer, prostate cancer, ovarian cancer, prostate cancer, stomach cancer, kidney cancer, malignant melanoma, hematological cancer, leukemia, and malignant lymphoma.

24. Use of an ADC according to claim 23 or of the pharmaceutical composition according to claim 22 for treatment of prostate cancer.