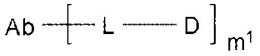
CLAIMS

1. An antibody-drug conjugate represented by the following formula:

[Formula 1]



wherein

m^1 represents an integer of 1 to 10;

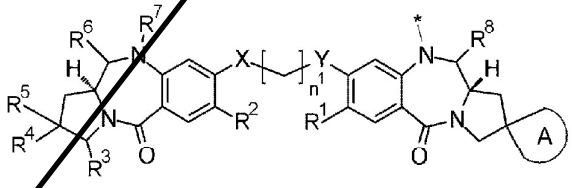
Ab represents an antibody or a functional fragment of the antibody, where the antibody optionally has a remodeled glycan;

L represents a linker linking Ab and D;

Ab may bond directly via its amino acid residue to L, or may bond via a glycan or a remodeled glycan of Ab to L; and

D represents a drug represented by the following formula:

[Formula 2]



wherein

the asterisk represents bonding to L;

n^1 represents an integer of 2 to 8;

A represents a spiro-bonded three- to five-membered saturated hydrocarbon ring or three- to five-membered saturated heterocycle optionally substituted with one to four halogen atoms;

R^1 and R^2 each independently represent a C1 to C6 alkoxy group, a C1 to C6 alkyl group, a hydrogen atom, a hydroxy group, a thiol group, a C1 to C6 alkylthio

group, a halogen atom, or -NR'R", wherein R' and R" each independently represent a hydrogen atom or a C1 to C6 alkyl group;

R^3, R^4, and R^5 are selected from (i) to (iii):

(i) R^3 and R^4 are combined, together with the carbon atoms to which R^3 and R^4 are bound, to form a double bond, and R^5 represents an aryl group or heteroaryl group optionally having one or more substituents selected from group 1 or a C1 to C6 alkyl group optionally having one or more substituents selected from group 2,

(ii) R^3 represents a hydrogen atom, and R^4 and R^5 are combined, together with the carbon atom to which R^4 and R^5 are bound, to form a three- to five-membered saturated hydrocarbon ring or a three- to five-membered saturated heterocycle, or CH_2=, and

(iii) R^3, R^4, and R^5 are combined, together with the carbon atom to which R^3 is bound and the carbon atom to which R^4 and R^5 are bound, to form a benzene ring or six-membered heterocycle optionally having one or more substituents selected from group 3;

R^6 and R^7 each represent a hydrogen atom, or R^6 and R^7 are combined to represent an imine bond (C=N);

R^8 represents a hydroxy group or a C1 to C3 alkoxy group;

X and Y each independently represent an oxygen atom, a nitrogen atom, or a sulfur atom;

group 1 represents:

a) a C1 to C6 alkoxy group optionally substituted with one to three halogen atoms,

b) a C1 to C6 alkyl group optionally substituted with any one selected from one to three halogen atoms, a hydroxy group, -OCOR', -NR'R", -C(=NR')-NR"R'", and -NHC(=NR')-NR"R'",

c) a halogen atom,

d) a C3 to C5 cycloalkoxy group,

e) a C1 to C6 alkylthio group,

f) -NR'R",

g) -C(=NR')-NR"R"',

h) -NHC(=NR')-NR"R"',

i) -NHCOR', or

j) a hydroxy group,

wherein R' and R" are as defined above, and R"' each independently represents a hydrogen atom or a C1 to C6 alkyl group;

group 2 represents a halogen atom, a hydroxy group, or a C1 to C6 alkoxy group; and

group 3 represents a halogen atom, or a C1 to C6 alkyl group or C1 to C6 alkoxy group optionally substituted with one to three halogen atoms.

2. The antibody-drug conjugate according to claim 1, wherein

A represents a spiro-bonded three- to five-membered saturated hydrocarbon ring optionally substituted with one or two halogen atoms;

R^1 and R^2 each independently represent a C1 to C3 alkoxy group;

R^3 and R^4 are combined together with the carbon atoms to which R^3 and R^4 are bound to form a double bond;

R^5 represents an aryl group or heteroaryl group optionally having one or more substituents selected from group 4, or a C1 to C3 alkyl group optionally having one or more substituents selected from group 5;

X and Y are each an oxygen atom;

group 4 represents:

a) a C1 to C3 alkoxy group optionally substituted with one to three halogen atoms,

b) a C1 to C3 alkyl group optionally substituted with any one selected from one to three halogen atoms, a hydroxy group, -OCOR", -C(=NR')-NR"R"', and -NHC(=NR')-NR"R"',

c) a C3 to C5 cycloalkoxy group,

d) -C(=NR')-NR"R"',

e) -NHC(=NR')-NR''R''', or

f) a hydroxy group,

wherein R', R'', and R''' each independently represent a hydrogen atom or a C1 to C3 alkyl group; and

group 5 represents a halogen atom, a hydroxy group, or a C1 to C3 alkoxy group.

3. The antibody-drug conjugate according to claim 1, wherein

A represents a spiro-bonded three- to five-membered saturated hydrocarbon ring optionally substituted with one or two halogen atoms;

R^1 and R^2 each independently represent a C1 to C3 alkoxy group;

R^3 represents a hydrogen atom;

R^4 and R^5 are combined, together with the carbon atom to which R^4 and R^5 are bound, to form a three- to five-membered saturated hydrocarbon ring, or $=CH_2$; and

X and Y are each an oxygen atom.

4. The antibody-drug conjugate according to claim 1, wherein

A represents a spiro-bonded three- to five-membered saturated hydrocarbon ring optionally substituted with one or two halogen atoms;

R^1 and R^2 each independently represent a C1 to C3 alkoxy group;

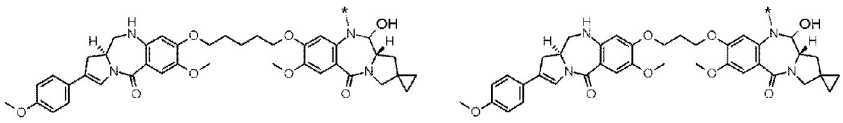
R^3, R^4, and R^5 are combined, together with the carbon atom to which R^3 is bound and the carbon atom to which R^4 and R^5 are bound, to form a benzene ring optionally having one or more substituents selected from group 6;

X and Y are each an oxygen atom; and

group 6 represents a halogen atom, or a C1 to C3 alkyl group or C1 to C3 alkoxy group optionally substituted with one to three halogen atoms.

5. The antibody-drug conjugate according to claim 1 or 2, wherein D is represented by any one of the following two formulas:

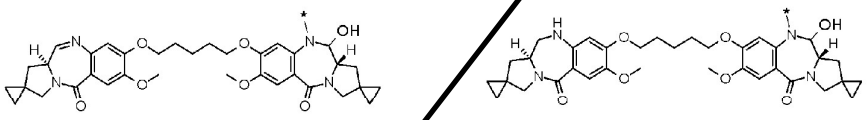
[Formula 3]



wherein each asterisk represents bonding to L.

6. The antibody-drug conjugate according to claim 1 or 3, wherein D is represented by any one of the following two formulas:

[Formula 4]



wherein each asterisk represents bonding to L.

7. The antibody-drug conjugate according to any one of claims 1 to 6, wherein

L is represented by -Lb-La-Lp-NH-B-CH_2-O(C=O)-*, the asterisk representing bonding to D;

B represents a phenyl group or a heteroaryl group;

Lp represents a linker consisting of an amino acid sequence cleavable in a target cell;

La represents any one selected from the group:

-C(=O)-$(CH_2CH_2)n^2$-C(=O)-,

-C(=O)-$(CH_2CH_2)n^2$-C(=O)-NH-$(CH_2CH_2)n^3$-C(=O)-,

-C(=O)-$(CH_2CH_2)n^2$-C(=O)-NH-$(CH_2CH_2O)n^3$-CH_2-C(=O)-,

-C(=O)-$(CH_2CH_2)n^2$-NH-C(=O)-$(CH_2CH_2O)n^3$-CH_2CH_2-C(=O)-, and

-$(CH_2)n^4$-O-C(=O)-;

n^2 represents an integer of 1 to 3, n^3 represents an integer of 1 to 5, and n^4 represents an integer of 0 to 2; and

Lb represents a spacer bonding La and a glycan or remodeled glycan of Ab.

8. The antibody-drug conjugate according to claim 7, wherein B is any one selected from a 1,4-phenyl group, a 2,5-pyridyl group, a 3,6-pyridyl group, a 2,5-pyrimidyl group, and a 2,5-thienyl group.

9. The antibody-drug conjugate according to claim 8, wherein B is a 1,4-phenyl group.

10. The antibody-drug conjugate according to any one of claims 7 to 9, wherein Lp is amino acid residues composed of two to seven amino acids.

11. The antibody-drug conjugate according to any one of claims 7 to 10, wherein Lp is amino acid residues consisting of amino acids selected from glycine, valine, alanine, phenylalanine, glutamic acid, isoleucine, proline, citrulline, leucine, serine, lysine, and aspartic acid.

12. The antibody-drug conjugate according to any one of claims 7 to 11, wherein Lp is selected from the following group: -GGVA-, -GG-(D-)VA-, -VA-, -GGFG-, -GGPI-, -GGVCit-, -GGVK-, -GG(D-)PI-, and -GGPL-.

13. The antibody-drug conjugate according to any one of claims 7 to 12, wherein La is selected from the following group:

-C(=O)-CH_2CH_2-C(=O)-, -C(=O)-$(CH_2CH_2)_2$-C(=O)-,

-C(=O)-CH_2CH_2-C(=O)-NH-$(CH_2CH_2)_2$-C(=O)-,

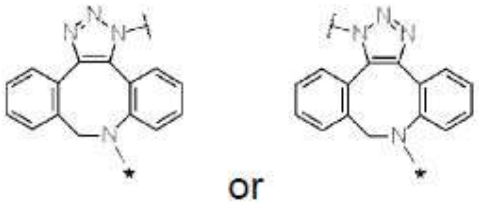
-C(=O)-CH_2CH_2-C(=O)-NH-$(CH_2CH_2O)_2$-CH_2-C(=O)-,

-C(=O)-CH_2CH_2-NH-C(=O)-$(CH_2CH_2O)_4$-CH_2CH_2-C(=O)-,

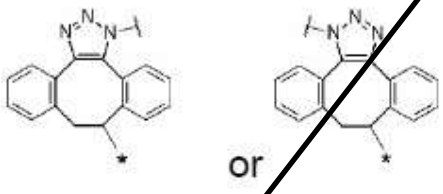
-CH_2-OC(=O)-, and -OC(=O)-.

14. The antibody-drug conjugate according to any one of claims 7 to 13, wherein Lb is represented by the following formula:

[Formula 5]

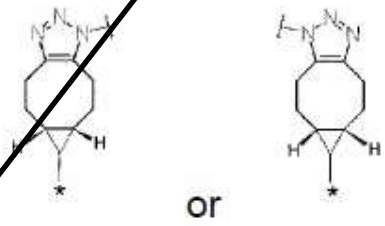


[Formula 6]



, or

[Formula 7]



wherein, in each structural formula for Lb shown above,

each asterisk represents bonding to La, and each wavy line represents bonding to a glycan or remodeled glycan of Ab.

15. The antibody-drug conjugate according to any one of claims 7 to 14, wherein L is represented by -Lb-La-Lp-NH-B-CH_2-O(C=O)-*, wherein

B is a 1,4-phenyl group;

Lp represents any one selected from the following group: -GGVA-, -GG-(D-)VA-, -VA-, -GGFG-, -GGPI-, -GGVCit-, -GGVK-, and -GGPL-;

La represents any one selected from the following group:

-C(=O)-CH_2CH_2-C(=O)-, -C(=O)-$(CH_2CH_2)_2$-C(=O)-,

-C(=O)-CH_2CH_2-C(=O)-NH-$(CH_2CH_2)_2$-C(=O)-,

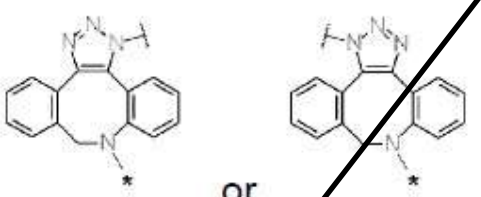
-C(=O)-CH_2CH_2-C(=O)-NH-$(CH_2CH_2O)_2$-CH_2-C(=O)-,

-C(=O)-CH_2CH_2-NH-C(=O)-$(CH_2CH_2O)_4$-CH_2CH_2-C(=O)-,

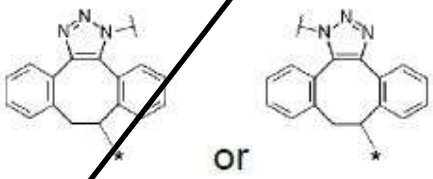
-CH_2-OC(=O)-, and -OC(=O)-; and

Lb is represented by the following formula:

[Formula 8]

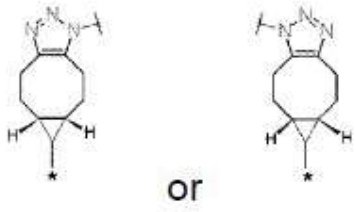


[Formula 9]



, or

[Formula 10]



wherein, in each structural formula for Lb shown above,

each asterisk represents bonding to La, and each wavy line represents bonding to a glycan or remodeled glycan of Ab.

16. The antibody-drug conjugate according to any one of claims 7 to 15, wherein

L is selected from the following group:

-Z^1-C(=O)-CH_2CH_2-C(=O)-GGVA-NH-B-CH_2-OC(=O)-,

-Z^1-C(=O)-CH_2CH_2-C(=O)-GG-(D-)VA-NH-B-CH_2-OC(=O)-,

-Z^1-C(=O)-CH_2CH_2-C(=O)-VA-NH-B-CH_2-OC(=O)-,

-Z^1-C(=O)-$(CH_2CH_2)_2$-C(=O)-VA-NH-B-CH_2-OC(=O)-,

-Z^1-C(=O)-CH_2CH_2-C(=O)-GGPI-NH-B-CH_2-OC(=O)-,

-Z^1-C(=O)-CH_2CH_2-C(=O)-GGFG-NH-B-CH_2-OC(=O)-,

-Z^1-C(=O)-CH_2CH_2-C(=O)-GGVCit-NH-B-CH_2-OC(=O)-,

-Z^1-C(=O)-CH_2CH_2-C(=O)-GGVK-NH-B-CH_2-OC(=O)-,

-Z^1-C(=O)-CH_2CH_2-C(=O)-GGPL-NH-B-CH_2-OC(=O)-,

-Z^1-C(=O)-CH_2CH_2-C(=O)-NH-$(CH_2CH_2)_2$-C(=O)-VA-NH-B-CH_2-OC(=O)-,

-Z^1-C(=O)-CH_2CH_2-C(=O)-NH-$(CH_2CH_2O)_2$-CH_2-C(=O)-VA-NH-B-CH_2-OC(=O)-,

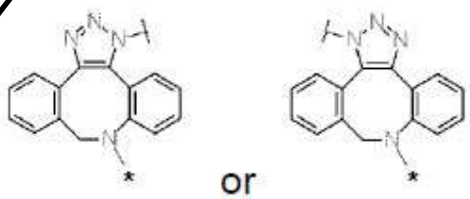
-Z^1-C(=O)-CH_2CH_2-NH-C(=O)-$(CH_2CH_2O)_4$-CH_2CH_2-C(=O)-VA-NH-B-CH_2-OC(=O)-,

-Z^2-OC(=O)-GGVA-NH-B-CH_2-OC(=O)-, and

-Z^3-CH_2-OC(=O)-GGVA-NH-B-CH_2-OC(=O)-, wherein

Z^1 represents the following structural formula:

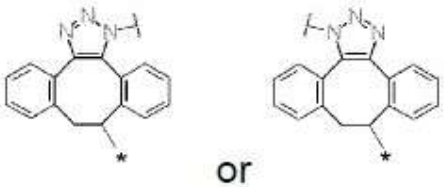
[Formula 11]



or

Z^2 represents the following structural formula:

[Formula 12]

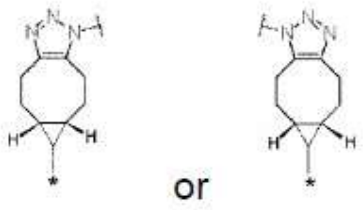


or

, and

Z^3 represents the following structural formula:

[Formula 13]



wherein, in each structural formula for Z^1, Z^2, and Z^3,

each asterisk represents bonding to La, each wavy line represents bonding to a glycan or remodeled glycan of Ab; and

B represents a 1,4-phenyl group.

17. The antibody-drug conjugate according to claim 16, wherein

L is selected from the following group:

$-Z^1-C(=O)-CH_2CH_2-C(=O)-GGVA-NH-B-CH_2-OC(=O)-$,

$-Z^1-C(=O)-CH_2CH_2-C(=O)-VA-NH-B-CH_2-OC(=O)-$,

$-Z^1-C(=O)-(CH_2CH_2)_2-C(=O)-VA-NH-B-CH_2-OC(=O)-$,

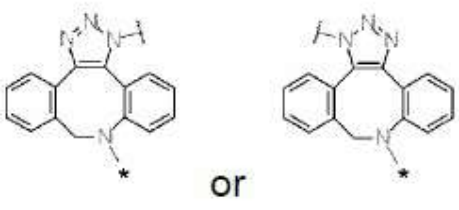
$-Z^1-C(=O)-CH_2CH_2-C(=O)-GGVCit-NH-B-CH_2-OC(=O)-$, $-Z^1-C(=O)-CH_2CH_2-C(=O)-NH-(CH_2CH_2)_2-C(=O)-VA-NH-B-CH_2-OC(=O)-$,

$-Z^1-C(=O)-CH_2CH_2-C(=O)-NH-(CH_2CH_2O)_2-CH_2-C(=O)-VA-NH-B-CH_2-OC(=O)-$, and

$-Z^1-C(=O)-CH_2CH_2-NH-C(=O)-(CH_2CH_2O)_4-CH_2CH_2-C(=O)-VA-NH-B-CH_2-OC(=O)-$, wherein

B is a 1,4-phenyl group, and Z^1 represents the following structural formula:

[Formula 14]



wherein, in the structural formula for Z^1,

each asterisk represents bonding to C(=O) neighboring to Z^1, and each wavy line represents bonding to a glycan or remodeled glycan of Ab.

18. The antibody-drug conjugate according to any one of claims 1 to 6, wherein

L is represented by -Lb-La-Lp-NH-B-CH_2-O(C=O)-*, wherein

the asterisk represents bonding to D;

B represents a 1,4-phenyl group;

Lp represents -GGVA- or -VA;

La represents -$(CH_2)n^9$-C(=O)- or -$(CH_2CH_2)n^{10}$-C(=O)-NH-$(CH_2CH_2O)n^{11}$-CH_2CH_2-C(=O)-, wherein n^9 represents an integer of 2 to 7, n^{10} represents an integer of 1 to 3, and n^{11} represents an integer of 6 to 10; and

Lb is -(succinimid-3-yl-N)-.

19. The antibody-drug conjugate according to claim 18, wherein

L represents any one selected from the following group:

-(succinimid-3-yl-N)-$(CH_2)_5$-C(=O)-VA-NH-B-CH_2-OC(=O)-,

-(succinimid-3-yl-N)-$(CH_2)_5$-C(=O)-GGVA-NH-B-CH_2-OC(=O)-, and

-(succinimid-3-yl-N)-CH_2CH_2-C(=O)-NH-$(CH_2CH_2O)_8$-CH_2CH_2-C(=O)-VA-NH-B-CH_2-OC(=O)-, wherein B is a 1,4-phenyl group.

20. The antibody-drug conjugate according to any one of claims 1 to 19, wherein the antibody is IgG.

21. The antibody-drug conjugate according to claim 20, wherein the antibody is IgG1, IgG2, or IgG4.

22. The antibody-drug conjugate according to any one of claims 1 to 21, wherein the antibody binds to a tumor cell, and is incorporated and internalizes in the tumor cell.

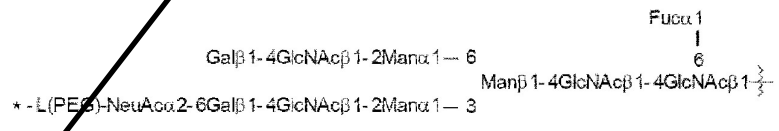
23. The antibody-drug conjugate according to claim 22, wherein the antibody further has antitumor effect.

24. The antibody-drug conjugate according to any one of claims 1 to 17 and 20 to 23, wherein the antibody bonds via a glycan bonding to Asn297 of the antibody (N297 glycan) to L.

25. The antibody-drug conjugate according to claim 24, wherein the N297 glycan is a remodeled glycan.

26. The antibody-drug conjugate according to claim 24 or 25, wherein the N297 glycan is N297-(Fuc)MSG1, N297-(Fuc)MSG2, or a mixture thereof, or N297-(Fuc)SG, with N297-(Fuc)MSG1, N297-(Fuc)MSG2, and N297-(Fuc)SG having structures represented by the following formulas:

[Formula 15]



[N297-(Fuc)MSG1]

wherein

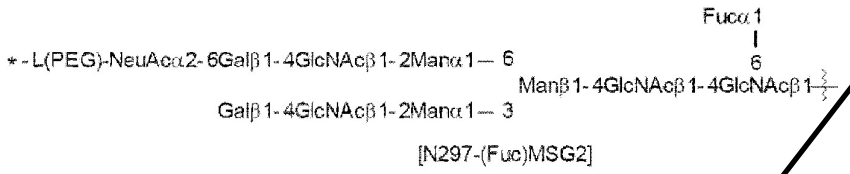
the wavy line represents bonding to Asn297 of the antibody;

L(PEG) represents $-(CH_2CH_2-O)n^5-CH_2CH_2-NH-$, wherein the amino group at the right end is bound via an amide bond to carboxylic acid at the 2-position of a sialic acid at the non-reducing terminal in the 1-3 branched chain of β-Man in the N297 glycan;

the asterisk represents bonding to linker L; and

n^5 represents an integer of 2 to 10,

[Formula 16]



[N297-(Fuc)MSG2]

wherein

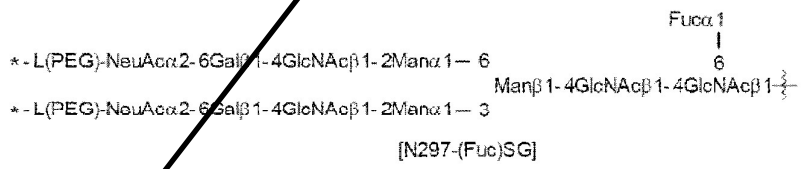
the wavy line represents bonding to Asn297 of the antibody;

L(PEG) represents $-(CH_2CH_2-O)n^5-CH_2CH_2-NH-$, wherein the amino group at the right end is bound via an amide bond to carboxylic acid at the 2-position of a sialic acid at the non-reducing terminal in the 1-6 branched chain of β-Man in the N297 glycan;

the asterisk represents bonding to linker L; and

n^5 represents an integer of 2 to 10, and

[Formula 17]



[N297-(Fuc)SG]

wherein

the wavy line represents bonding to Asn297 of the antibody;

L(PEG) represents $-(CH_2CH_2-O)n^5-CH_2CH_2-NH-$, wherein the amino group at the right end is bound via an amide bond to carboxylic acid at the 2-position of a sialic acid at the non-reducing terminal in each of the 1-3 and 1-6 branched chains of β-Man in the N297 glycan;

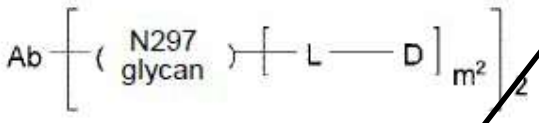
the asterisk represents bonding to linker L; and

n^5 represents an integer of 2 to 10.

27. The antibody-drug conjugate according to claim 26, wherein n^5 is an integer of 2 to 5.

28. The antibody-drug conjugate according to any one of claims 24 to 27, represented by the following formula:

[Formula 18]



wherein

m^2 represents an integer of 1 or 2;

L is a linker linking the N297 glycan of Ab and D, and being any one selected from the following group:

$-Z^1-C(=O)-CH_2CH_2-C(=O)-GGVA-NH-B-CH_2-OC(=O)-$,

$-Z^1-C(=O)-CH_2CH_2-C(=O)-VA-NH-B-CH_2-OC(=O)-$,

$-Z^1-C(=O)-(CH_2CH_2)_2-C(=O)-VA-NH-B-CH_2-OC(=O)-$,

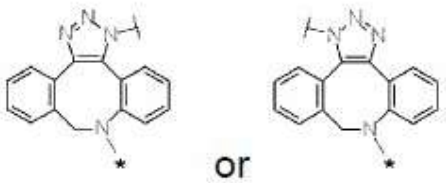
$-Z^1-C(=O)-CH_2CH_2-C(=O)-GGVCit-NH-B-CH_2-OC(=O)-$,

$-Z^1-C(=O)-CH_2CH_2-C(=O)-NH-(CH_2CH_2)_2-C(=O)-VA-NH-B-CH_2-OC(=O)-$,

$-Z^1-C(=O)-CH_2CH_2-C(=O)-NH-(CH_2CH_2O)_2-CH_2-C(=O)-VA-NH-B-CH_2-OC(=O)-$, and $-Z^1-C(=O)-CH_2CH_2-NH-C(=O)-(CH_2CH_2O)_4-CH_2CH_2-C(=O)-VA-NH-B-CH_2-OC(=O)-$, wherein

B is a 1,4-phenyl group, and Z^1 represents the following structural formula:

[Formula 19]



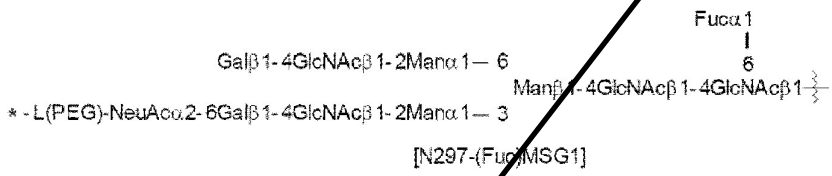
wherein, in the structural formulas for Z^1,

each asterisk represents bonding to C(=O) neighboring to Z^1, and each wavy line represents bonding to the N297 glycan of Ab;

Ab represents an IgG antibody or a functional fragment of the antibody;

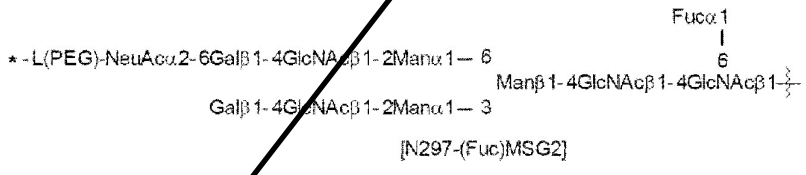
the N297 glycan of Ab represents any one of N297-(Fuc)MSG1, N297-(Fuc)MSG2, and a mixture thereof, and N297-(Fuc)SG, with N297-(Fuc)MSG1, N297-(Fuc)MSG2, and N297-(Fuc)SG having structures represented by the following formulas:

[Formula 20]



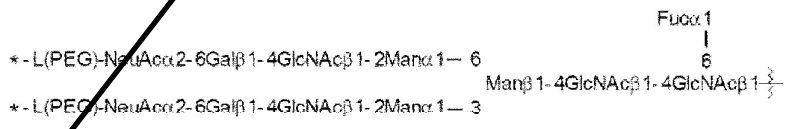
[N297-(Fuc)MSG1]

[Formula 21]



[N297-(Fuc)MSG2]

[Formula 22]



[N297-(Fuc)SG]

wherein

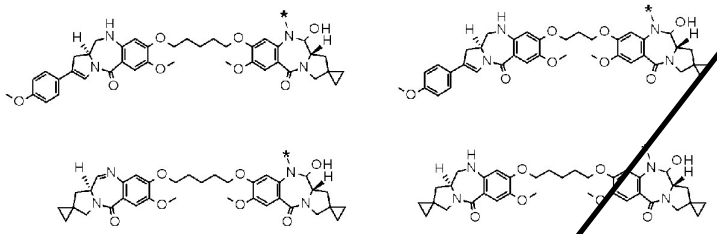
each wavy line represents bonding to Asn297 of the antibody,

L(PEG) in the N297 glycan represents $-NH-CH_2CH_2-(O-CH_2CH_2)n^5-*$, wherein n^5 represents an integer of 2 to 5, the amino group at the left end is bound via an amide bond to carboxylic acid at the 2-position of a sialic acid at the non-reducing terminal in each or either one of the 1-3 and 1-6 branched chains of β-Man in the N297

glycan, and each asterisk represents bonding to a nitrogen atom at the 1- or 3-position of the triazole ring of Z^1 in linker L; and

D is any one selected from the following group:

[Formula 23]

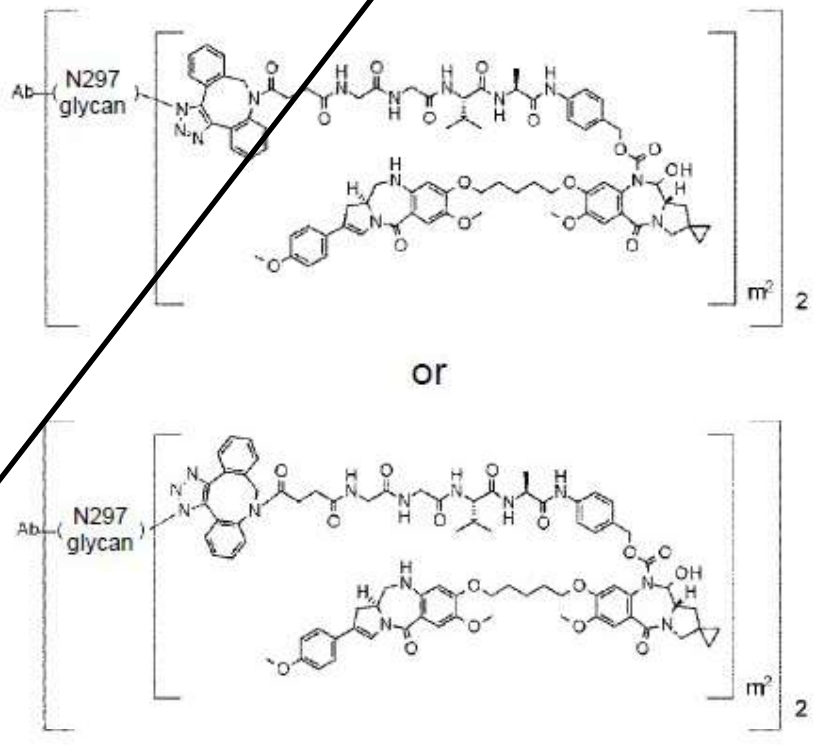


wherein

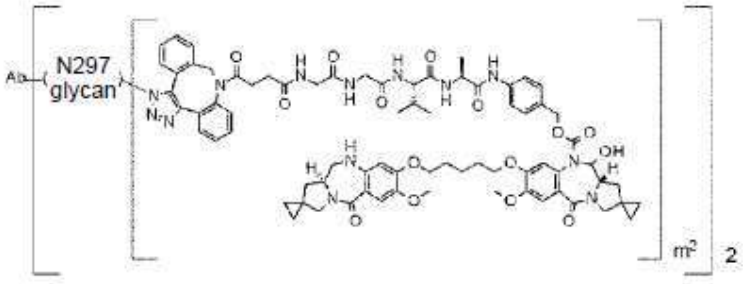
each asterisk represents bonding to L.

29. An antibody-drug conjugate selected from the following group:

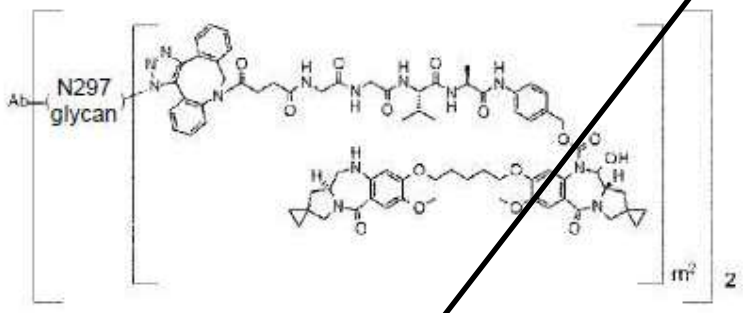
[Formula 24]



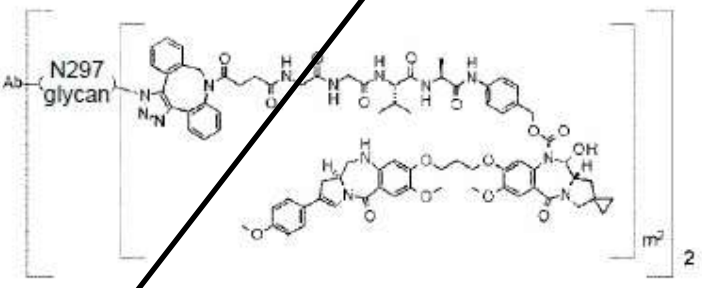
[Formula 25]



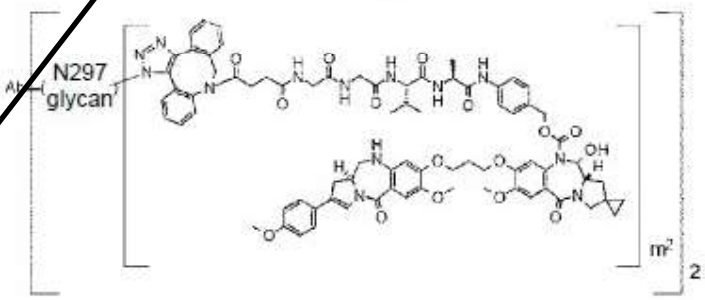
or



[Formula 26]

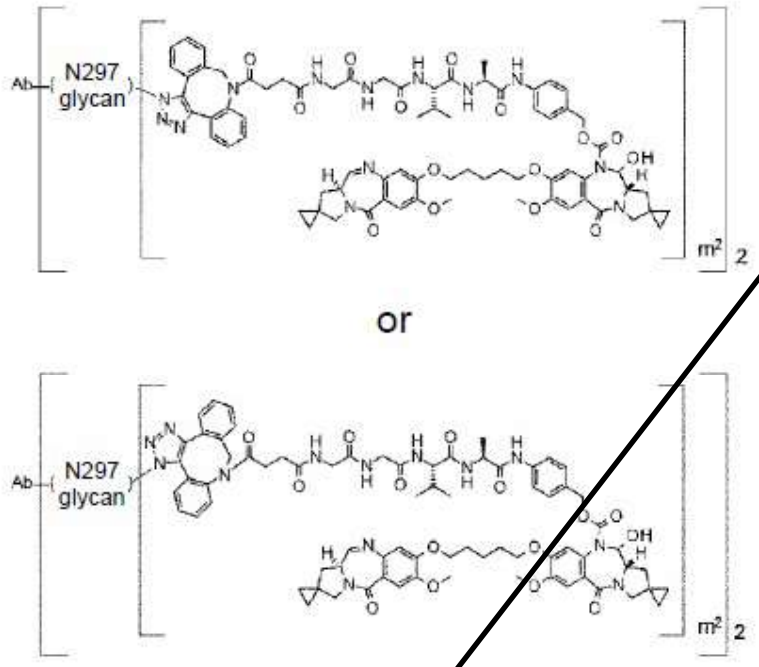


or



, or

[Formula 27]



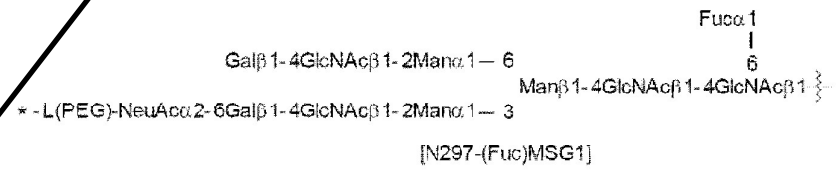
wherein, in each structural formula shown above,

m^2 represents an integer of 1 or 2;

Ab represents an IgG antibody or a functional fragment of the antibody;

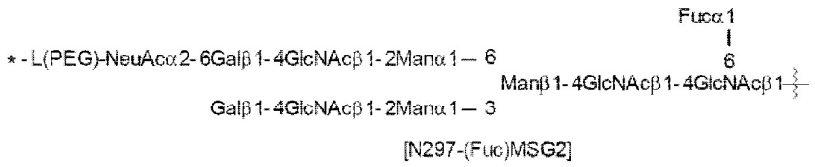
the N297 glycan of Ab represents any one of N297-(Fuc)MSG1, N297-(Fuc)MSG2, and a mixture thereof, and N297-(Fuc)SG, with N297-(Fuc)MSG1, N297-(Fuc)MSG2, and N297-(Fuc)SG having structures represented by the following formulas:

[Formula 28]

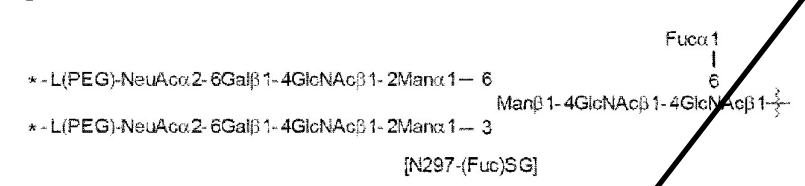


[N297-(Fuc)MSG1]

[Formula 29]



[Formula 30]



wherein

each wavy line represents bonding to Asn297 of the antibody,

L(PEG) in the N297 glycan represents -NH-CH_2CH_2-$(O\text{-}CH_2CH_2)_3$-*, wherein the amino group at the left end is bound via an amide bond to carboxylic acid at the 2-position of a sialic acid at the non-reducing terminal in each or either one of the 1-3 and 1-6 branched chains of β-Man in the N297 glycan, and each asterisk represents bonding to a nitrogen atom at the 1- or 3-position of the triazole ring in the corresponding structural formula.

30. An antibody which binds to CLDN6 and/or CLDN9, or a functional fragment of the antibody.

31. The antibody according to claim 30 or a functional fragment of the antibody, wherein CLDN6 is a molecule consisting of an amino acid sequence represented by SEQ ID NO: 1, and CLDN9 is a molecule consisting of an amino acid sequence represented by SEQ ID NO: 3.

32. The antibody according to claim 30 or 31 or a functional fragment of the antibody, the antibody comprising a heavy chain comprising CDRH1, CDRH2, and

CDRH3 and a light chain comprising CDRL1, CDRL2, and CDRL3 as described in any one of the following (a) and (b):

(a) CDRH1 consisting of an amino acid sequence represented by SEQ ID NO: 9, CDRH2 consisting of an amino acid sequence represented by SEQ ID NO: 10, and CDRH3 consisting of an amino acid sequence represented by SEQ ID NO: 11, and CDRL1 consisting of an amino acid sequence represented by SEQ ID NO: 5, CDRL2 consisting of an amino acid sequence represented by SEQ ID NO: 6, and CDRL3 consisting of an amino acid sequence represented by SEQ ID NO: 7 or an amino acid sequence having one or two amino acid substitutions in the amino acid sequence represented by SEQ ID NO: 7; and

(b) CDRH1 consisting of an amino acid sequence represented by SEQ ID NO: 15, CDRH2 consisting of an amino acid sequence represented by SEQ ID NO: 16, and CDRH3 consisting of an amino acid sequence represented by SEQ ID NO: 17, and CDRL1 consisting of an amino acid sequence represented by SEQ ID NO: 12, CDRL2 consisting of an amino acid sequence represented by SEQ ID NO: 13, and CDRL3 consisting of an amino acid sequence represented by SEQ ID NO: 14.

33. The antibody according to claim 32 or a functional fragment of the antibody, the antibody comprising a heavy chain comprising CDRH1, CDRH2, and CDRH3 and a light chain comprising CDRL1, CDRL2, and CDRL3 as described in any one of the following (a) and (b):

(a) CDRH1 consisting of an amino acid sequence represented by SEQ ID NO: 9, CDRH2 consisting of an amino acid sequence represented by SEQ ID NO: 10, and CDRH3 consisting of an amino acid sequence represented by SEQ ID NO: 11, and CDRL1 consisting of an amino acid sequence represented by SEQ ID NO: 5, CDRL2 consisting of an amino acid sequence represented by SEQ ID NO: 6, and CDRL3 consisting of an amino acid sequence represented by SEQ ID NO: 7 or an amino acid sequence represented by SEQ ID NO: 8; and

(b) CDRH1 consisting of an amino acid sequence represented by SEQ ID NO: 15, CDRH2 consisting of an amino acid sequence represented by SEQ ID NO: 16, and CDRH3 consisting of an amino acid sequence represented by SEQ ID NO: 17, and CDRL1 consisting of an amino acid sequence represented by SEQ ID NO: 12, CDRL2 consisting of an amino acid sequence represented by SEQ ID NO: 13, and CDRL3 consisting of an amino acid sequence represented by SEQ ID NO: 14.

34. The antibody according to any one of claims 30 to 33 or a functional fragment of the antibody, the antibody comprising a heavy chain variable region and a light chain variable region as described in any one of the following (a) and (b):

(a) a heavy chain variable region consisting of an amino acid sequence represented by SEQ ID NO: 21 and a light chain variable region consisting of an amino acid sequence represented by SEQ ID NO: 19; and

(b) a heavy chain variable region consisting of an amino acid sequence represented by SEQ ID NO: 25 and a light chain variable region consisting of an amino acid sequence represented by SEQ ID NO: 23.

35. The antibody according to any one of claims 30 to 34 or a functional fragment of the antibody, the antibody comprising a heavy chain variable region consisting of an amino acid sequence selected from the group consisting of the following (a) to (e) and a light chain variable region consisting of an amino acid sequence selected from the group consisting of the following (f) to (k):

(a) an amino acid sequence represented by SEQ ID NO: 54;

(b) an amino acid sequence represented by SEQ ID NO: 58;

(c) an amino acid sequence represented by SEQ ID NO: 62;

(d) an amino acid sequence with a homology of at least 95% or higher to a sequence of a framework region excluding CDR sequences in any of the sequences (a) to (c);

(e) an amino acid sequence having one to several amino acid deletions, substitutions, or additions in a sequence of a framework region excluding CDR sequences in any of the sequences (a) to (c);

(f) an amino acid sequence represented by SEQ ID NO: 38;

(g) an amino acid sequence represented by SEQ ID NO: 42;

(h) an amino acid sequence represented by SEQ ID NO: 46;

(i) an amino acid sequence represented by SEQ ID NO: 50;

(j) an amino acid sequence with a homology of at least 95% or higher to a sequence of a framework region excluding CDR sequences in any of the sequences (f) to (i); and

(k) an amino acid sequence having one to several amino acid deletions, substitutions, or additions in a sequence of a framework region excluding CDR sequences in any of the sequences (f) to (i).

36. The antibody according to claim 35 or a functional fragment of the antibody, the antibody comprising a heavy chain variable region and a light chain variable region selected from the group consisting of the following (a) to (e):

(a) a heavy chain variable region consisting of an amino acid sequence represented by SEQ ID NO: 54 and a light chain variable region consisting of an amino acid sequence represented by SEQ ID NO: 38;

(b) a heavy chain variable region consisting of an amino acid sequence represented by SEQ ID NO: 58 and a light chain variable region consisting of an amino acid sequence represented by SEQ ID NO: 42;

(c) a heavy chain variable region consisting of an amino acid sequence represented by SEQ ID NO: 54 and a light chain variable region consisting of an amino acid sequence represented by SEQ ID NO: 46;

(d) a heavy chain variable region consisting of an amino acid sequence represented by SEQ ID NO: 58 and a light chain variable region consisting of an amino acid sequence represented by SEQ ID NO: 50; and

(e) a heavy chain variable region consisting of an amino acid sequence represented by SEQ ID NO: 62 and a light chain variable region consisting of an amino acid sequence represented by SEQ ID NO: 46.

37. The antibody according to any one of claims 30 to 36 or a functional fragment of the antibody, wherein the antibody is a chimeric antibody.

38. The antibody according to any one of claims 30 to 36 or a functional fragment of the antibody, wherein the antibody is a humanized antibody.

39. The antibody according to any one of claims 30 to 38 or a functional fragment of the antibody, the antibody comprising a heavy chain constant region of human IgG1, human IgG2, or human IgG4.

40. The antibody according to claim 38 or 39 or a functional fragment of the antibody, the antibody comprising a heavy chain and a light chain selected from the group consisting of the following (a) to (e):

(a) a heavy chain consisting of an amino acid sequence consisting of amino acid residues 20 to 471 of SEQ ID NO: 52 and a light chain consisting of an amino acid sequence consisting of amino acid residues 21 to 234 of SEQ ID NO: 36 (H1L1);

(b) a heavy chain consisting of an amino acid sequence consisting of amino acid residues 20 to 471 of SEQ ID NO: 56 and a light chain consisting of an amino acid sequence consisting of amino acid residues 21 to 234 of SEQ ID NO: 40 (H2L2);

(c) a heavy chain consisting of an amino acid sequence consisting of amino acid residues 20 to 471 of SEQ ID NO: 52 and a light chain consisting of an amino acid sequence consisting of amino acid residues 21 to 234 of SEQ ID NO: 44 (H1L3);

(d) a heavy chain consisting of an amino acid sequence consisting of amino acid residues 20 to 471 of SEQ ID NO: 56 and a light chain consisting of an amino acid sequence consisting of amino acid residues 21 to 234 of SEQ ID NO: 48 (H2L4); and

(e) a heavy chain consisting of an amino acid sequence consisting of amino acid residues 20 to 471 of SEQ ID NO: 60 and a light chain consisting of an amino acid sequence consisting of amino acid residues 21 to 234 of SEQ ID NO: 44 (H3L3).

41. The antibody according to claim 30 or 31 or a functional fragment of the antibody, wherein the antibody binds to a site of an antigen recognizable to the antibody according to any one of claims 32 to 36 and 40.

42. The antibody according to claim 30 or 31 or a functional fragment of the antibody, wherein the antibody competes with the antibody according to any one of claims 32 to 36 and 40 for binding to CLDN6 and/or CLDN9.

43. A polynucleotide encoding the antibody according to any one of claims 30 to 42.

44. The polynucleotide according to claim 43, comprising a polynucleotide selected from the group consisting of the following (a) to (j):

(a) a polynucleotide encoding a heavy chain variable region consisting of an amino acid sequence represented by SEQ ID NO: 54 and a polynucleotide encoding a light chain variable region consisting of an amino acid sequence represented by SEQ ID NO: 38;

(b) a polynucleotide encoding a heavy chain variable region consisting of an amino acid sequence represented by SEQ ID NO: 58 and a polynucleotide encoding a

light chain variable region consisting of an amino acid sequence represented by SEQ ID NO: 42;

(c) a polynucleotide encoding a heavy chain variable region consisting of an amino acid sequence represented by SEQ ID NO: 54 and a polynucleotide encoding a light chain variable region consisting of an amino acid sequence represented by SEQ ID NO: 46;

(d) a polynucleotide encoding a heavy chain variable region consisting of an amino acid sequence represented by SEQ ID NO: 58 and a polynucleotide encoding a light chain variable region consisting of an amino acid sequence represented by SEQ ID NO: 50;

(e) a polynucleotide encoding a heavy chain variable region consisting of an amino acid sequence represented by SEQ ID NO: 62 and a polynucleotide encoding a light chain variable region consisting of an amino acid sequence represented by SEQ ID NO: 46;

(f) a polynucleotide encoding a heavy chain consisting of an amino acid sequence consisting of amino acid residues 20 to 471 of SEQ ID NO: 52 and a polynucleotide encoding a light chain consisting of an amino acid sequence consisting of amino acid residues 21 to 234 of SEQ ID NO: 36;

(g) a polynucleotide encoding a heavy chain consisting of an amino acid sequence consisting of amino acid residues 20 to 471 of SEQ ID NO: 56 and a polynucleotide encoding a light chain consisting of an amino acid sequence consisting of amino acid residues 21 to 234 of SEQ ID NO: 40;

(h) a polynucleotide encoding a heavy chain consisting of an amino acid sequence consisting of amino acid residues 20 to 471 of SEQ ID NO: 52 and a polynucleotide encoding a light chain consisting of an amino acid sequence consisting of amino acid residues 21 to 234 of SEQ ID NO: 44;

(i) a polynucleotide encoding a heavy chain consisting of an amino acid sequence consisting of amino acid residues 20 to 471 of SEQ ID NO: 56 and a

polynucleotide encoding a light chain consisting of an amino acid sequence consisting of amino acid residues 21 to 234 of SEQ ID NO: 48; and

(j) a polynucleotide encoding a heavy chain consisting of an amino acid sequence consisting of amino acid residues 20 to 471 of SEQ ID NO: 60 and a polynucleotide encoding a light chain consisting of an amino acid sequence consisting of amino acid residues 21 to 234 of SEQ ID NO: 44.

45. An expression vector comprising the polynucleotide according to claim 43 or 44.

46. A host cell transformed with the expression vector according to claim 45.

47. The host cell according to claim 46, wherein the host cell is a eukaryotic cell.

48. The host cell according to claim 47, wherein the host cell is an animal cell.

49. A method for producing the antibody according to any one of claims 30 to 42 or a functional fragment of the antibody, the method comprising the steps of: culturing the host cell according to any one of claims 46 to 48; and collecting a targeted antibody from the culture obtained in the step of culturing.

50. An antibody obtained by using the method according to claim 49, or a functional fragment of the antibody.

51. The antibody according to any one of claims 30 to 42 and 50 or a functional fragment of the antibody, the antibody comprising one or two or more modifications selected from the group consisting of N-linked glycosylation, O-linked glycosylation, N-terminal processing, C-terminal processing, deamidation, isomerization of aspartic acid, oxidation of methionine, addition of a methionine residue at an N terminus,

amidation of a proline residue, and deletion of one or two amino acid residues at the carboxyl terminus of a heavy chain.

52. The antibody according to claim 51 or a functional fragment of the antibody, wherein one or several amino acid residues are deleted at the carboxyl terminus of a heavy chain.

53. The antibody according to claim 52 or a functional fragment of the antibody, wherein one amino acid residue is deleted at the carboxyl terminus of each of the two heavy chains.

54. The antibody according to any one of claims 50 to 53 or a functional fragment of the antibody, wherein a proline residue at the carboxyl terminus of a heavy chain is further amidated.

55. A method for producing a glycan-remodeled antibody, the method comprising the steps of:

i) culturing the host cell according to any one of claims 46 to 48 and collecting a targeted antibody from the culture obtained;

ii) treating the antibody obtained in step i) with hydrolase to produce a (Fucα1,6)GlcNAc-antibody; and

iii)-1 reacting the (Fucα1,6)GlcNAc-antibody and a glycan donner molecule in the presence of transglycosidase, the glycan donner molecule obtained by introducing a PEG linker having an azide group to the carbonyl group of carboxylic acid at the 2-position of a sialic acid in MSG (9) or SG (10) and oxazolinating the reducing terminal, or

iii)-2 reacting the (Fucα1,6)GlcNAc-antibody and a glycan donner molecule in the presence of transglycosidase, the glycan donner molecule obtained by introducing a

PEG linker having an azide group to the carbonyl group of carboxylic acid at the 2-position of a sialic acid in (MSG-)Asn or (SG-)Asn with an α-amino group optionally protected and to the carbonyl group of carboxylic acid in the Asn, causing action of hydrolase, and then oxazolinating the reducing terminal.

56. The method according to claim 55, further comprising the step of purifying the (Fucα1,6)GlcNAc-antibody through purification of a reaction solution in step ii) with a hydroxyapatite column.

57. A method for producing the antibody-drug conjugate according to any one of claims 1 to 29, the method comprising the steps of:

i) producing a glycan-remodeled antibody by using the method according to claim 55 or 56; and

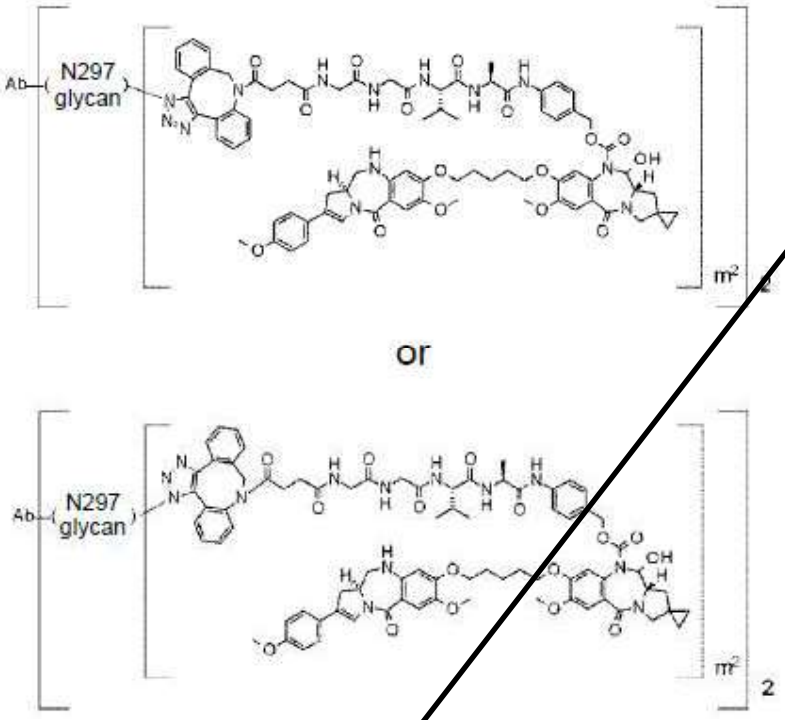
ii) reacting a drug-linker having DBCO and an azide group in a glycan of the glycan-remodeled antibody made in step i).

58. A glycan-remodeled antibody obtained by using the method according to claim 55 or 56.

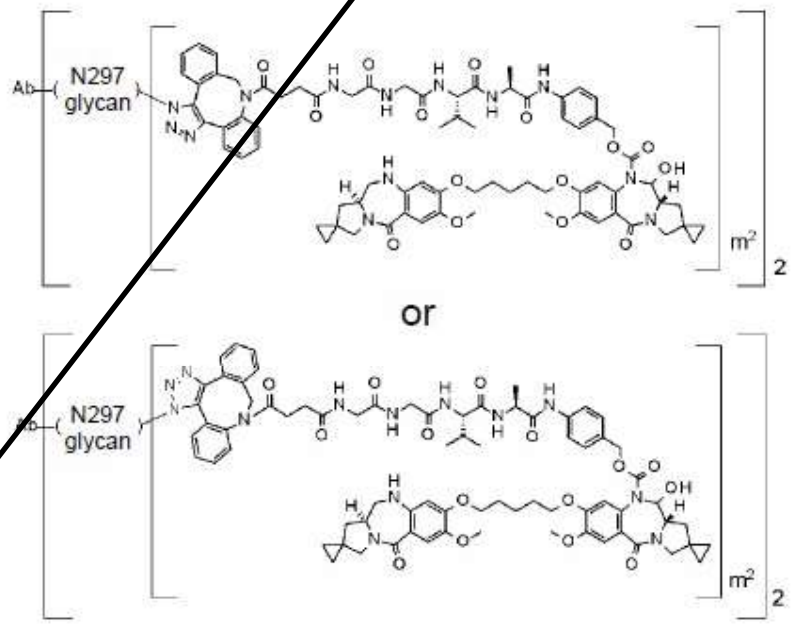
59. An antibody-drug conjugate obtained by using the method according to claim 57.

60. An antibody-drug conjugate selected from the following group:

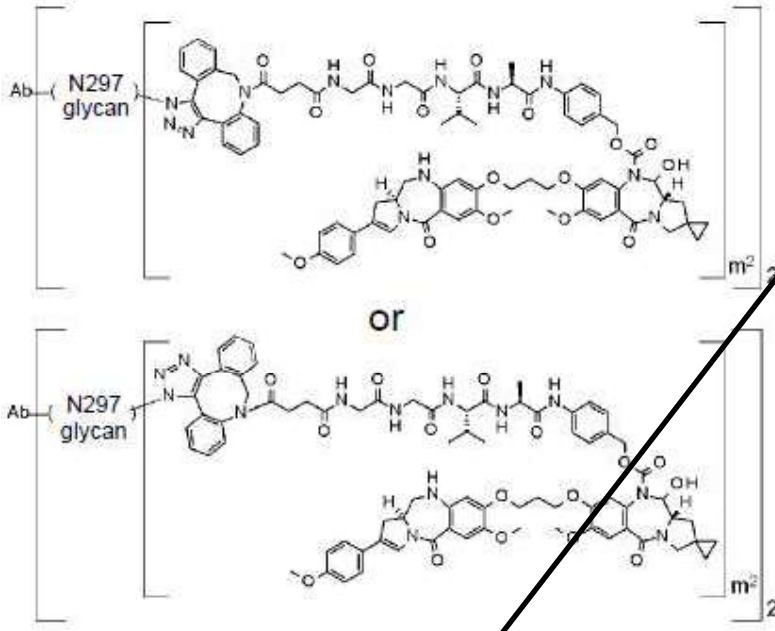
[Formula 31]



[Formula 32]



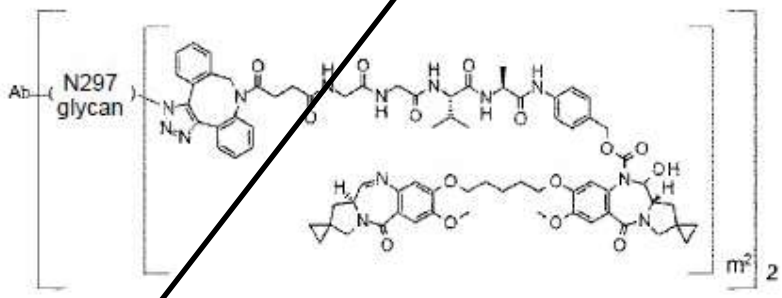
[Formula 33]



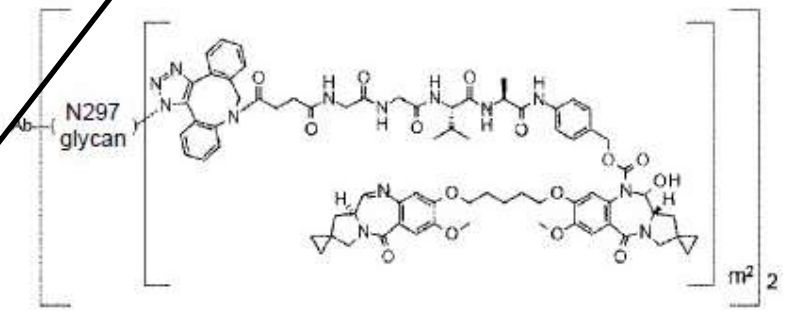
or

, or

[Formula 34]



or



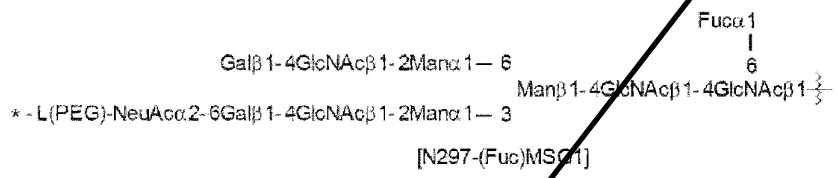
wherein, in each structural formula shown above,

m^2 represents an integer of 1 or 2;

Ab represents the antibody according to any one of claims 30 to 42, 50 to 54, and 58 or a functional fragment of the antibody, or an anti-HER2 antibody; and

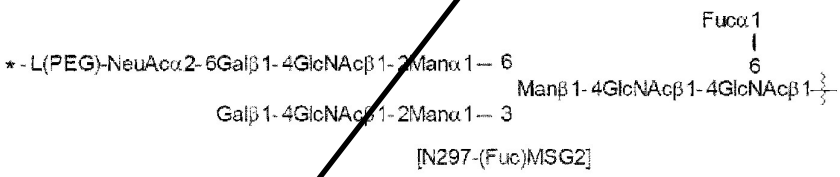
the N297 glycan of Ab represents any one of N297-(Fuc)MSG1, N297-(Fuc)MSG2, and a mixture thereof, and N297-(Fuc)SG, with N297-(Fuc)MSG1, N297-(Fuc)MSG2, and N297-(Fuc)SG having structures represented by the following formulas:

[Formula 35]



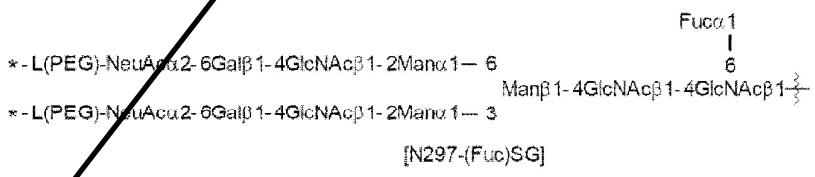
[N297-(Fuc)MSG1]

[Formula 36]



[N297-(Fuc)MSG2]

[Formula 37]



[N297-(Fuc)SG]

wherein

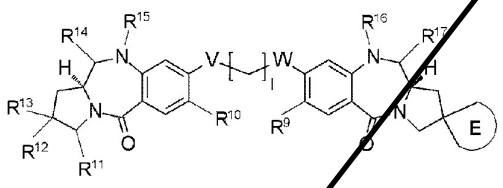
each wavy line represents bonding to Asn297 of the antibody,

L(PEG) represents -NH-CH_2CH_2-(O-CH_2CH_2)$_3$-*, wherein the amino group at the left end is bound via an amide bond to carboxylic acid at the 2-position of a sialic acid at the non-reducing terminal in each or either one of the 1-3 and 1-6 branched chains of β-Man in the N297 glycan, and each asterisk represents bonding to a nitrogen atom at the 1- or 3-position of the triazole ring in the corresponding structural formula.

61. The antibody-drug conjugate according to any one of claims 1 to 29, 59, and 60, wherein the average number of conjugated drug molecules per antibody molecule in the antibody-drug conjugate is 1 to 3 or 3 to 5.

62. A compound, a salt of the compound, or a hydrate of the compound or the salt, the compound represented by the following formula:

[Formula 38]



wherein

l represents an integer of 2 to 8;

E represents a spiro-bonded three- to five-membered saturated hydrocarbon ring or three- to five-membered saturated heterocycle optionally substituted with one to four halogen atoms;

R^9 and R^{10} each independently represent a C1 to C6 alkoxy group, a C1 to C6 alkyl group, a hydrogen atom, a hydroxy group, a thiol group, a C1 to C6 alkylthio group, a halogen atom, or -NR'R", wherein

R' and R" each independently represent a hydrogen atom or a C1 to C6 alkyl group;

R^{11}, R^{12} and R^{13} are selected from the following (i) to (iii):

(i) R^{11} and R^{12} are combined, together with the carbon atoms to which R^{11} and R^{12} are bound, to form a double bond , and R^{13} represents an aryl group or a heteroaryl group optionally having one or more substituents selected from group 7 or a C1 to C6 alkyl group optionally having one or more substituents selected from group 8,

(ii) R^{11} represents a hydrogen atom, and R^{12} and R^{13} are combined, together with the carbon atom to which R^{12} and R^{13} are bound, to form a three- to five-membered saturated hydrocarbon ring or a three- to five-membered saturated heterocycle, or CH_2=, and

(iii) R^{11}, R^{12}, and R^{13} are combined, together with the carbon atom to which R^{11} is bound and the carbon atom to which R^{12} and R^{13} are bound, to form a benzene ring or a six-membered heterocycle optionally having one or more substituents selected from group 9, and R^{13} represents a single bond;

R^{14} and R^{15} each represent a hydrogen atom, or R^{14} and R^{15} are combined to represent an imine bond (C=N);

R^{16} and R^{17} represent any one of the following (a) and (b):

(a) R^{16} and R^{17} are combined to form an imine bond (N=C), and

(b) R^{16} represents J-La'-Lp'-NH-B'-CH_2-O-(C=O)-*, wherein

the asterisk represents bonding to the nitrogen atom neighboring to R^{16},

B' represents a phenyl group or a heteroaryl group,

Lp' represents a linker consisting of an amino acid sequence cleavable in a target cell,

La' represents any one of the following group:

-C(=O)-$(CH_2CH_2)n^6$-C(=O)-,

-C(=O)-$(CH_2CH_2)n^6$-C(=O)-NH-$(CH_2CH_2)n^7$-C(=O)-,

-C(=O)-$(CH_2CH_2)n^6$-C(=O)-NH-$(CH_2CH_2O)n^7$-CH_2-C(=O)-,

-C(=O)-$(CH_2CH_2)n^6$-NH-C(=O)-$(CH_2CH_2O)n^7$-CH_2CH_2-C(=O)-,

-$(CH_2)n^8$-O-C(=O)-,

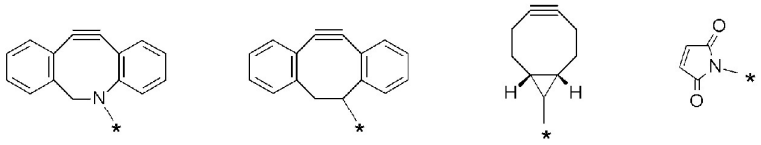
-$(CH_2)n^{12}$-C(=O)-, and

-$(CH_2CH_2)n^{13}$-C(=O)-NH-$(CH_2CH_2O)n^{14}$-CH_2CH_2-C(=O)-, wherein

n^6 represents an integer of 1 to 3, n^7 represents an integer of 1 to 5, n^8 represents an integer of 0 to 2, n^{12} represents an integer of 2 to 7, n^{13} represents an integer of 1 to 3, and n^{14} represents an integer of 6 to 10,

J represents any one of the following:

[Formula 39]



wherein, in the structural formulas for J shown above,

each asterisk represents bonding to La';

R^{17} represents a hydroxy group or a C1 to C3 alkoxy group;

V and W are each independently an oxygen atom, a nitrogen atom, or a sulfur atom;

group 7 represents:

a) a C1 to C6 alkoxy group optionally substituted with one to three halogen atoms,

b) a C1 to C6 alkyl group optionally substituted with any one selected from one to three halogen atoms, a hydroxy group, -OCOR', -NR'R", -C(=NR')-NR"R'", and -NHC(=NR')-NR"R'",

c) a halogen atom,

d) a C3 to C5 cycloalkoxy group,

e) a C1 to C6 alkylthio group,

f) -NR'R",

g) -C(=NR')-NR"R'",

h) -NHC(=NR')-NR"R'",

i) -NHCOR', or

j) a hydroxy group,

wherein

R' and R" are as defined above, and R'" each independently represents a hydrogen atom or a C1 to C6 alkyl group;

group 8 represents a halogen atom, a hydroxy group, or a C1 to C6 alkoxy group; and

group 9 represents a halogen atom or a C1 to C6 alkyl group or a C1 to C6 alkoxy group optionally substituted with one to three halogen atoms.

63. The compound according to claim 62, a salt of the compound, or a hydrate of the compound or the salt, wherein

E represents a spiro-bonded three- to five-membered saturated hydrocarbon ring optionally substituted with one or two halogen atoms;

R^9 and R^{10} each independently represent a C1 to C3 alkoxy group;

R^{11} and R^{12} are combined together with the carbon atoms to which R^{11} and R^{12} are bound to form a double bond;

R^{13} represents an aryl group or heteroaryl group optionally having one or more substituents selected from group 10, or a C1 to C3 alkyl group optionally having one or more substituents selected from group 11;

V and W are each an oxygen atom;

group 10 represents:

a) a C1 to C3 alkoxy group optionally substituted with one to three halogen atoms,

b) a C1 to C3 alkyl group optionally substituted with any one selected from one to three halogen atoms, a hydroxy group, -OCOR", -C(=NR')-NR"R'", and -NHC(=NR')-NR"R'",

c) a C3 to C5 cycloalkoxy group,

d) -C(=NR')-NR"R'",

e) -NHC(=NR')-NR"R'", or

f) a hydroxy group,

wherein

R', R", and R'" each independently represent a hydrogen atom or a C1 to C3 alkyl group; and

group 11 represents a halogen atom, a hydroxy group, or a C1 to C3 alkoxy group.

64. The compound according to claim 62, a salt of the compound, or a hydrate of the compound or the salt, wherein

E represents a spiro-bonded three- to five-membered saturated hydrocarbon ring optionally substituted with one or two halogen atoms;

R^9 and R^{10} each independently represent a C1 to C3 alkoxy group;

R^{11} represents a hydrogen atom;

R^{12} and R^{13} are combined, together with the carbon atom to which R^{12} and R^{13} are bound, to form a three- to five-membered saturated hydrocarbon ring, or $=CH_2$; and

V and W are each an oxygen atom.

65. The compound according to claim 62, a salt of the compound, or a hydrate of the compound or the salt, wherein

E represents a spiro-bonded three- to five-membered saturated hydrocarbon ring optionally substituted with one or two halogen atoms;

R^9 and R^{10} each independently represent a C1 to C3 alkoxy group;

R^{11}, R^{12}, and R^{13} are combined, together with the carbon atom to which R^{11} is bound and the carbon atom to which R^{12} and R^{13} are bound, to form a benzene ring optionally having one or more substituents selected from group 12;

V and W are each an oxygen atom; and

group 12 represents a halogen atom or a C1 to C3 alkyl group or a C1 to C3 alkoxy group optionally substituted with one to three halogen atoms.

66. The compound according to any one of claims 62 to 65, a salt of the compound, or a hydrate of the compound or the salt, wherein

B' is any one selected from a 1,4-phenyl group, a 2,5-pyridyl group, a 3,6-pyridyl group, a 2,5-pyrimidyl group, and a 2,5-thienyl group.

67. The compound according to claim 66, a salt of the compound, or a hydrate of the compound or the salt, wherein B' is a 1,4-phenyl group.

68. The compound according to any one of claims 62 to 67, a salt of the compound, or a hydrate of the compound or the salt, wherein Lp' is amino acid residues selected from the following group:

-GGVA-, -GG-(D-)VA-, -VA-, -GGFG-, -GGPI-, -GGVCit-, -GGVK-, -GG(D-)P-I-, and -GGPL-.

69. The compound according to any one of claims 62 to 68, a salt of the compound, or a hydrate of the compound or the salt, wherein La' is selected from the following group:

-C(=O)-CH_2CH_2-C(=O)-, -C(=O)-$(CH_2CH_2)_2$-C(=O)-,

-C(=O)-CH_2CH_2-C(=O)-NH-$(CH_2CH_2)_2$-C(=O)-,

-C(=O)-CH_2CH_2-C(=O)-NH-$(CH_2CH_2O)_2$-CH_2-C(=O)-,

-C(=O)-CH_2CH_2-NH-C(=O)-$(CH_2CH_2O)_4$-CH_2CH_2-C(=O)-,

-CH_2-OC(=O)-, -OC(=O)-,

-$(CH_2)_5$-C(=O)-, and -CH_2CH_2-C(=O)-NH-$(CH_2CH_2O)_8$-CH_2CH_2-C(=O)-.

70. The compound according to any one of claims 62 to 69, a salt of the compound, or a hydrate of the compound or the salt, wherein

R^{16} is represented by J-La'-Lp'-NH-B'-CH_2-O (C=O)-*, wherein

B' is a 1,4-phenyl group;

Lp' represents any one selected from the following group:

-GGVA-, -GG-(D-)VA-, -VA-, -GGFG-, -GGPI-, -GGVCit-, -GGVK-, and -GGPL-;

La' represents any one selected from the following group:

-C(=O)-CH_2CH_2-C(=O)-, -C(=O)-$(CH_2CH_2)_2$-C(=O)-,

-C(=O)-CH_2CH_2-C(=O)-NH-$(CH_2CH_2)_2$-C(=O)-,

-C(=O)-CH_2CH_2-C(=O)-NH-$(CH_2CH_2O)_2$-CH_2-C(=O)-,

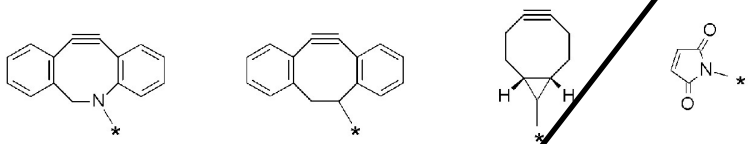
-C(=O)-CH_2CH_2-NH-C(=O)-$(CH_2CH_2O)_4$-CH_2CH_2-C(=O)-,

-CH_2-OC(=O)-, -OC(=O)-,

-$(CH_2)_5$-C(=O)-, and -CH_2CH_2-C(=O)-NH-$(CH_2CH_2O)_8$-CH_2CH_2-C(=O)-; and

J represents any one of the following:

[Formula 40]



wherein, in the structural formulas for J,

each asterisk represents bonding to La'.

71. The compound according to any one of claims 62 to 70, a salt of the compound, or a hydrate of the compound or the salt, wherein

R^{16} is selected from the following group:

J^1-C(=O)-CH_2CH_2-C(=O)-GGVA-NH-B'-CH_2-OC(=O)-,

J^1-C(=O)-CH_2CH_2-C(=O)-GG-(D-)VA-NH-B'-CH_2-OC(=O)-,

J^1-C(=O)-CH_2CH_2-C(=O)-VA-NH-B'-CH_2-OC(=O)-,

J^1-C(=O)-$(CH_2CH_2)_2$-C(=O)-VA-NH-B'-CH_2-OC(=O)-,

J^1-C(=O)-CH_2CH_2-C(=O)-GGPI-NH-B'-CH_2-OC(=O)-,

J^1-C(=O)-CH_2CH_2-C(=O)-GGFG-NH-B'-CH_2-OC(=O)-,

J^1-C(=O)-CH_2CH_2-C(=O)-GGVCit-NH-B'-CH_2-OC(=O)-,

J^1-C(=O)-CH_2CH_2-C(=O)-GGVK-NH-B'-CH_2-OC(=O)-,

J^1-C(=O)-CH_2CH_2-C(=O)-GGPL-NH-B'-CH_2-OC(=O)-,

J^1-C(=O)-CH_2CH_2-C(=O)-NH-$(CH_2CH_2)_2$-C(=O)-VA-NH-B'-CH_2-OC(=O)-,

J^1-C(=O)-CH_2CH_2-C(=O)-NH-$(CH_2CH_2O)_2$-CH_2-C(=O)-VA-NH-B'-CH_2-OC(=O)-,

J^1-C(=O)-CH_2CH_2-NH-C(=O)-$(CH_2CH_2O)_4$-CH_2CH_2-C(=O)-VA-NH-B'-CH_2-OC(=O)-,

J^2-OC(=O)-GGVA-NH-B'-CH_2-OC(=O)-,

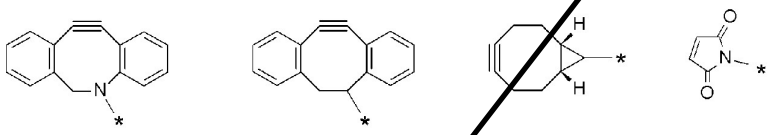
J^3-CH_2-OC(=O)-GGVA-NH-B'-CH_2-OC(=O)-,

J^4-$(CH_2)_5$-C(=O)-GGVA-NH-B'-CH_2-OC(=O)-,

J^4-$(CH_2)_5$-C(=O)-VA-NH-B'-CH_2-OC(=O)-, and J^4-CH_2CH_2-C(=O)-NH-$(CH_2CH_2O)_8$-CH_2CH_2-C(=O)-VA-NH-B'-CH_2-OC(=O)-, wherein

J^1, J^2, J^3, and J^4 represent the following structural formulas:

[Formula 41]



J^1 J^2 J^3 J^4

wherein, in the structural formulas for J^1, J^2, J^3, and J^4, each asterisk represents bonding to a neighboring group, and

B' is a 1,4-phenyl group.

72. The compound according to any one of claims 62 to 71, a salt of the compound, or a hydrate of the compound or the salt, wherein

R^{16} is selected from the following group:

J^1-C(=O)-CH_2CH_2-C(=O)-GGVA-NH-B'-CH_2-OC(=O)-,

J^1-C(=O)-CH_2CH_2-C(=O)-VA-NH-B'-CH_2-OC(=O)-,

J^1-C(=O)-$(CH_2CH_2)_2$-C(=O)-VA-NH-B'-CH_2-OC(=O)-,

J^1-C(=O)-CH_2CH_2-C(=O)-GGVCit-NH-B'-CH_2-OC(=O)-, J^1-C(=O)-CH_2CH_2-C(=O)-NH-$(CH_2CH_2)_2$-C(=O)-VA-NH-B'-CH_2-OC(=O)-,

J^1-C(=O)-CH_2CH_2-C(=O)-NH-$(CH_2CH_2O)_2$-CH_2-C(=O)-VA-NH-B'-CH_2-OC(=O)-,

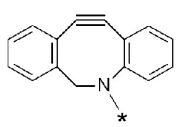
J^1-C(=O)-CH_2CH_2-NH-C(=O)-$(CH_2CH_2O)_4$-CH_2CH_2-C(=O)-VA-NH-B'-CH_2-OC(=O)-,

J^4-$(CH_2)_5$-C(=O)-GGVA-NH-B'-CH_2-OC(=O)-, and J^4-$(CH_2)_5$-C(=O)-VA-NH-B'-CH_2-OC(=O)-, wherein

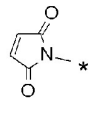
B' is a 1,4-phenyl group, and

J^1 and J^4 represent the following structural formulas:

[Formula 42]



J^1



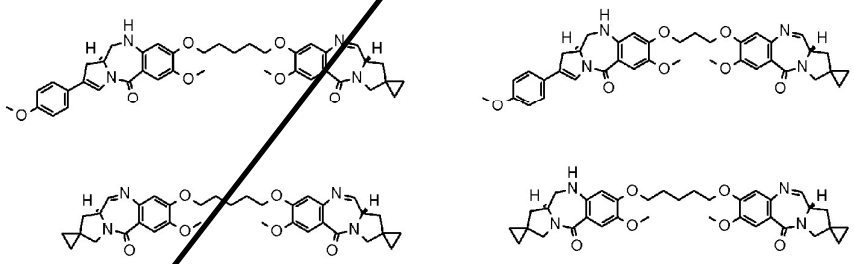
J^4

wherein, in the structural formulas for J^1 and J^4,

each asterisk represents bonding to a neighboring group.

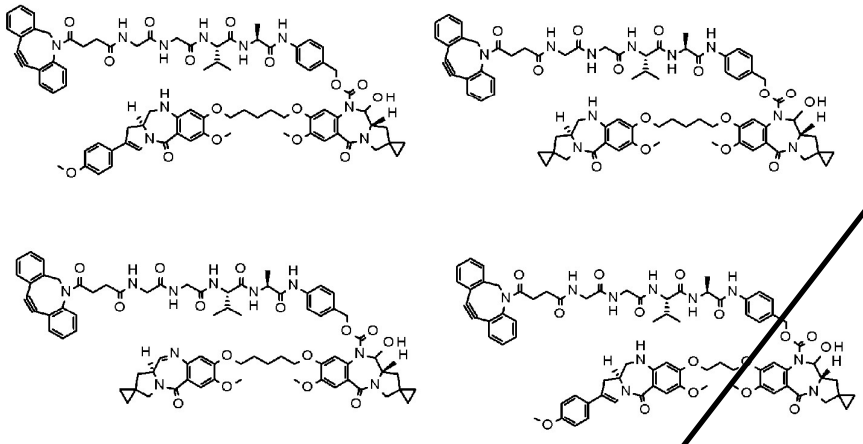
73. A compound, a salt of the compound, or a hydrate of the compound or the salt, wherein the compound is any one compound selected from the following formulas:

[Formula 43]



74. A compound, a salt of the compound, or a hydrate of the compound or the salt, wherein the compound is any one compound selected from the following formulas:

[Formula 44]



75. A pharmaceutical composition comprising any of the antibody-drug conjugate according to any one of claims 1 to 29 and 59 to 61, a salt of the antibody-drug conjugate, or a hydrate of the antibody-drug conjugate or the salt; the antibody according to any one of claims 30 to 42, 50 to 54, and 58 or a functional fragment of the antibody; and the compound according to any one of claims 62 to 74, a salt of the compound, or a hydrate of the compound or the salt.

76. The pharmaceutical composition according to claim 75, being an antitumor drug.

77. The pharmaceutical composition according to claim 76, wherein the tumor is a tumor expressing CLDN6 and/or CLDN9.

78. The pharmaceutical composition according to claim 76 or 77, wherein the tumor is ovarian cancer (surface epithelial tumor, stromal tumor, or germ cell tumor), lung cancer (non-small cell lung cancer or small cell lung cancer), gastric cancer, endometrial cancer, testicular cancer (seminoma or non-seminoma), uterine cervix cancer, placental choriocarcinoma, kidney cancer, urothelial cancer, colorectal cancer, prostate cancer, glioblastoma multiforme, brain tumor, pancreatic cancer, breast cancer, melanoma, liver cancer, bladder cancer, or esophageal cancer.

79. A method for treating a tumor, wherein any of the antibody-drug conjugate according to any one of claims 1 to 29 and 59 to 61, a salt of the antibody-drug conjugate, or a hydrate of the antibody-drug conjugate or the salt; the antibody according to any one of claims 30 to 42, 50 to 54, and 58 or a functional fragment of the antibody; and the compound according to any one of claims 62 to 74, a salt of the compound, or a hydrate of the compound or the salt is administered to an individual.

80. The method according to claim 79, wherein the tumor is a tumor expressing CLDN6 and/or CLDN9.

81. The method according to claim 79 or 80, wherein the tumor is ovarian cancer (surface epithelial tumor, stromal tumor, or germ cell tumor), lung cancer (non-small cell lung cancer or small cell lung cancer), gastric cancer, endometrial cancer, testicular cancer (seminoma or non-seminoma), uterine cervix cancer, placental choriocarcinoma, kidney cancer, urothelial cancer, colorectal cancer, prostate cancer, glioblastoma multiforme, brain tumor, pancreatic cancer, breast cancer, melanoma, liver cancer, bladder cancer, or esophageal cancer.

82. A method for treating a tumor, wherein a pharmaceutical composition comprising at least one selected from the antibody-drug conjugate according to any one of claims 1 to 29 and 59 to 61, a salt of the antibody-drug conjugate, or a hydrate of the antibody-drug conjugate or the salt; the antibody according to any one of claims 30 to 42, 50 to 54, and 58 or a functional fragment of the antibody; and the compound according to any one of claims 62 to 74, a salt of the compound, or a hydrate of the compound or the salt, and at least one antitumor drug are administered to an individual simultaneously, separately, or consecutively.