

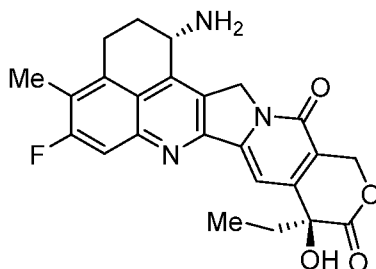
CLAIMS

1. A conjugate comprising an antibody conjugated to a cytotoxic agent, wherein the antibody is capable of binding to MUC1, which comprises
 - (i) a heavy chain variable region comprising the complementarity-determining regions (CDRs) CDR-H1 having the amino acid sequence of SEQ ID NO: 1, CDR-H2 having the amino acid sequence of SEQ ID NO: 2 and CDR-H3 having the amino acid sequence of SEQ ID NO: 3, and
 - (ii) a light chain variable region comprising the complementarity-determining regions (CDRs) CDR-L1 having the amino acid sequence of SEQ ID NO: 4, CDR-L2 having the amino acid sequence of SEQ ID NO: 5 and CDR-L3 having the amino acid sequence of SEQ ID NO: 6.
2. The conjugate according to claim 1, wherein the amino acid at position 8 of SEQ ID NO: 2 is selected from the group consisting of glutamine, histidine, tryptophan, tyrosine, lysine and arginine, or wherein the CDR-H2 has the amino acid sequence of SEQ ID NO: 7.
3. The conjugate according to claim 1, wherein the heavy chain variable region of the antibody has the amino acid sequence of SEQ ID NO: 9 or an amino acid sequence which is at least 90% identical to the amino acid sequence of SEQ ID NO: 9.
4. The conjugate according to any one of claims 1 to 3, wherein the heavy chain variable region of the antibody has the amino acid sequence of SEQ ID NO: 10 or an amino acid sequence which is at least 90% identical to the amino acid sequence of SEQ ID NO: 10.
5. The conjugate according to any one of claims 1 to 4, wherein the light chain variable region of the antibody has the amino acid sequence of SEQ ID NO: 12 or an amino acid sequence which is at least 90% identical to the amino acid sequence of SEQ ID NO: 12.
6. The conjugate according to any one of claims 1 to 5, wherein the heavy chain variable region of the antibody has the amino acid sequence of SEQ ID NO: 10 and the light chain variable region of the antibody has the amino acid sequence of SEQ ID NO: 12.
7. The conjugate according to any one of claims 1 to 6, wherein the antibody comprises an Fc region and preferably is an IgG1, IgG2 or IgG4-type antibody.

8. The conjugate according to any one of claims 1 to 7, wherein the heavy chain of the antibody has the amino acid sequence of SEQ ID NO: 15, in particular SEQ ID NO: 22, and the light chain of the antibody has the amino acid sequence of SEQ ID NO: 16.
- 5 9. The conjugate according to claim 1, wherein the CDR-H2 has the amino acid sequence of SEQ ID NO: 8.
- 10 10. The conjugate according to claim 1 or 9, wherein the heavy chain variable region of the antibody has the amino acid sequence of SEQ ID NO: 11 or an amino acid sequence which is at least 90% identical to the amino acid sequence of SEQ ID NO: 11.
11. The conjugate according to any one of claims 1, 9 and 10, wherein the heavy chain variable region of the antibody has the amino acid sequence of SEQ ID NO: 12 or an amino acid sequence which is at least 90% identical to the amino acid sequence of SEQ ID NO: 12.
- 15 12. The conjugate according to any one of claims 1 and 9 to 11, wherein the heavy chain variable region of the antibody has the amino acid sequence of SEQ ID NO: 11 and the light chain variable region of the antibody has the amino acid sequence of SEQ ID NO: 12.
- 20 13. The conjugate according to any one of claims 1 and 9 to 12, wherein the antibody comprises an Fc region and preferably is an IgG1, IgG2 or IgG4-type antibody.
14. The conjugate according to any one of claims 1 and 9 to 13, wherein the heavy chain of the antibody has the amino acid sequence of SEQ ID NO: 19 and the light chain of the antibody has the amino acid sequence of SEQ ID NO: 16.
- 25 15. The conjugate according to claims 7, 8, 13 and 14, wherein the antibody comprises a glycosylation pattern having one or more of the following characteristics:
- 30 (i) a detectable amount of glycans carrying a bisecting GlcNAc residue;
- (ii) a relative amount of glycans carrying at least one galactose residue of at least 25% of the total amount of glycans attached to the Fc glycosylation sites of the antibody in a composition.
16. The conjugate according to any one of claims 1 to 15, wherein the antibody is obtainable by production in a mammalian cell.

17. The conjugate according to any one of claims 1 to 16, wherein the antibody is obtainable by production in a human cell line selected from the group consisting of NM-H9D8 (DSM ACC 2806), NM-H9D8-E6 (DSM ACC 2807), NM-H9D8-E6Q12 (DSM ACC 2856) and cell lines derived therefrom.
- 5 18. The conjugate according to any one of claims 1 to 16, wherein the antibody is obtainable by production in a CHO cell line and cell lines derived therefrom.
19. The conjugate according to any one of claims 1 to 18, wherein the antibody is obtainable by a production method comprising the steps of (i) providing a host cell comprising a nucleic acid encoding the antibody according to claims 1 to 14, (ii) 10 culturing the host cell under conditions suitable for expression of the antibody, and (iii) obtaining the antibody expressed by the host cell.
20. The conjugate according to any one of claims 1 to 19, wherein the antibody competes with the antibody comprising a heavy chain variable region with the amino acid sequence of SEQ ID NO: 10 and a light chain variable region with the amino acid sequence of SEQ ID NO:12, or the antibody comprising a heavy chain 15 variable region with the amino acid sequence of SEQ ID NO:11 and a light chain variable region with the amino acid sequence of SEQ ID NO:12 for the binding to TA-MUC1.
21. The conjugate according to any one of claims 1 to 20, wherein the antibody has the activity of being internalized into MUC1-expressing cells through binding to MUC-1. 20
22. The conjugate according to any one of claims 1 to 21, wherein the cytotoxic agent is an anti-tumor agent.
23. The conjugate according to any one of claims 1 to 22, wherein the cytotoxic agent is a chemotherapeutic agent. 25
24. The conjugate according to claim 23, wherein the chemotherapeutic agent is selected from the group consisting of a microtubule inhibitor, a topoisomerase I inhibitor, a DNA damaging agent, a DNA alkylating agent and a DNA minor groove binder.
- 30 25. The conjugate according to claim 24, wherein the chemotherapeutic agent is a topoisomerase I inhibitor.
26. The conjugate according to claim 25, wherein the topoisomerase I inhibitor is an antitumor compound represented by the following formula:

[Formula 1]



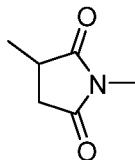
27. The conjugate according to any one of claims 1 to 26, wherein the antibody is conjugated to the cytotoxic agent or antitumor compound via a linker having any structure selected from the group consisting of the following formulas (a) to (f):

- (a) $-(\text{Succinimid-3-yl-N})-\text{CH}_2\text{CH}_2-\text{C}(=\text{O})-\text{GGFG}-\text{NH}-\text{CH}_2\text{CH}_2\text{CH}_2-\text{C}(=\text{O})-$,
- (b) $-(\text{Succinimid-3-yl-N})-\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2-\text{C}(=\text{O})-\text{GGFG}-\text{NH}-\text{CH}_2\text{CH}_2\text{CH}_2-\text{C}(=\text{O})-$,
- (c) $-(\text{Succinimid-3-yl-N})-\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2-\text{C}(=\text{O})-\text{GGFG}-\text{NH}-\text{CH}_2-\text{O}-\text{CH}_2-\text{C}(=\text{O})-$,
- (d) $-(\text{Succinimid-3-yl-N})-\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2-\text{C}(=\text{O})-\text{GGFG}-\text{NH}-\text{CH}_2\text{CH}_2-\text{O}-\text{CH}_2-\text{C}(=\text{O})-$,
- (e) $-(\text{Succinimid-3-yl-N})-\text{CH}_2\text{CH}_2-\text{C}(=\text{O})-\text{NH}-\text{CH}_2\text{CH}_2\text{O}-\text{CH}_2\text{CH}_2\text{O}-\text{CH}_2\text{CH}_2-\text{C}(=\text{O})-\text{GGFG}-\text{NH}-\text{CH}_2\text{CH}_2\text{CH}_2-\text{C}(=\text{O})-$, and
- (f) $-(\text{Succinimid-3-yl-N})-\text{CH}_2\text{CH}_2-\text{C}(=\text{O})-\text{NH}-\text{CH}_2\text{CH}_2\text{O}-\text{CH}_2\text{CH}_2\text{O}-\text{CH}_2\text{CH}_2\text{O}-\text{CH}_2\text{CH}_2\text{O}-\text{CH}_2\text{CH}_2-\text{C}(=\text{O})-\text{GGFG}-\text{NH}-\text{CH}_2\text{CH}_2\text{CH}_2-\text{C}(=\text{O})-$,

wherein the antibody is connected to the terminus of $-(\text{Succinimid-3-yl-N})$, the cytotoxic agent or antitumor compound is connected to the carbonyl group in the rightmost of formulas (a) to (f) with the nitrogen atom of the amino group at position 1 as a connecting position, GGFG represents an amino acid sequence consisting of glycine-glycine-phenylalanine-glycine linked through peptide bonds, and

$-(\text{Succinimid-3-yl-N})-$ has a structure represented by the following formula:

[Formula 2]



which is connected to the antibody at position 3 thereof and is connected to a methylene group in the linker structure containing this structure on the nitrogen atom at position 1.

28. The conjugate according to claim 27, wherein the linker is represented by any formula selected from the group consisting of the following formulas (a) to (c):

(a) -(Succinimid-3-yl-N)-CH₂CH₂CH₂CH₂CH₂-C(=O)-GGFG-NH-CH₂-O-CH₂-C(=O)-,

(b) -(Succinimid-3-yl-N)-CH₂CH₂CH₂CH₂CH₂-C(=O)-GGFG-NH-CH₂CH₂-O-CH₂-C(=O)-, and

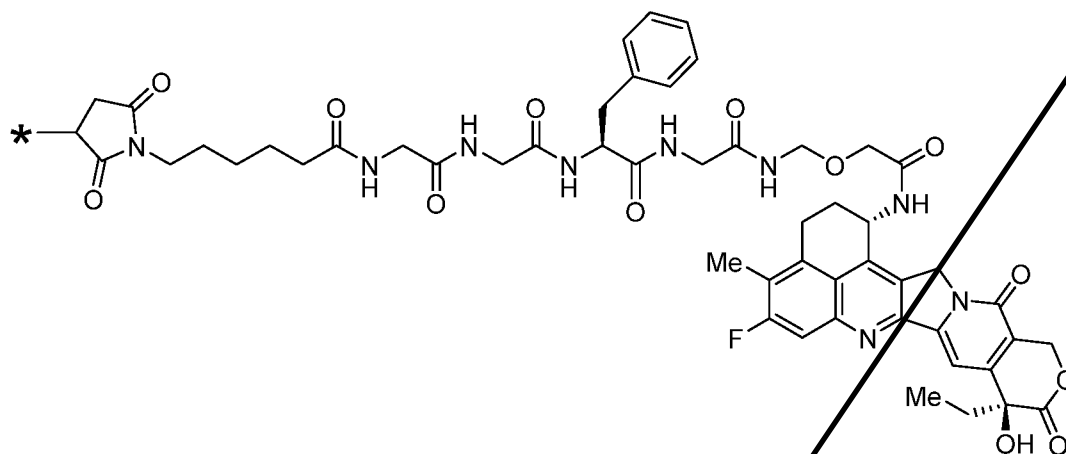
(c) -(Succinimid-3-yl-N)-CH₂CH₂-C(=O)-NH-CH₂CH₂O-CH₂CH₂O-CH₂CH₂-C(=O)-GGFG-NH-CH₂CH₂CH₂-C(=O)-.

29. The conjugate according to any one of claims 27 to 28, wherein the linker is represented by the following formula (a):

(a) -(Succinimid-3-yl-N)-CH₂CH₂CH₂CH₂CH₂-C(=O)-GGFG-NH-CH₂-O-CH₂-C(=O)-.

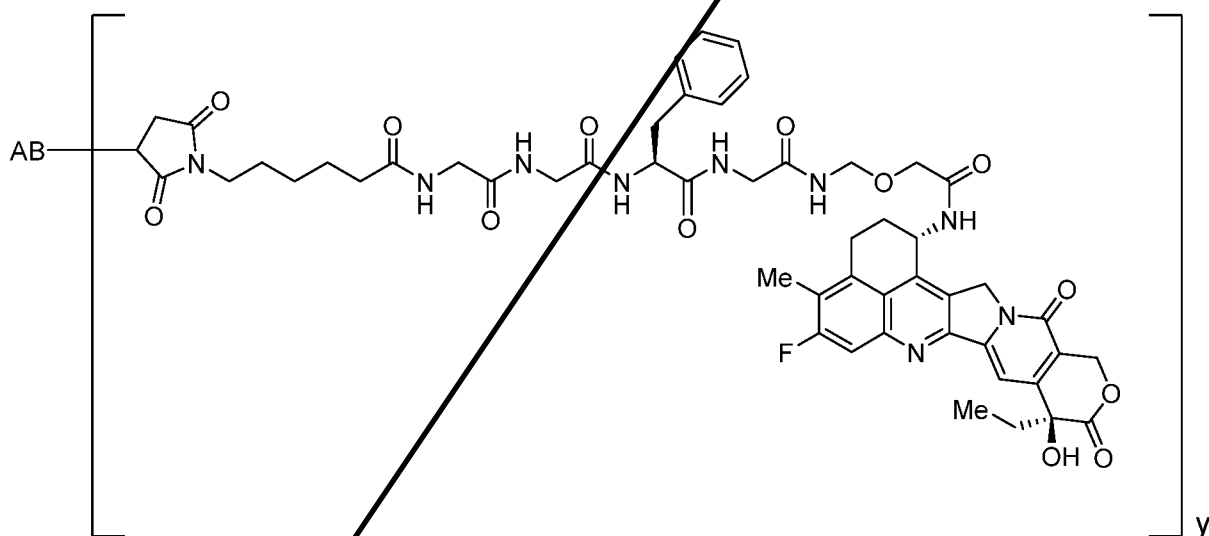
30. The conjugate according to any one of claims 26 to 29, wherein the antibody is conjugated to a drug linker represented by the following formula (wherein asterisk* represents the point of connection to the antibody) by a thioether bond:

[Formula 3]



31. The conjugate according to any one of claims 26 to 30, which is represented by the following formula;

[Formula 4]



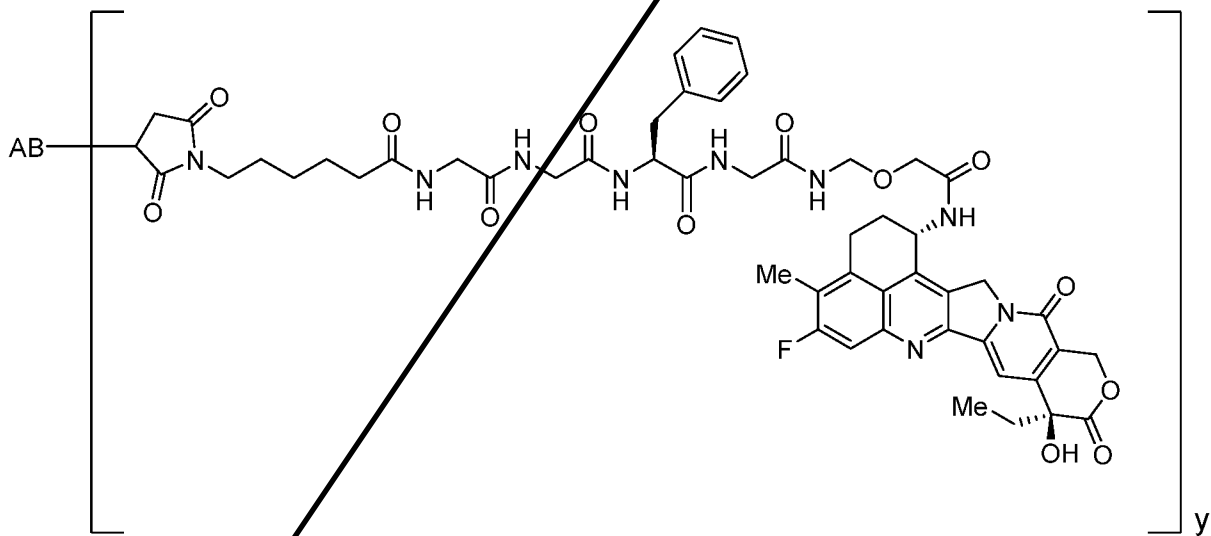
wherein AB represents the antibody thereof, y represents an average number of units of the drug-linker structure conjugated to the antibody per itself, and the antibody is conjugated to a drug linker represented by the above formula by a thioether bond.

32. The conjugate according to claim 30 or 31, wherein the antibody comprises any one of the following combinations a) to d) of a heavy chain variable region and a light chain variable region, or heavy chain and light chain:

- (a) the heavy chain variable region has the amino acid sequence of SEQ ID NO: 10 and the light chain variable region has the amino acid sequence of SEQ ID NO: 12,
- (b) the heavy chain variable region has the amino acid sequence of SEQ ID NO: 11 and the light chain variable region has the amino acid sequence of SEQ ID NO: 12,
- (c) the heavy chain has the amino acid sequence of SEQ ID NO: 22 and the light chain has the amino acid sequence of SEQ ID NO: 16, and
- (d) the heavy chain has the amino acid sequence of SEQ ID NO: 19 and the light chain has the amino acid sequence of SEQ ID NO: 16.

33. A conjugate, which is represented by the following formula,

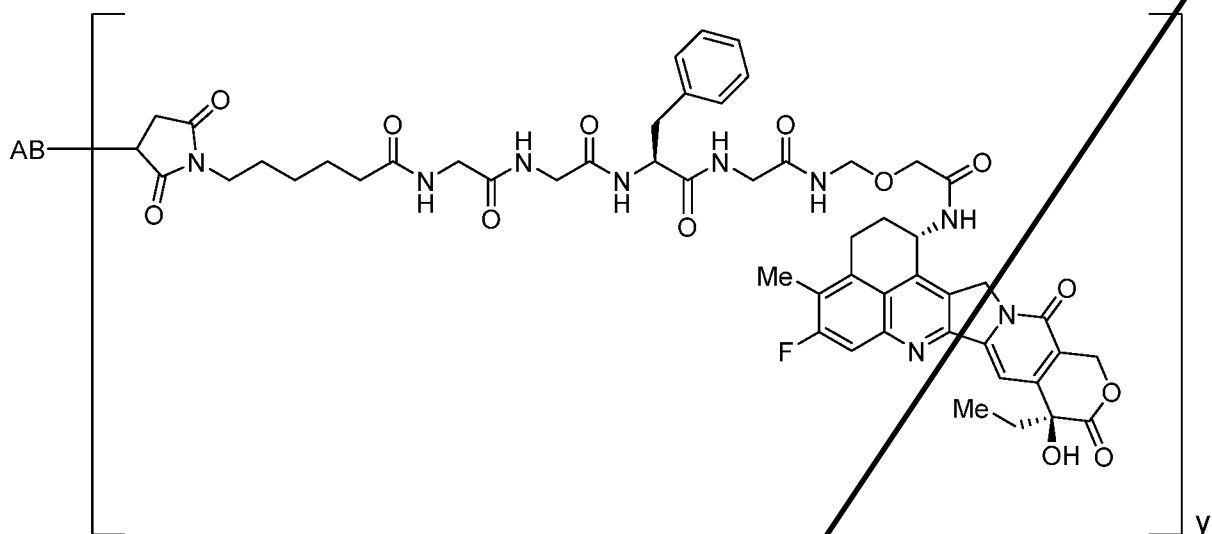
[Formula 5]



wherein AB represents the antibody, the antibody comprises the heavy chain variable region having the amino acid sequence of SEQ ID NO: 10 and the light chain variable region having the amino acid sequence of SEQ ID NO: 12, y represents an average number of units of the drug-linker structure conjugated to the antibody per itself, and the antibody is conjugated to a drug linker represented by the above formula by a thioether bond.

34. A conjugate, which is represented by the following formula,

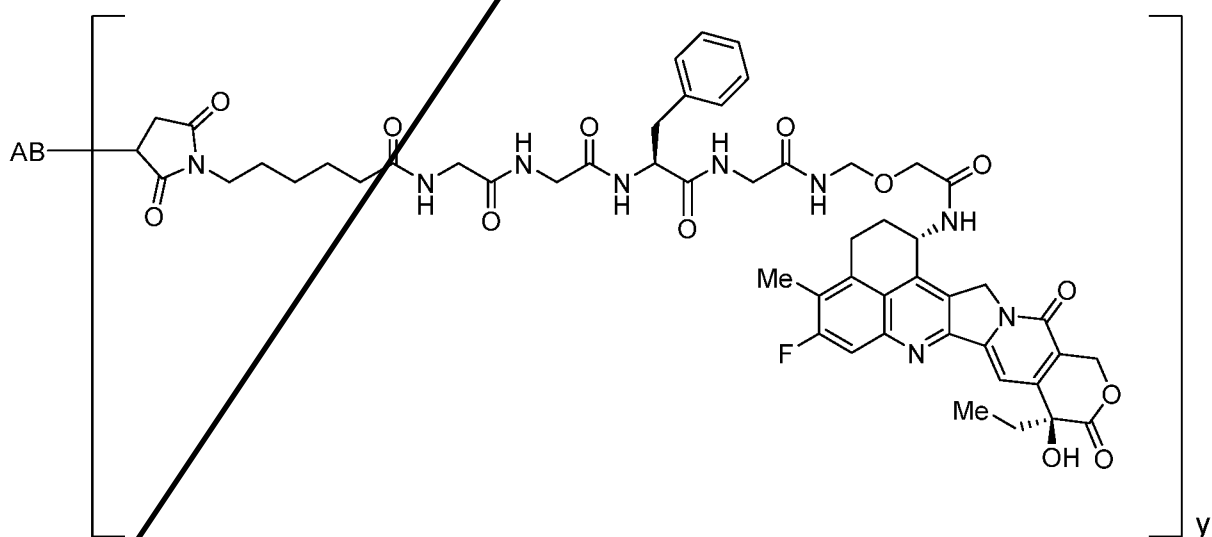
[Formula 6]



wherein AB represents the antibody, the antibody comprises the heavy chain variable region having the amino acid sequence of SEQ ID NO: 11 and the light chain variable region having the amino acid sequence of SEQ ID NO: 12, y represents an average number of units of the drug-linker structure conjugated to the antibody per itself, the antibody is conjugated to a drug linker represented by the above formula by a thioether bond.

35. A conjugate, which is represented by the following formula,

[Formula 7]

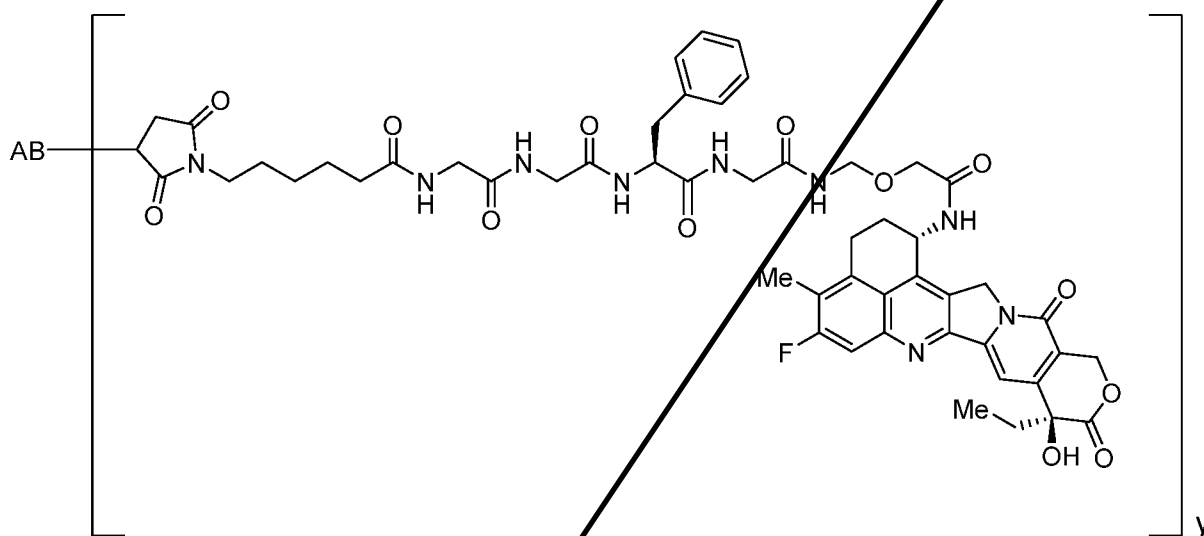


wherein AB represents the antibody, the antibody comprises the heavy chain having the amino acid sequence of SEQ ID NO: 22 and the light chain having the

amino acid sequence of SEQ ID NO: 16, y represents an average number of units of the drug-linker structure conjugated to the antibody per itself, and the antibody is conjugated to a drug linker represented by the above formula by a thioether bond.

36. A conjugate, which is represented by the following formula,

[Formula 8]



wherein AB represents the antibody, the antibody comprises the heavy chain having the amino acid sequence of SEQ ID NO: 19 and the light chain having the amino acid sequence of SEQ ID NO: 16, y represents an average number of units of the drug-linker structure conjugated to the antibody per itself, and the antibody is conjugated to a drug linker represented by the above formula by a thioether bond.

37. The conjugate according to any one of claims 1 to 36, wherein the antibody comprises one or more modifications selected from the group consisting of defucosylation, reduced fucose, N-linked glycosylation, O-linked glycosylation, N-terminal processing, C-terminal processing, deamidation, isomerization of aspartic acid, oxidation of methionine, the substitutions of two leucine (L) residues to alanine (A) at position 234 and 235 of the heavy chain (LALA), amidation of a proline residue, and a deletion or lack of one or two amino acids at the carboxyl terminus.

38. The conjugate according to claim 37, wherein the antibody comprises a deletion or lack of one or two amino acid(s) in the carboxyl terminus of the heavy chain.

39. The conjugate according to claim 38, wherein the antibody comprises two heavy chains, both of which lack one carboxyl-terminal amino acid residue.

40. The conjugate according to any one of claims 1 to 39, wherein the average number y of the cytotoxic agents, in particular drug-linker structures, conjugated per antibody is in a range of from 1 to 10.
- 5 41. The conjugate according to any one of claims 1 to 40, wherein the average number y of the cytotoxic agents, in particular of units of the selected one drug-linker structure, conjugated per antibody is in a range of from 2 to 8.
42. The conjugate according to any one of claims 1 to 41, wherein the average number y of the cytotoxic agents, in particular of units of the selected one drug-linker structure, conjugated per antibody is in a range of from 3 to 8.
- 10 43. The conjugate according to any one of claims 1 to 42, wherein the average number y of the cytotoxic agents, in particular of units of the selected one drug-linker structure, conjugated per antibody is in a range of from 7 to 8.
44. The conjugate according to any one of claims 1 to 43, wherein the average number y of the cytotoxic agents, in particular of units of the selected one drug-linker structure, conjugated per antibody is in a range of from 7.5 to 8.
- 15 45. The conjugate according to any one of claims 1 to 44, wherein the number of conjugated cytotoxic agents per antibody molecule is 8.
46. A composition comprising the conjugate according to any one of claims 1 to 45.
47. The conjugate according to any one of claim 1 to 45 for use in medicine.
- 20 48. The conjugate according to claim 47, or the composition according to claim 46 for use in the treatment of cancer, an infection, an autoimmune disease or an immunodeficiency disorder.
49. The conjugate or the composition according to claim 47 or 48, wherein the cancer is characterized by expressing TA-MUC1.
- 25 50. The conjugate or the composition according to claim 49, wherein the cancer is selected from the group consisting of ovarian cancer, breast cancer, pancreatic cancer, lung cancer, colon cancer, stomach cancer, liver cancer, kidney cancer, blood cancer, endometrial cancer, thyroid cancer, leukemias, seminomas, melanomas, carcinomas, teratomas, lymphomas, sarcomas, mesotheliomas, neuroblastomas, gliomas, rectal cancer, adrenal cancer, skin cancer, cancer of the
- 30 brain, cervical cancer, intestinal cancer, intestine cancer, head and neck cancer, gastrointestinal cancer, lymph node cancer, esophagus cancer, colorectal cancer,

ear, nose and throat (ENT) cancer, prostate cancer, bladder cancer, cancer of the uterus and the metastases thereof.

51. The conjugate or the composition according to any one of claims 46 to 50, wherein the composition is used in combination with a further agent.

5 52. A method for treating cancer in a subject in need thereof comprising, administering to the subject with cancer a therapeutically effective amount of the conjugation according to any one of claims 1 to 45 or the composition according to claim 46.

53. The method according to claim 52, wherein the cancer is characterized by expressing TA-MUC1.

10 54. The method for treating cancer according to claim 52 or 53, wherein the cancer is selected from the group consisting of ovarian cancer, breast cancer, pancreatic cancer, lung cancer, colon cancer, stomach cancer, liver cancer, kidney cancer, blood cancer, endometrial cancer, thyroid cancer, leukemia, seminomas, melanomas, carcinomas, teratomas, lymphomas, sarcomas, mesotheliomas, neuroblastomas, gliomas, rectal cancer, adrenal cancer, skin cancer, cancer of the
15 brain, cervical cancer, intestinal cancer, intestine cancer, head and neck cancer, gastrointestinal cancer, lymph node cancer, esophagus cancer, colorectal cancer, ear, nose and throat (ENT) cancer, prostate cancer, bladder cancer, cancer of the uterus and the metastases thereof.

20 55. The method for treating cancer according to claim 54, further comprising administering a further therapeutic agent.

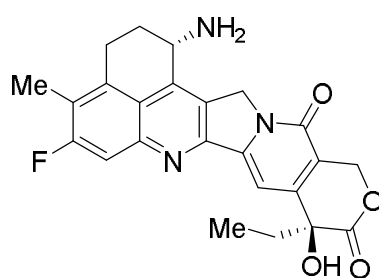
CLAIMS

1. A conjugate comprising an antibody conjugated to a cytotoxic agent, wherein the antibody is capable of binding to MUC1 or TA-MUC1, and wherein the antibody comprises
 - (i) a heavy chain variable region comprising the complementarity-determining regions (CDRs) CDR-H1 having the amino acid sequence of SEQ ID NO: 1, CDR-H2 having the amino acid sequence of SEQ ID NO: 2 and CDR-H3 having the amino acid sequence of SEQ ID NO: 3, and
 - (ii) a light chain variable region comprising the complementarity-determining regions (CDRs) CDR-L1 having the amino acid sequence of SEQ ID NO: 4, CDR-L2 having the amino acid sequence of SEQ ID NO: 5 and CDR-L3 having the amino acid sequence of SEQ ID NO: 6,wherein the amino acid at position 8 of SEQ ID NO: 2 is selected from the group consisting of glutamine, histidine, tryptophan, tyrosine, lysine, arginine, aspartic acid and glutamic acid, or wherein the CDR-H2 has the amino acid sequence of SEQ ID NO: 7.
2. The conjugate according to claim 1, wherein:
 - (i) the heavy chain variable region of the antibody has the amino acid sequence of SEQ ID NO: 9 or an amino acid sequence which is at least 90% identical to the amino acid sequence of SEQ ID NO: 9, or the heavy chain variable region of the antibody has the amino acid sequence of SEQ ID NO: 10 or an amino acid sequence which is at least 90% identical to the amino acid sequence of SEQ ID NO: 10, and/or
 - (ii) the light chain variable region of the antibody has the amino acid sequence of SEQ ID NO: 12 or an amino acid sequence which is at least 90% identical to the amino acid sequence of SEQ ID NO: 12, or
 - (iii) the heavy chain variable region of the antibody has the amino acid sequence of SEQ ID NO: 10 and the light chain variable region of the antibody has the amino acid sequence of SEQ ID NO: 12.
3. The conjugate according to claim 1 or 2, wherein the heavy chain of the antibody has the amino acid sequence of SEQ ID NO: 15, in particular SEQ ID NO: 22, and the light chain of the antibody has the amino acid sequence of SEQ ID NO: 16.
4. The conjugate according to claim 1, wherein:

- (i) the heavy chain variable region of the antibody has an amino acid sequence which is at least 90% identical to the amino acid sequence of SEQ ID NO: 11, and/or
 - (ii) the light chain variable region of the antibody has the amino acid sequence of SEQ ID NO: 12 or an amino acid sequence which is at least 90% identical to the amino acid sequence of SEQ ID NO: 12.
- 5. The conjugate according to any one of claims 1 to 4, wherein the antibody comprises an Fc region and preferably is an IgG1, IgG2 or IgG4-type antibody.
 - 6. The conjugate according to claims 3 or 5, wherein the antibody comprises a glycosylation pattern having one or more of the following characteristics:
 - (i) a detectable amount of glycans carrying a bisecting GlcNAc residue;
 - (ii) a relative amount of glycans carrying at least one galactose residue of at least 25% of the total amount of glycans attached to the Fc glycosylation sites of the antibody in a composition.
 - 7. The conjugate according to any one of claims 1 to 6, wherein the antibody is obtainable by production in a mammalian cell, preferably wherein the antibody is obtainable by production in a human cell line selected from the group consisting of NM-H9D8 (DSM ACC 2806), NM-H9D8-E6 (DSM ACC 2807), NM-H9D8-E6Q12 (DSM ACC 2856) and cell lines derived therefrom or in a CHO cell line and cell lines derived therefrom.
 - 8. The conjugate according to any one of claims 1 to 7, wherein the antibody is obtainable by a production method comprising the steps of (i) providing a host cell comprising a nucleic acid encoding the antibody defined in any one of claims 1 to 5, (ii) culturing the host cell under conditions suitable for expression of the antibody, and (iii) obtaining the antibody expressed by the host cell.
 - 9. The conjugate according to any one of claims 1 to 8, wherein the antibody competes with the antibody comprising a heavy chain variable region with the amino acid sequence of SEQ ID NO: 10 and a light chain variable region with the amino acid sequence of SEQ ID NO:12, or the antibody comprising a heavy chain variable region with the amino acid sequence of SEQ ID NO:11 and a light chain variable region with the amino acid sequence of SEQ ID NO:12 for the binding to TA-MUC1.
 - 10. The conjugate according to any one of claims 1 to 9, wherein the antibody has the activity of being internalized into MUC1, or TA-MUC1-expressing cells through binding to MUC-1, or TA-MUC1.

11. The conjugate according to any one of claims 1 to 10, wherein the cytotoxic agent is an anti-tumor agent, preferably a chemotherapeutic agent, preferably still wherein the chemotherapeutic agent is selected from the group consisting of a microtubule inhibitor, a topoisomerase I inhibitor, a DNA damaging agent, a DNA alkylating agent and a DNA minor groove binder, preferably a topoisomerase I inhibitor, and more preferably wherein the topoisomerase I inhibitor is an antitumor compound represented by the following formula:

[Formula 1]



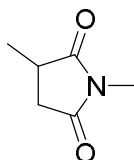
12. The conjugate according to any one of claims 1 to 11, wherein the antibody is conjugated to the cytotoxic agent or antitumor compound via a linker having any structure selected from the group consisting of the following formulas (a) to (f):

- (a) $-(\text{Succinimid-3-yl-N})-\text{CH}_2\text{CH}_2-\text{C}(=\text{O})-\text{GGFG}-\text{NH}-\text{CH}_2\text{CH}_2\text{CH}_2-\text{C}(=\text{O})-$,
- (b) $-(\text{Succinimid-3-yl-N})-\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2-\text{C}(=\text{O})-\text{GGFG}-\text{NH}-\text{CH}_2\text{CH}_2\text{CH}_2-\text{C}(=\text{O})-$,
- (c) $-(\text{Succinimid-3-yl-N})-\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2-\text{C}(=\text{O})-\text{GGFG}-\text{NH}-\text{CH}_2-\text{O}-\text{CH}_2-\text{C}(=\text{O})-$,
- (d) $-(\text{Succinimid-3-yl-N})-\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2-\text{C}(=\text{O})-\text{GGFG}-\text{NH}-\text{CH}_2\text{CH}_2-\text{O}-\text{CH}_2-\text{C}(=\text{O})-$,
- (e) $-(\text{Succinimid-3-yl-N})-\text{CH}_2\text{CH}_2-\text{C}(=\text{O})-\text{NH}-\text{CH}_2\text{CH}_2\text{O}-\text{CH}_2\text{CH}_2\text{O}-\text{CH}_2\text{CH}_2-\text{C}(=\text{O})-\text{GGFG}-\text{NH}-\text{CH}_2\text{CH}_2\text{CH}_2-\text{C}(=\text{O})-$, and
- (f) $-(\text{Succinimid-3-yl-N})-\text{CH}_2\text{CH}_2-\text{C}(=\text{O})-\text{NH}-\text{CH}_2\text{CH}_2\text{O}-\text{CH}_2\text{CH}_2\text{O}-\text{CH}_2\text{CH}_2\text{O}-\text{CH}_2\text{CH}_2\text{O}-\text{CH}_2\text{CH}_2-\text{C}(=\text{O})-\text{GGFG}-\text{NH}-\text{CH}_2\text{CH}_2\text{CH}_2-\text{C}(=\text{O})-$,

wherein the antibody is connected to the terminus of $-(\text{Succinimid-3-yl-N})$, the cytotoxic agent or antitumor compound is connected to the carbonyl group in the rightmost of formulas (a) to (f) with the nitrogen atom of the amino group at position 1 as a connecting position, GGFG represents an amino acid sequence consisting of glycine-glycine-phenylalanine-glycine linked through peptide bonds, and

-(Succinimid-3-yl-N)- has a structure represented by the following formula:

[Formula 2]



which is connected to the antibody at position 3 thereof and is connected to a methylene group in the linker structure containing this structure on the nitrogen atom at position 1, preferably wherein the linker is represented by any formula selected from the group consisting of the following formulas (a) to (c):

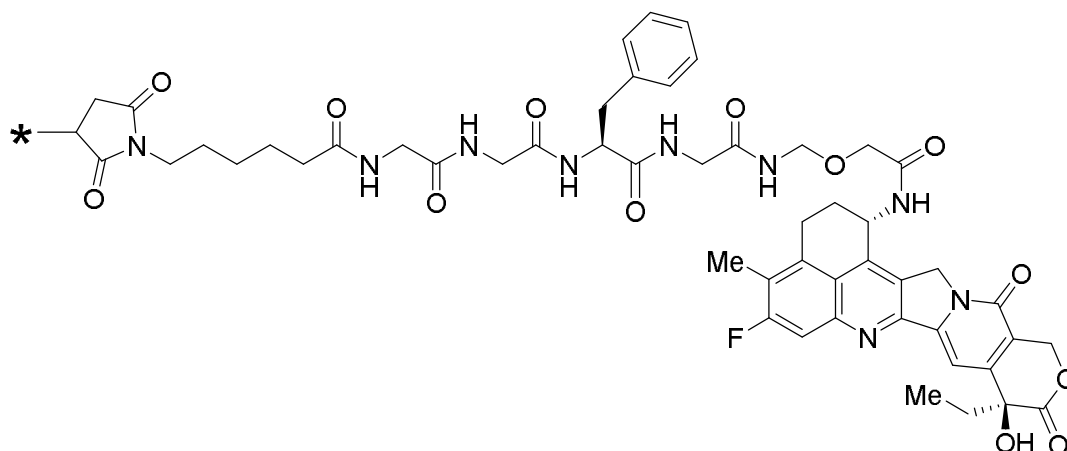
- (a) -(Succinimid-3-yl-N)-CH₂CH₂CH₂CH₂CH₂-C(=O)-GGFG-NH-CH₂-O-CH₂-C(=O)-,
- (b) -(Succinimid-3-yl-N)-CH₂CH₂CH₂CH₂CH₂-C(=O)-GGFG-NH-CH₂CH₂-O-CH₂-C(=O)-, and
- (c) -(Succinimid-3-yl-N)-CH₂CH₂-C(=O)-NH-CH₂CH₂O-CH₂CH₂O-CH₂CH₂-C(=O)-GGFG-NH-CH₂CH₂CH₂-C(=O)-,

preferably wherein the linker is represented by the following formula (a):

- (a) -(Succinimid-3-yl-N)-CH₂CH₂CH₂CH₂CH₂-C(=O)-GGFG-NH-CH₂-O-CH₂-C(=O)-.

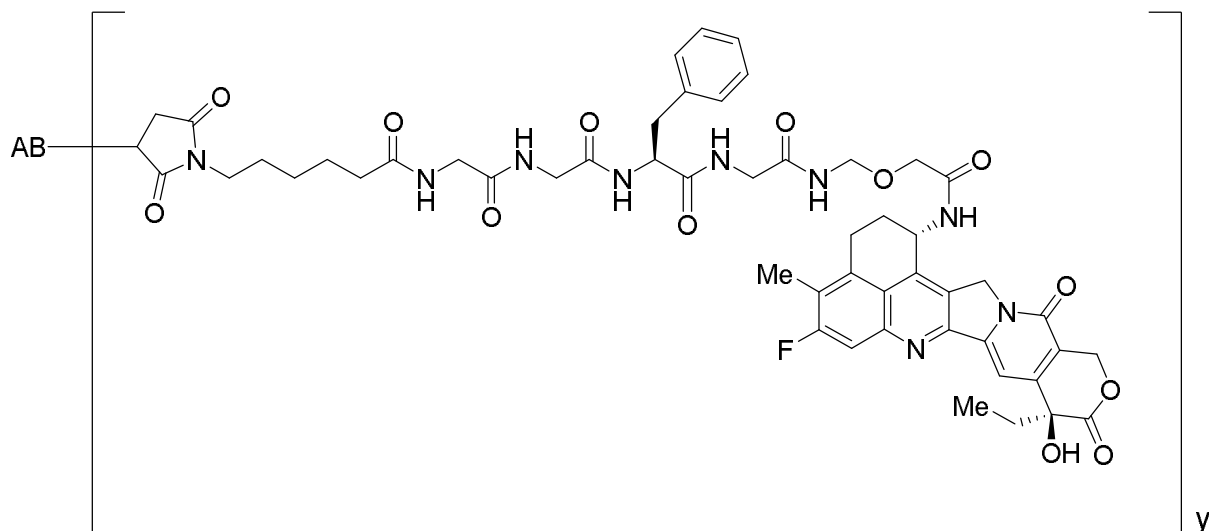
13. The conjugate according to claims 11 or 12, wherein the antibody is conjugated to a drug linker represented by the following formula (wherein asterisk* represents the point of connection to the antibody) by a thioether bond:

[Formula 3]



14. The conjugate according to any one of claims 11 to 13, which is represented by the following formula;

[Formula 4]



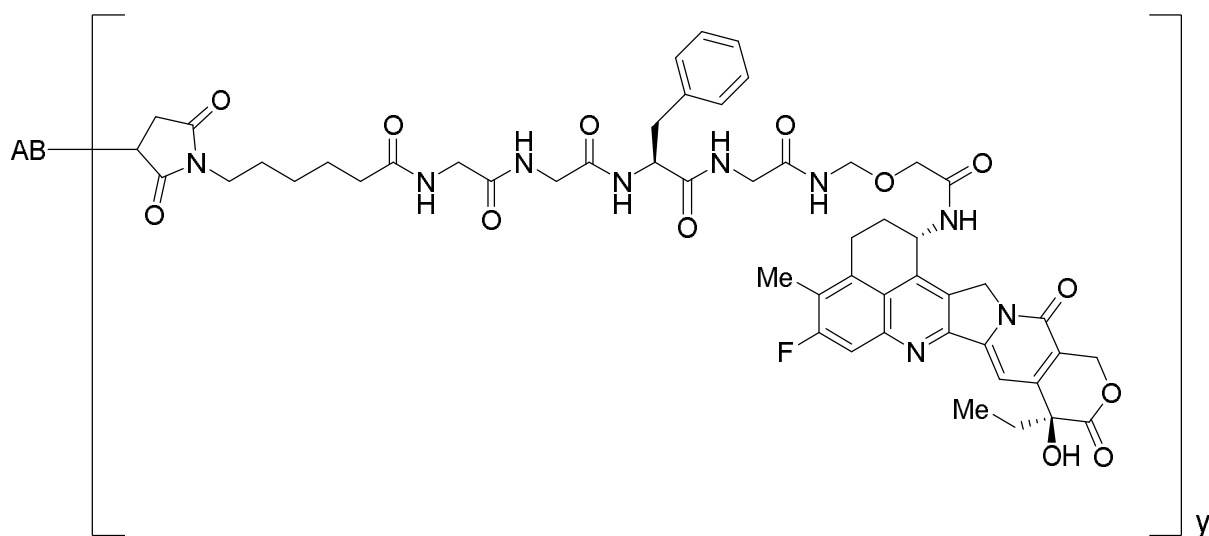
wherein AB represents the antibody thereof, y represents an average number of units of the drug-linker structure conjugated to the antibody per itself, and the antibody is conjugated to a drug linker represented by the above formula by a thioether bond.

15. The conjugate according to claim 13 or 14, wherein the antibody comprises any one of the following combinations a) to b) of a heavy chain variable region and a light chain variable region, or heavy chain and light chain:

- (a) the heavy chain variable region has the amino acid sequence of SEQ ID NO: 10 and the light chain variable region has the amino acid sequence of SEQ ID NO: 12, and
- (b) the heavy chain has the amino acid sequence of SEQ ID NO: 22 and the light chain has the amino acid sequence of SEQ ID NO: 16.

16. A conjugate, which is represented by the following formula,

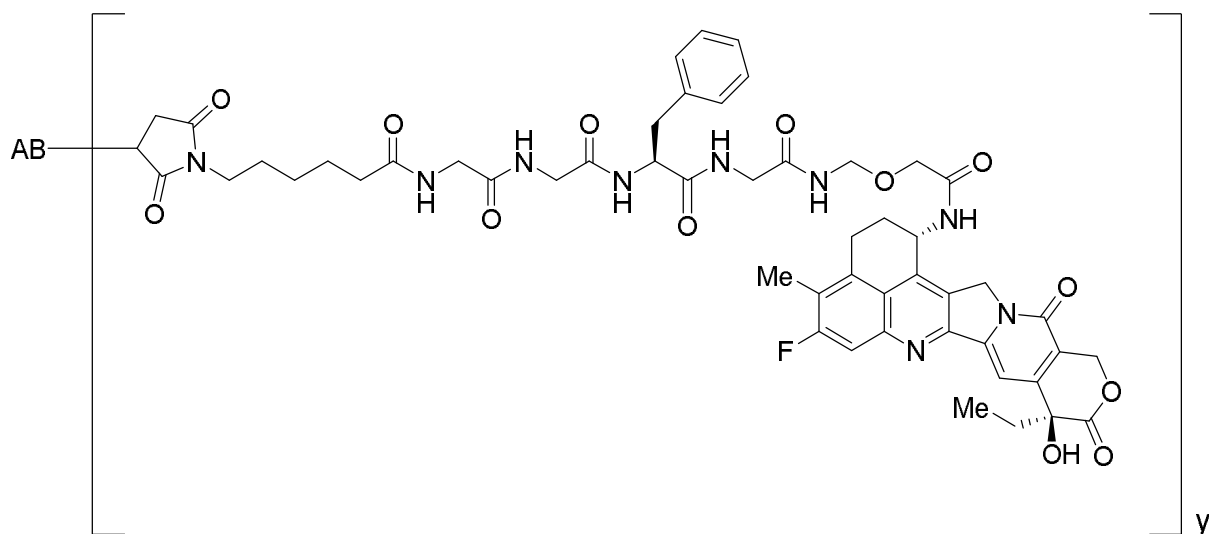
[Formula 5]



wherein AB represents the antibody, the antibody comprises the heavy chain variable region having the amino acid sequence of SEQ ID NO: 10 and the light chain variable region having the amino acid sequence of SEQ ID NO: 12, y represents an average number of units of the drug-linker structure conjugated to the antibody per itself, and the antibody is conjugated to a drug linker represented by the above formula by a thioether bond.

17. A conjugate, which is represented by the following formula,

[Formula 7]



wherein AB represents the antibody, the antibody comprises the heavy chain having the amino acid sequence of SEQ ID NO: 22 and the light chain having the amino acid sequence of SEQ ID NO: 16, y represents an average number of units of the drug-linker structure conjugated to the antibody per itself, and the antibody is conjugated to a drug linker represented by the above formula by a thioether bond.

18. The conjugate according to any one of claims 1 to 17, wherein the antibody comprises one or more modifications selected from the group consisting of defucosylation, reduced fucose, N-linked glycosylation, O-linked glycosylation, N-terminal processing, C-terminal processing, deamidation, isomerization of aspartic acid, oxidation of methionine, the substitutions of two leucine (L) residues to alanine (A) at position 234 and 235 of the heavy chain (LALA), amidation of a proline residue, and a deletion or lack of one or two amino acids at the carboxyl terminus, preferably wherein the antibody comprises a deletion or lack of one or two amino acid(s) in the carboxyl terminus of the heavy chain., more preferably wherein the antibody comprises two heavy chains, both of which lack one carboxyl-terminal amino acid residue.
19. The conjugate according to any one of claims 1 to 18, wherein the average number y of the cytotoxic agents, in particular drug-linker structures, conjugated per antibody is in a range of from 1 to 10.
20. The conjugate according to any one of claims 1 to 19, wherein the average number y of the cytotoxic agents, in particular of units of the selected one drug-linker structure, conjugated per antibody is in a range of from 2 to 8, from 3 to 8, from 7 to 8, or from 7.5 to 8.

21. The conjugate according to any one of claims 1 to 20, wherein the number of conjugated cytotoxic agents per antibody molecule is 8.
22. A composition comprising the conjugate according to any one of claims 1 to 21.
23. The conjugate according to any one of claim 1 to 21 for use in medicine.
24. The conjugate according to claim 23, or the composition according to claim 22 for use in the treatment of cancer, an infection, an autoimmune disease or an immunodeficiency disorder, preferably , wherein the cancer is characterized by expressing TA-MUC1, more preferably wherein the cancer is selected from the group consisting of ovarian cancer, breast cancer, pancreatic cancer, lung cancer, colon cancer, stomach cancer, liver cancer, kidney cancer, blood cancer, endometrial cancer, thyroid cancer, leukemias, seminomas, melanomas, carcinomas, teratomas, lymphomas, sarcomas, mesotheliomas, neuroblastomas, gliomas, rectal cancer, adrenal cancer, skin cancer, cancer of the brain, cervical cancer, intestinal cancer, intestine cancer, head and neck cancer, gastrointestinal cancer, lymph node cancer, esophagus cancer, colorectal cancer, ear, nose and throat (ENT) cancer, prostate cancer, bladder cancer, cancer of the uterus and the metastases thereof.
25. The conjugate or the composition according to any one of claims 22 to 24, wherein the conjugate or the composition is for use in combination with a further agent.